August 2020

Whitney Road Corridor Plan

AVI, PC

ENGINEERING, PLANNING, SURVEYING

1103 OLD TOWN LANE SUITE 101, CHEYENNE, WY 82009

WWW.AVIPC.COM

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Lead Agencies

Cheyenne Metropolitan Planning Organization
615 West 20th Street
Cheyenne, WY 82001

Laramie County Planning & Development Office
Laramie County
3966 Archer Parkway
Cheyenne, WY 82009

City of Cheyenne
2101 O'Neil Avenue
Cheyenne, WY 82001

Wyoming Department of Transportation
District Number One
Project Development
Resident Engineers Office

Consultant Team

AVI Professional Corporation (AVI)

1103 Old Town Lane, Suite 101, Cheyenne, WY
Thomas D. Cobb, PE, Project Manager
Scott Cowley, PE, Principal
Sherry Prieskorn, Office Administrator

Sustainable Traffic Solutions, Inc (STS)
823 West 124th Drive, Westminster, CO
Joe Henderson, PE

Numerous agencies, local associations and individuals devoted their time to the development of this document, including but not limited to:

Cheyenne Metropolitan Planning Organization

Policy Committee
Technical Advisory Committee
Citizens Advisory Committee
Whitney Road Steering Committee

Laramie County

County Commissioners
Planning Commission
Laramie County Planning and Development Office
Public Works

City of Cheyenne

City Council
Planning Commission

Community

Interested Stakeholders
Property Owners
Area Residents

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Kimberly-Horn-Whitney Ranch Traffic Study

US30 Corridor Study -Kimley Horn

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1.0 INTRODUCTION

Various areas in East Cheyenne and Laramie County have begun to develop and redevelop in the last several years. Until the previous decline in energy related oil, gas, and mineral extraction, the area has seen a steady growth in the job market as a result of a number of new industrial companies, age related baby boomer market businesses including health care providers, long-term care, and health care support businesses. This growth has increased the demand for additional housing in area. Consequently, fringe City and County residential developments like Saddle Ridge Subdivision have begun to advance in un-platted and open parcels available within and surrounding the City of Cheyenne. Saddle Ridge Subdivision entailed a 209 acre residential housing development and has steadily reached build-out. The subdivision has recently been expanded to a twelfth filing to the east and other housing and mixed use developments have now been prompted to develop within Laramie County including Whitney Ranch.

The estimated population for the City of Cheyenne in 2020, 2030, and 2040 is projected to increase from 65,891 to 71,848 to 75,621 residents according to the Department of Administration and Information Economic Analysis Division. This corresponds to approximately +9.0% over the next 10 years and +14.8% over a 20 year period. As the community continues to experience growth, the existing transportation system will not be sufficient to accommodate all the expansion.

A number of important transportation connections in the eastern Cheyenne roadway network, north of I-80 and south of Iron Mountain Road, have not been completed or planned. The need for an east west connector other than Dell Range Blvd. and Pershing between Whitney Road and College Drive has been evident for quite some time as potential rural residential developments adjacent to the area have begun to emerge.

The boundaries of the Whitney Road Corridor Study are U.S. 30 to the south and Beckle Road/ Storey Blvd. to the north. The boundary is illustrated in Figure 1.1 Corridor Study Area and Vicinity Map.

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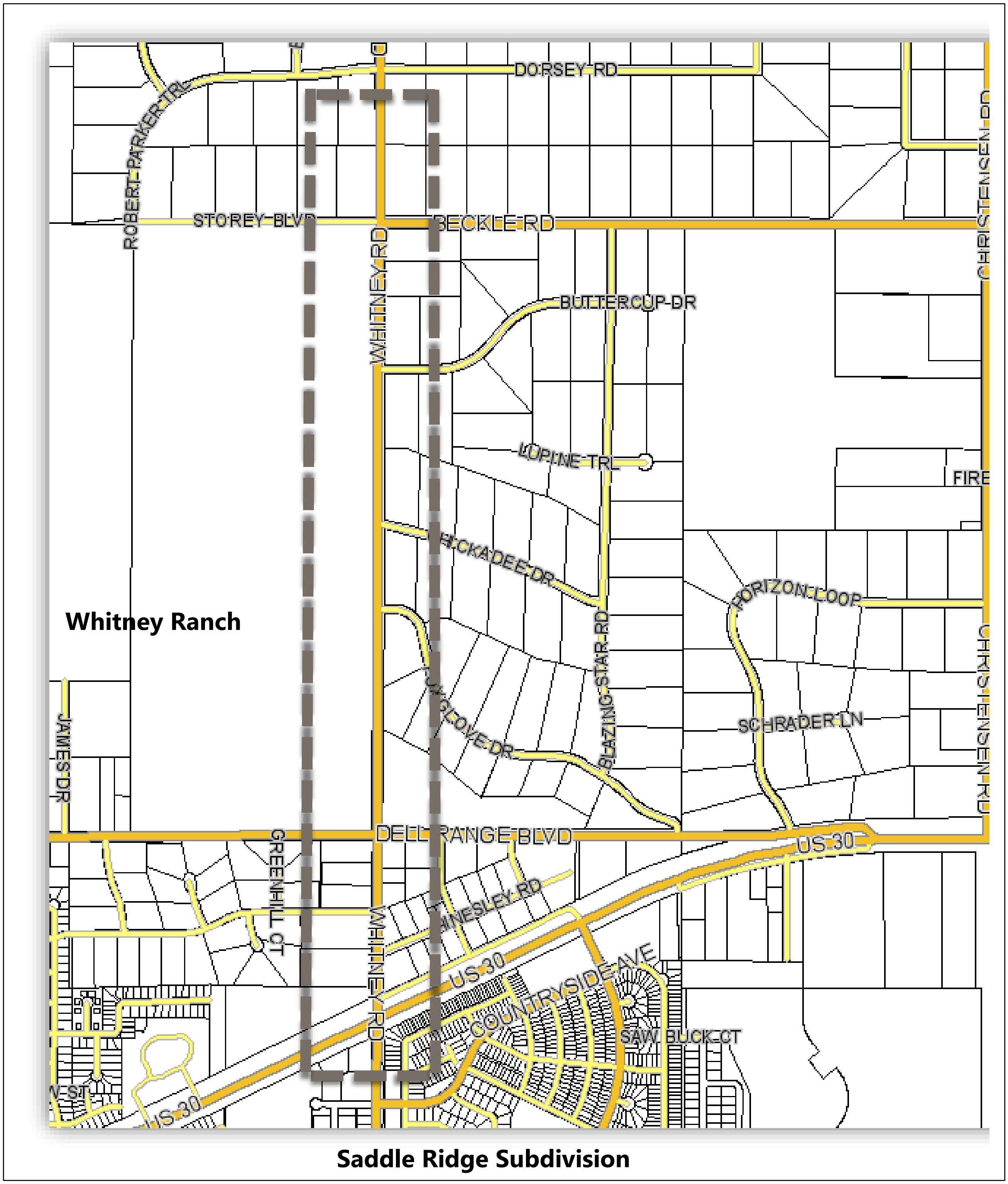

Figure 1.1 Corridor Study Area and Vicinity Map

The project was reviewed with oversight by a steering committee comprised of the following agencies or representative organizations:

- The Cheyenne Metropolitan Planning Organization.
- Laramie County Public Works.
- Cheyenne Urban Planning.
- City Engineering.
- Black Hills Energy.
- High West Energy.
- City of Cheyenne Board of Public Utilities.
- WYDOT District #1.
- WYDOT Traffic.

The primary objective of the plan is to create a comprehensive plan which strives to optimize safety, growth, and fiscal responsibility. After discussion with the members of the Steering Committee, the goal of the project was to create a 10% design corridor plan for the future development of Whitney Road that met the following criteria:

- Understand the community and neighborhood vision for the roadway.
- Improve roadway and intersection safety and function.
- Address drainage and snow drifting.

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2.0 GLIMPSE

The Glimpse section of the plan provides a summary of the review of the known existing information related to the roadway, right-of-way, and planning area.

History and Platting

Prior to platting, the roadway was likely used by local ranchers, property owners, and businesses as a shared access road. Based on the Cheyenne – Laramie County Cooperative GIS Database Search/ Interactive Mapping Site [1], the first recorded plat of Whitney Road was the Foster Tracts Subdivision recorded on September 29, 1952.

<u>U.S. 30 to Dell Range (Middle Section)</u>

The Foster Tracts, 2nd Filing dedicated 33’ of Whitney Road right-of-way on the east side of Section 24 from U.S. 30 to the north approximately 1,348.2’ or what is now Dell Range Blvd. A total of 66’ of right-of-way was illustrated on the plat (Figure 2.1 Foster Tracts Subdivision 2nd Filing Plat with a 66' Right-of-way width).

It appears that an additional 7’ of right-of-way was dedicated for a total of 40’ based on survey monuments located in the field. Other platting continued to the west of the corridor with the Final Plat of Greenmeadow Estates recorded in June 2019 (Figure 2.2 Greenmeadow Estates Subdivision 40’ West Right-of-way). This plat dedicated a right-of-way width of 40’ west of the east line of Section 26, Township 14 N, Range 66 West from Dell Range Blvd. to the south for 949.30’. The remainder of the west right-of-way line of Whitney Road from U.S. 30 to Greenmeadow Estates is defined by un-platted 5.0 acre mobile home park boundary and the Jolly Roger Subdivision. The Jolly Ranch Subdivision dedicated approximately 40’ of right-of-way and an additional 10’ Road Reservation from the east line of Section 26, T 14 N, R 66 W. The plat was recorded on May 10, 1994 (Figure 2.5 Jolly Rogers Subdivision).

<u>Dell Range to Beckle Road/ Storey Blvd. (North Section)</u>

The north portion of the corridor (i.e. north of Dell Range Blvd.) was first platted with the Meadowlark Estates plat recorded on November 19, 1997 (Figure 2.3 Final Plat Meadowlark Estates 40' Right-of-way East of West Section Line 24). The plat dedicated 40’ of right-of-way from the west line of Section 24 to the east. The west right-of-way is defined by deed on an un-platted parcel owned by Gysel Whitney, LLC. Development based on a boundary survey conducted by AVI. This area is under development planning and future right-of-way needs should be addressed during the development agreement process.

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U.S. 30 to Country Side Avenue (South Section)

The south right-of-way for the section of Whitney Road was dedicated by two plats. The first was the Saddle Ridge Subdivision recorded June 27, 2007 (Figure 2.4 Saddle Ridge Subdivision).The Saddle Ridge Subdivision dedicated a total of 50’ of right-of-way from the west line of Section 25 to the east. The east right of right-of-way was confirmed by the US 30 Business Plaza recorded February 9, 2016 to be 40’ east of the West Section 25 (Figure 2.6 US 30 Business Plaza).

Dell Range Blvd.

The Dell Range Blvd. right-of-way northeast of Whitney Road is defined on the north by the Meadowlark Estates Subdivision plat which dedicated 60’ to the north of the south line of Section 24, T 14 N, R 66 W. The right-of-way southeast of Whitney Road is defined by the Foster Tracts, 2nd Filing where 33’ south of the north line of Section 25 was dedicated for right-of-way. The southwest right-of-way at Dell Range Blvd. at Whitney Road is Greenmeadow Estates plat which dedicated 50’ of right-of-way south of the north line of Section 26, T 14 N, R 66 W while the northwest right-of-way was established by legal/ deed on an un-platted parcel owned by Gysel Whitney, LLC. Based on the boundary work completed by AVI, it appears that 40’ of right-of-way exists north of south line of Section 23.

Table 2.1 Platted Roadway Right of Widths summarizes the information known at this time related to the right-of-way widths of the corridor and intersecting cross streets. Please see Appendix G for recorded plats and road reservation documentation.

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Table 2.1 Platted Roadway Right of Widths

Roadway Section	Platted Width [1]	Notes
Whitney Road:		
Beckel Road/ Storey to Dell Range Blvd.	80′	40′ East, 40′ West (AVI Boundary of Whitney-Gysel Property)
Dell Range Blvd. to U.S. 30	73′	40′ West, 33′ East (Property corner indicates 80′ by monument evidence)
U.S. 30 to Country Side Avenue	90′	50′ East, 40′ West
Dell Range Blvd.		
East of Whitney Road	93′	60′ North, 33′ South
West of Whitney Road	90′	50′ South, 40′ North (AVI Boundary of Whitney-Gysel Property)
Whitney Road Intersecting Roadways		
Beckle Road (East)	90′	40′ North, 50′ South
Storey Blvd (Beckle Road) (West)	50′	
Buttercup Drive	80′	
Chickadee Drive	80′	
Foxglove	80′	
Greenmeadow Drive	60′	
Hinsley Road	80′	
U.S. 30	300′	

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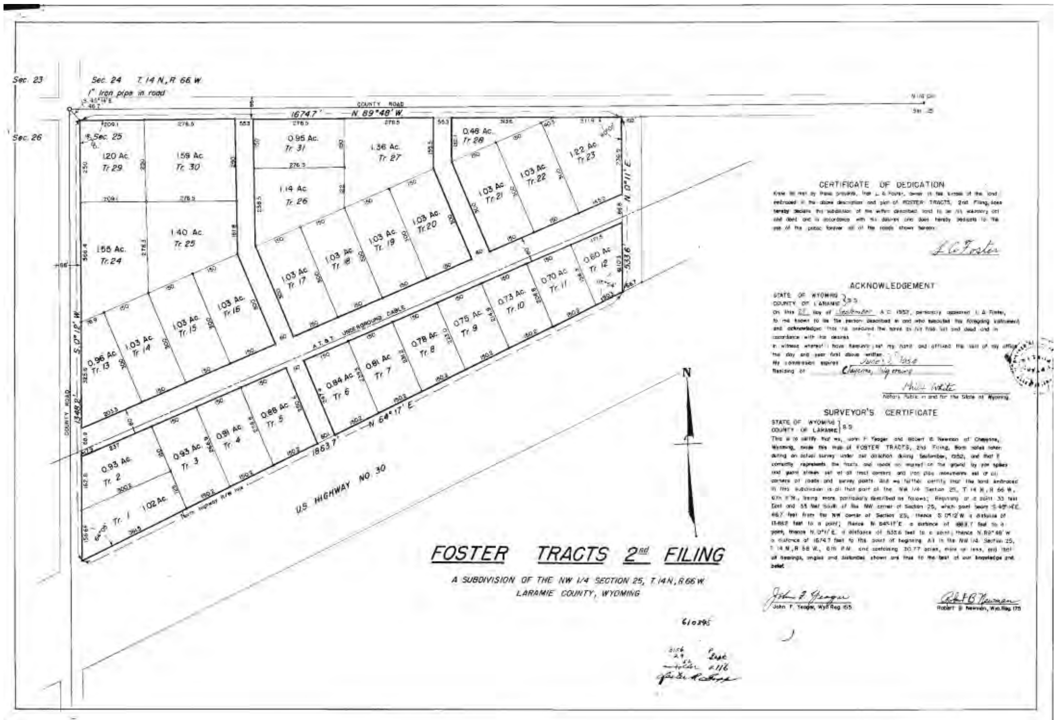

Figure 2.1 Foster Tracts Subdivision 2nd Filing Plat with a 66' Right-of-way width

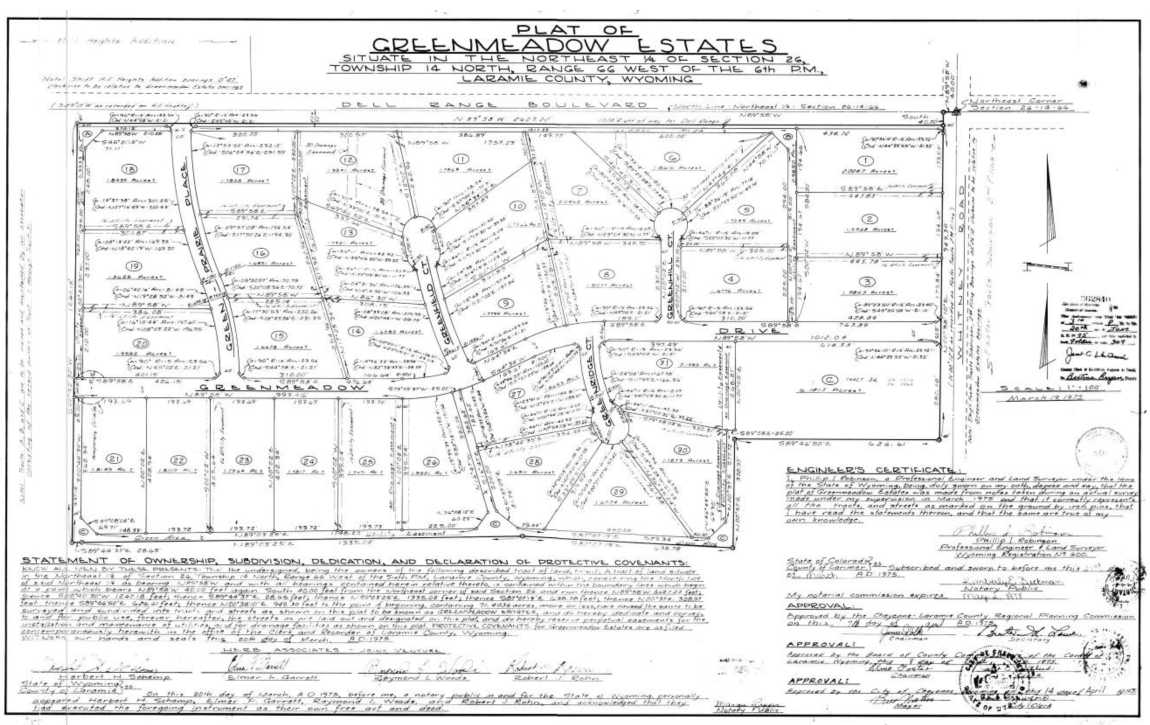

Figure 2.2 Greenmeadow Estates Subdivision 40' West Right-of-way

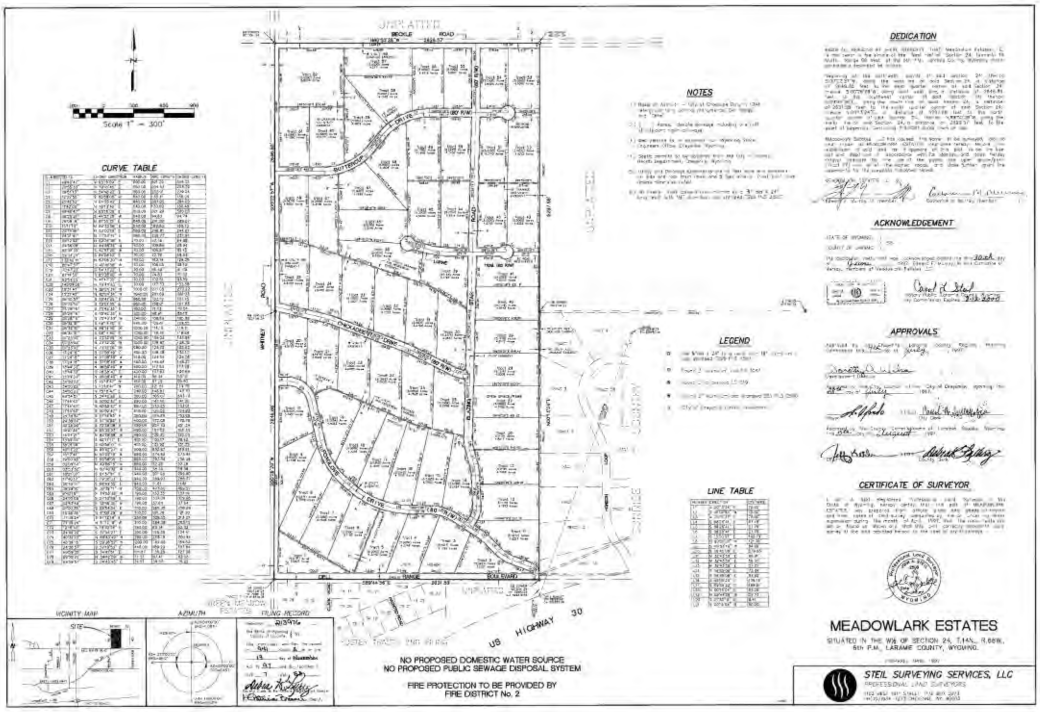

Figure 2.3 Final Plat Meadowlark Estates 40' Right-of-way East of West Section Line 24

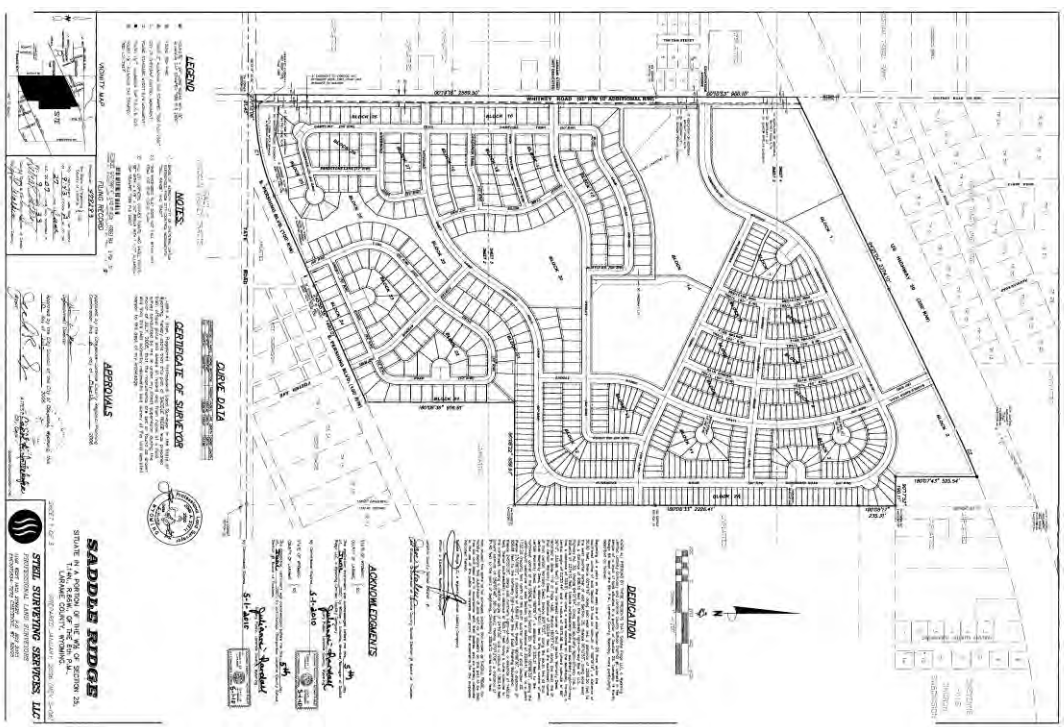

Figure 2.4 Saddle Ridge Subdivision

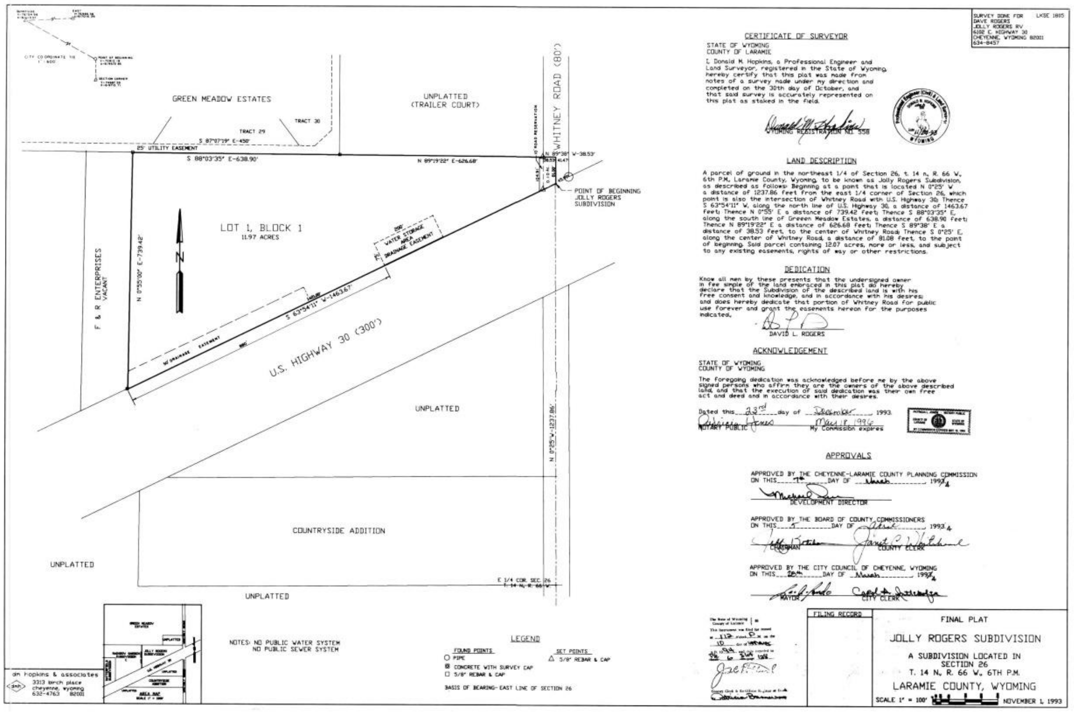

Figure 2.5 Jolly Rogers Subdivision

Figure 2.6 US 30 Business Plaza

Existing Corridor and Boundary Conditions

Whitney Road runs north/south and connects large lot developments in the northeast area of Cheyenne with east/west arterials in the eastern side of the community. It is classified as a minor arterial from US 30 to Dell Range and a major collector from Dell Range northward. Whitney extends four miles north to Iron Mountain Road which then connects to Interstate 25 (I-25) approximately five point five (5.5) miles to the west. The major cross streets on the corridor are Dell Range Blvd. and U.S. Highway 30. Dell Range Blvd. is a principal arterial and contains the principal big box and strip mall, and mall shopping areas in Cheyenne. State highway U.S. 30 is also a principal arterial and connects to the downtown of Cheyenne where much of the state and city government offices, as well as, the regional hospital are located.

Traffic on the narrow, rural Whitney Road has been increasing due to the growth in eastern Cheyenne including the Saddle Ridge subdivision and the other county subdivisions north of Dell Range. In particular, the varying conditions are summarized below.

<u>Whitney Road between US 30 and Dell Range Boulevard</u>

As shown in Figure 2.7 and 2.8 this section of Whitney Road is a narrow county road with an approximate width of 20' to 22' without shoulders. The posted speed limit is this section of roadway is 30 mph. The boundary conditions contain rural residential, a mobile home park, travel park, undeveloped parcels, industrial, and commercial. The properties along this stretch are close to the road. The intersection with US 30 and Whitney is stop controlled and skewed with Whitney Road at an angel of sixty point three seven (60.37) degrees.

Figure 2.7 Whitney Road north of US 30 (Looking north)

Figure 2.8 Whitney Road at US 30 (Looking southwest)

Whitney Road between Dell Range Boulevard and Beckle Road/ Storey Blvd.

As shown in Figure 2.9 Whitney Road (Dell Range Blvd. to Storey Blvd. / Beckle Road) this section of Whitney Road is also a narrow county road with an approximate width of 20' to 22' without shoulders. The posted speed limit is this section of roadway is 40 mph from Dell Range Blvd to Foxglove Road and 45 mph north of Foxglove Road. The boundary conditions are rural residential to the east and north, and an undeveloped parcel to the west containing an old ranch house and supporting buildings. The intersection of Whitney at Dell Range is stop controlled. Additionally, this section of Whitney has recently been impacted by heavy semi-truck traffic due to oil and gas well drilling and production in area which prompted regulatory signage "No Truck Traffic" to be placed north of Dell Range Blvd. on Whitney. This section of Whitney Road contains, and elevation change of approximately 95 feet from Dell range with grades in excess ten (10) percent. This grade and elevation change creates unsafe sightlines as you near the top of the hill heading north and coming over the crest heading south. This grade becomes dangerous in inclement weather and icy conditions.

Whitney Road north of Chickadee Drive
(Looking north)

Whitney Road at Dell Range
(Looking north)

Figure 2.9 Whitney Road (Dell Range Blvd. to Storey Blvd. / Beckle Road)

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Historical Review

The Whitney Road corridor plan area is not known to be a part of any historic districts at the present time. Additionally, the Wyoming State Historic Preservation Office (SHPO) website was reviewed for all the National Register listings in the area of the study and none were found.

Please note that if federal funds are used on any future projects or if a federal agency is part of the planning and implementation, a Section 106 Study will be required to determine potential impacts to any historic properties. Properties in the area of any construction impacts will be identified and evaluated based on the Secretary of Interior's Standards and Guidelines for identification. Several determinations can be made in the evaluation including the following:

- No historic properties affected.
- Historic property adversely affected.
- Historic property not adversely affected.

Utilities

Based on observed surface locates and desktop research the following utilities have been identified within the corridor area:

- Black Hills Energy: Overhead Electric, Underground Natural Gas Line.
- High West Energy: Overhead Electric.
- Century Link: Underground telephone; fiber optic.
- Suncor Energy: 12.75″ Petroleum Pipeline (2′ to 5′ deep; east side of Whitney Road), <u>Easement Bk #1282, page 780-783 South of U.S. 30.</u>
- Plains All American Pipeline System, LLC: 16″ Petroleum Pipeline (4′-3″ to 14′-5″ deep; west side of Whitney Road), <u>Easement Bk #1976, p. 1815.</u>
- City of Cheyenne Board of Public Utilities (BOPU).
    - Water Main
    - Sanitary Sewer Main

<u>Whitney Utility Infrastructure</u>

Further development of the corridor will require wet and dry utility infrastructure to be expanded and coordinated with the individual entities to support future development. Water and sewer utilities are not immediately available within the corridor area with the exception of a small section on the southwest corner of the corridor beginning at Whitney Road at U.S. Highway 30 and Saddle Ridge. Future water and sewer development of this area would likely be served by the BOPU as the SCWSD is not allowed to serve or expand outside their current boundary without City of Cheyenne and BOPU approval.

As with any new roadway project, prudent engineering and planning for underground utility infrastructure should be evaluated and incorporated into the roadway construction plans. This approach results in the least expensive method to get the utility infrastructure installed as the road construction project will have the all of the soft project costs such as mobilization, traffic control, testing, surveying, bonds & insurance already included as well as the more expensive hard cost associated with roadway resurfacing. In additions, the inconvenience to the traveling motorist is considerable reduced as all work is completed under and during a single construction project.

There is an existing 12" water main located at the south end of Whitney road and a 15" existing sewer main available for extension. As these mains extend up Whitney to Del range intersection, the water line would connect to a proposed 12" water main planned to be extended east down Del range to Whitney Road. Both water and sewer mains need to extend past the Roundabout splitter island limits currently under design. This will minimize have new improvements removed to connect into these mains. Utility main stub outs should also be made into each County road side street for ease for future main extension. BOPU should be consulted to determine what the optimum main size should be based on their system modeling efforts and assumed development density for the contributing areas.

An area of contribution exhibit has been prepared see Figure 2.10 Water and Sewer Main Summary that indicates those county properties that would potentially connect to the Whitney water and sewer infrastructure over the next 20 years. Initial estimates are approximately 260 acres would benefit from the water main being extended and approximately 390 acres would contribute to the sanitary sewer main. At urban densities, this would serve around 1000 residential units. County parcel along Whitney road are prime for redevelopment as traffic counts are projected to increase. This combined with the installation and availability of utility infrastructure will allow the adjacent properties to transition into higher and better uses.

A cross section of Whitney road in Figure 2.10 Water and Sewer Main Summary depicts potential infrastructure location and spacing with the road section.

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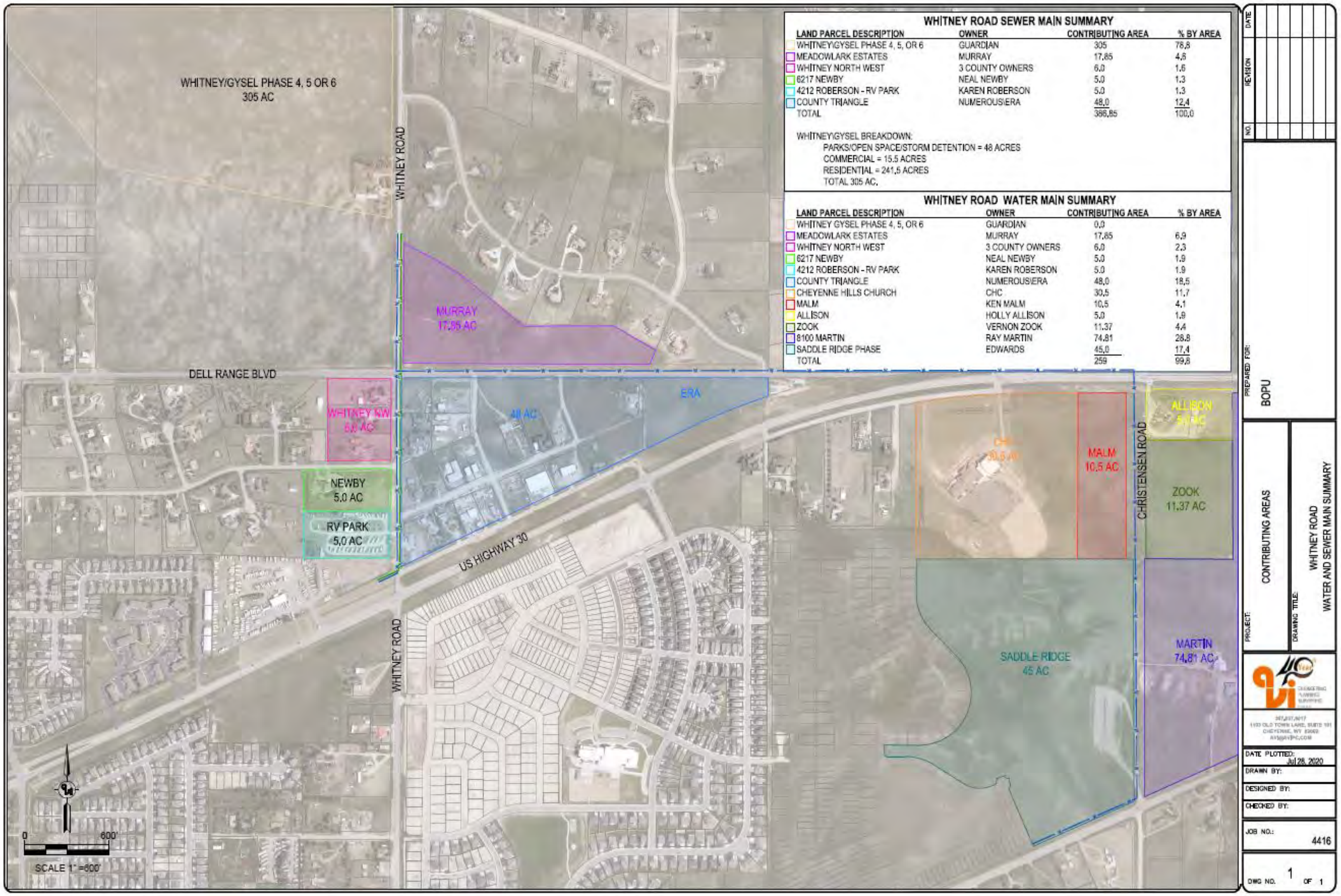

Figure 2.10 Water and Sewer Main Summary

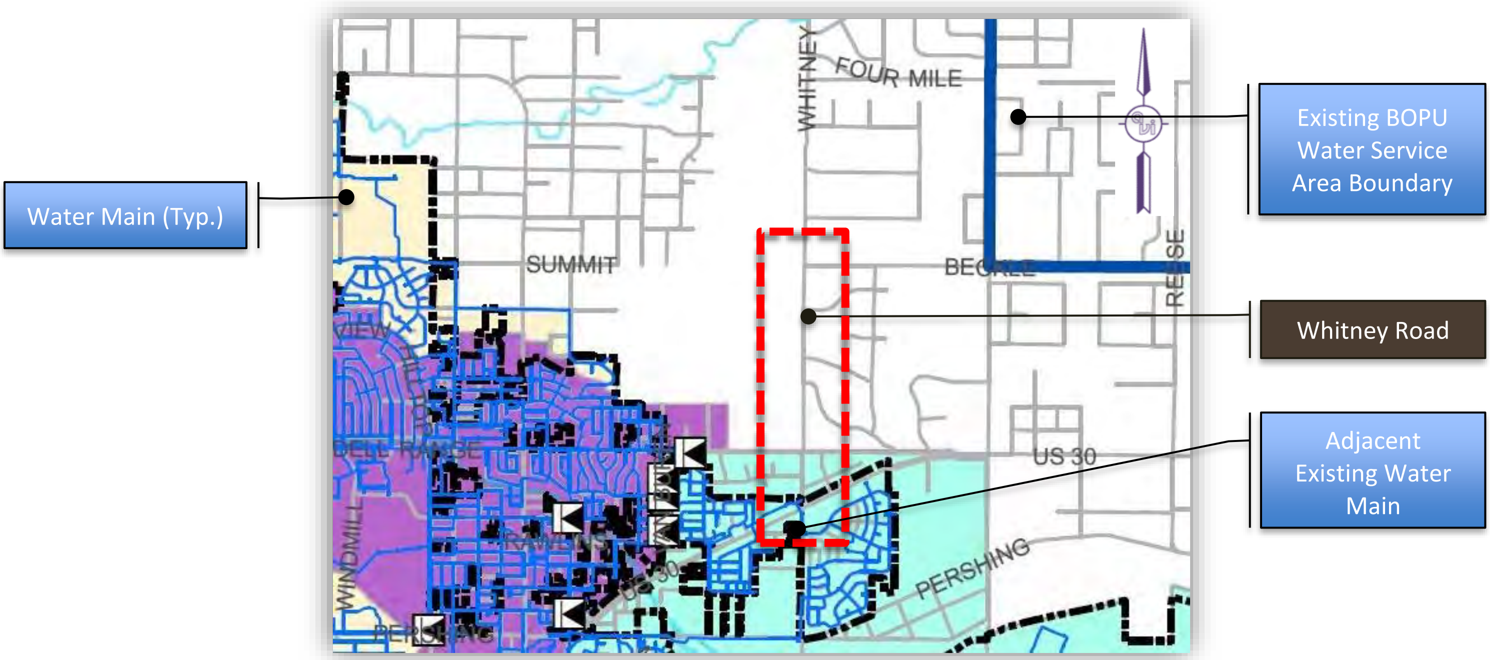

Figure 2.11 Water Service Area and Existing Distribution Lines (BOPU)

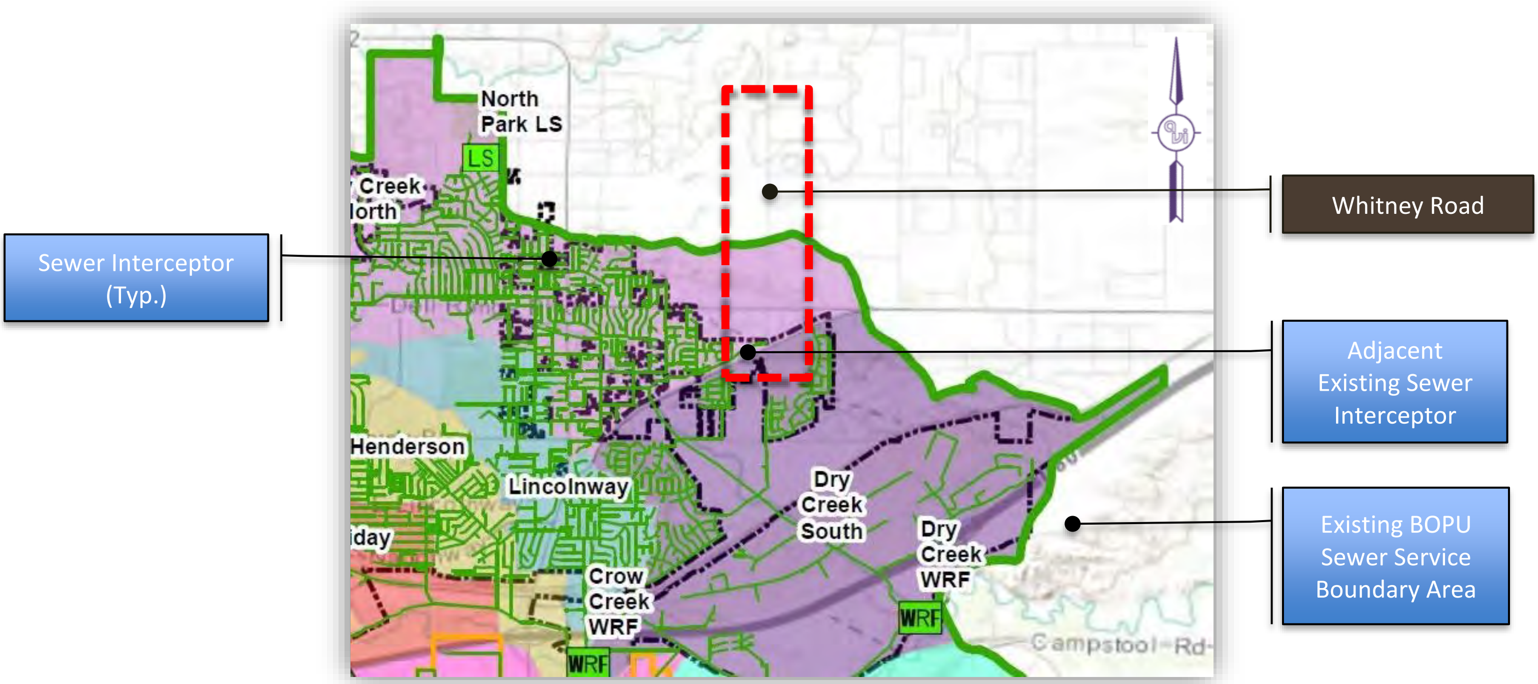

Figure 2.12 Sewer Service Boundary, Existing Collection System (BOPU)

Adjacent water and wastewater distribution and collection lines, as well as, service area boundaries are illustrated in the excerpt figures from the 2013 Cheyenne Water and Wastewater Master Plans by HDR for the City of Cheyenne Board of Public Utilities [2] and shown in Figure 2.11 Water Service Area and Existing Distribution Lines (BOPU) and Figure 2.12 Sewer Service Boundary, Existing Collection System (BOPU). The primary developments in the area appear to be served by onsite septic and groundwater well systems. This is based on a review of the e-permit Application and Water Rights Database by the Wyoming State Engineer's Office [3] which indicates four hundred twenty-one (421) water rights existing within T 14 N, R 66 W, Section 23, 24, 25, and 26 adjacent to the corridor area. As the corridor and area develops, property owners will have the ability to connect to future water and sewer mains within the area.

The utility companies that posed potential conflicts or crossings were notified of the planning project. Those were the Suncor Pipeline and Plains All American Pipeline which are on the east and west side of the existing roadway, respectively. These petroleum pipeline companies were specifically were asked about any special requirements required for possible crossings or boundary conditions of a future roadway in the area. Please see Collaboration Section 3.0 for additional information. Desktop and courthouse research at this level of corridor study did not reveal the easements for Suncor Pipeline North of U.S. 30 on Whitney Road. The Plains All American Pipeline has a standard Laramie County Easement within the right-way. See Appendix F for additional information. The contacts for these two specialized coordination efforts for the adjacent petroleum lines will be required of a future project and as noted below:

Contacts:

Dillon R. Ohrt, SR/WA,
Right-of-way and Public Awareness Coordinator
Suncor Energy (U.S.A.) Pipeline Company
Cheyenne, WY 82001
307-549-8008
dorhrt@suncor.com

Steve Sullivan, ROW
307-472-9900
sdsullivan@paalp.com

Plains All American Pipeline
2500 E 5th St
Cheyenne, WY 82001
Corporate Headquarters
333 Clay Street, Suite 1600,
Houston, TX 77002
713-646-4100.

Drainage

None of the Whitney Road Corridor study area is within the Federal Emergency Management Agency (FEMA) regulated Dry Creek or Childs Draw Basin floodplains as shown on Flood Insurance Rate Map (FIRM), Panel 1111 of 1650, Map Number 56021C1111F, Effective January 17, 2007 (https://msc.fema.gov/portal).

The corridor appears to be within Unshaded Zone X. The Unshaded Zone X is classified to be outside the 0.2% annual chance floodplain. Detailed hydraulic and hydrologic modeling efforts along with sound engineering judgment will be critical to overall success of the future final plan development.

Bicycle Transportation

Currently there are no bike lanes, multiuse paths, or formal trails within the corridor boundary. However, it should be noted that Whitney Road was designated for a "Shoulder Bikeway" and "Greenway" connection with Dell Range Blvd designated for a "Buffered Bike Lane" and US 30 for a "Greenway" in the *September 2012 Cheyenne On-street* Bicycle Plan and Greenway Plan Update [4] . See the existing and future proposed plan excerpt shown in Figure 2.13 Planned Bike and Trial Network.

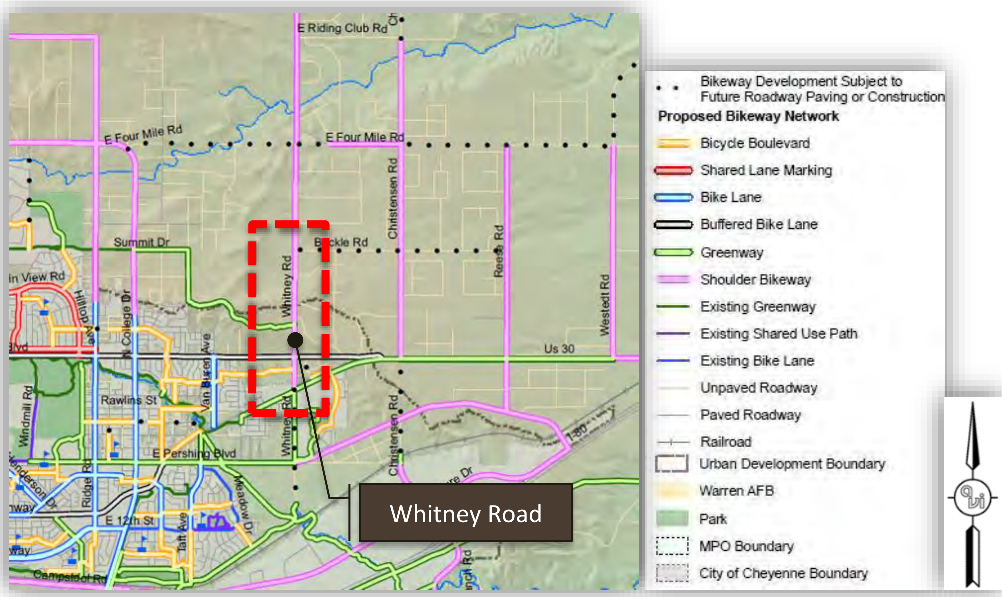

Figure 2.13 Planned Bike and Trail Network

Transit

Based on existing corridor use and conditions no transit has been utilized to date. Based on a review of the long range direction of the transit system illustrated in the Cheyenne Transit Program Five-Year Transit Development Plan, it appears that no additional routes have been planned in this area. The nearest Cheyenne Transit Program (CTP) stop is at the intersection of Dell Range Blvd. at Ocean Loop approximately one point two (1.2) miles west of the corridor location. Future need for transit will depend on the development of the corridor, land use densities, and surrounding boundary conditions.

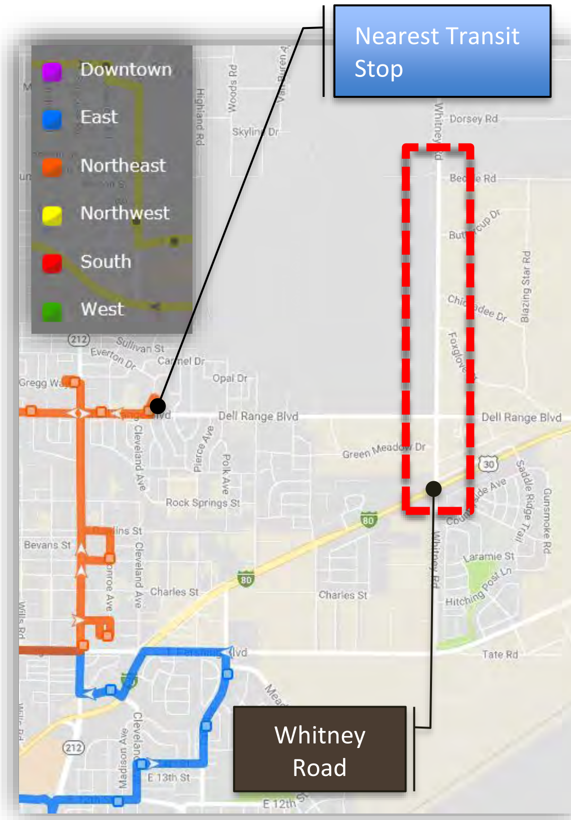

Figure 2.14 Existing Transit Routes

Environmental

Environmental considerations were reviewed for possible impact to future improvements within the corridor based on a desktop analysis without field confirmation or independent investigation. AVI reviewed publicly available databases and submitted inquires to public agencies in an attempt to accurately identify resources that may be present. No significant impacts were identified but, will need to be investigated with future planning projects to confirm or identify. Refer to Profile Chapter and Appendix F for additional information and reference.

Current Traffic Conditions

<u>Traffic Volume</u>

Traffic volume data was collected for this project on average weekdays at various times during April 4 thru April 10, 2017. Peak hour counts were collected at the key intersections along Whitney Road during the morning and evening peak hours. Noon peak hour counts were evaluated when they were available. Peak hour and daily traffic volumes, laneage, and traffic control are contained in Figure 2.15 Existing Traffic Conditions 2017.

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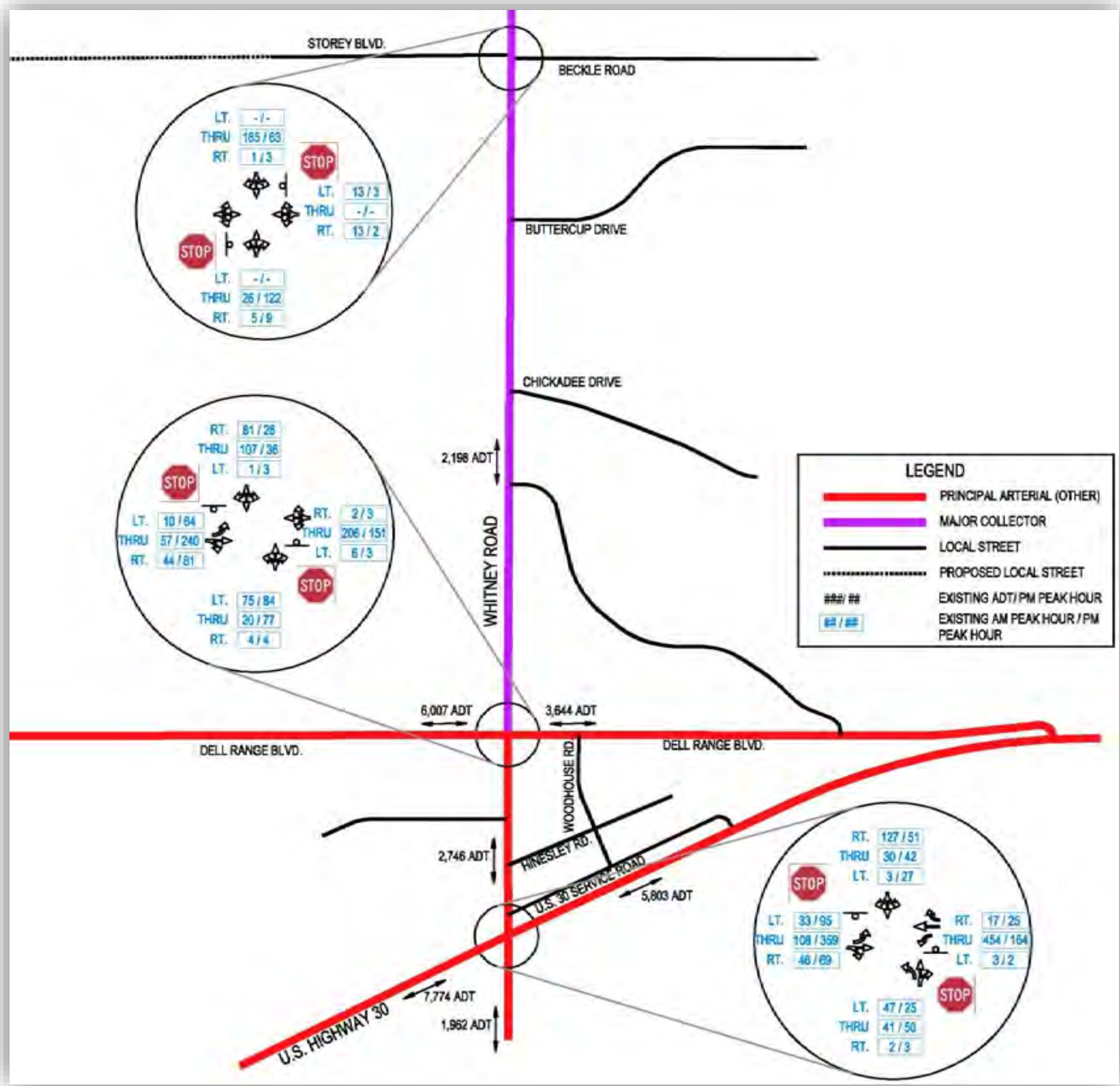

Figure 2.15 Existing Traffic Conditions 2017

Traffic Safety

Crash data was provided by WYDOT and the City of Cheyenne for each of the key intersections along the corridor for the time period beginning on January 2014 and ending on September 2017. The number of crashes ranged from a total of eleven (11) at Whitney Road at U.S. 30 and one (1) at the intersection of Whitney Road at Beckle Road. Given the low calculated crash rates, it would appear that no crash problems are present on the corridor at this time. However, given crash rate at intersections is based on accidents per million entering vehicles, volumes are not that high, and one fatality occurred our analysis is skewed.

Intersection Crash Rate (R) is calculated as follows:

R = (1,000,000 x C)/ 365 x N x V where,

R = Crash rate for the intersection expressed as accidents per million entering vehicles (MEV).

C = Total number of intersection crashes in the study period.

N = Number of years of data.

V = Traffic volumes entering the intersection daily.

Based on observation, failure to yield is the primary cause of the crashes for both Whitney Road at Dell Range Blvd and Whitney Road at U.S. 30. Both intersections pose the highest risk for potential safety concerns for the corridor due to speeds, geometry, and vertical alignment. The crash data is detailed in Appendix E and summarized in Table 2.2 2014 - 2018 Crash Summary for Key Intersections.

Table 2.2 2014 - 2018 Crash Summary for Key Intersections

Type	Whitney Road		
	Beckle Road	Dell Range Blvd.	US 30
	Number of Crashes		
Angle	-	7	10
Rear End	1	-	3
Fixed Objects	-	1	4
Head-on	-	-	-
Total	**1**	**8**	**17**
Rate	**0.33**	**0.53**	**0.89**
PDO	1	4	11
Injury	-	3	4
Fatality	-	1	2
Total	**1**	**8**	**17**
Failure to Yield ROW	-	7	9
Following too Closely	1	-	2
Speeding	-	-	2
Driving too Fast for Conditions	-	1	3
Mechanical Failure			1
Total	**1**	**8**	**17**

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Existing Land Use and Zoning

Land Use in the corridor study area varies but, is mainly comprised of agricultural in combination with agricultural residential, medium density residential, mixed use (Laramie County), Public, and Community Business. The current Zoning Map is illustrated in Figure 2.16 2015 Zoning Map.

The following zoning uses are currently within the corridor area:

City Zoning: Description:

- CB Community Business
- MR Medium Density Residential
- MU Mixed Use (Laramie County)
- P Public
- AR Agricultural Residential
- A-2 Agricultural

The Laramie County Land Use Regulations [5] and City of Cheyenne UDC [6] does not correlate to Mixed Use in the City of Cheyenne. This is due to the fact that Laramie County unlike Cheyenne does not distinguish mixed-use residential and mixed-use business for land use types. Laramie County only has a single Mixed Use Zone which can be residential or commercial.

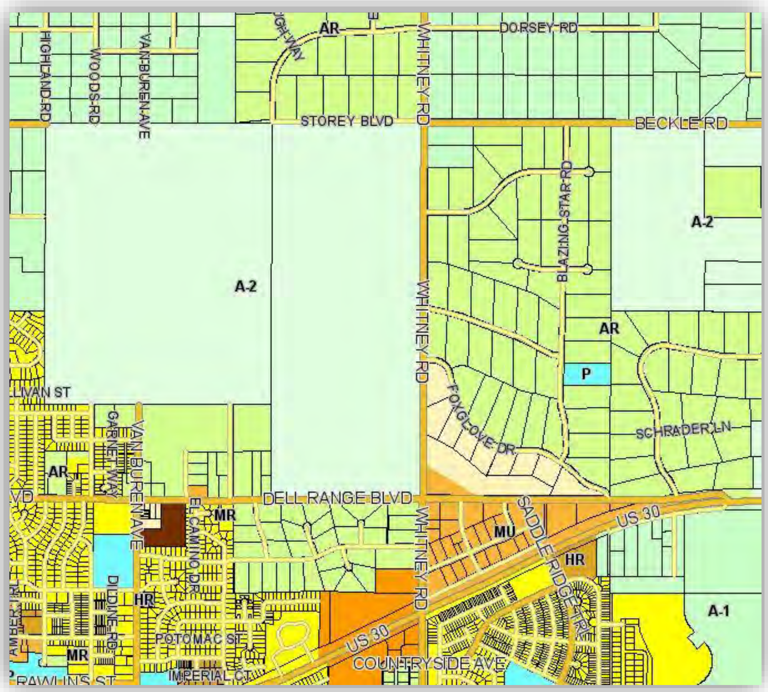

Figure 2.16 2015 Zoning Map

3.0 COLLABORATION

The collaboration is the process and planning context phase of the project. It provided an avenue for a cooperative design effort which defined the opportunities and constraints of the corridor, as well as framework for key planning considerations, that shaped the plan.

The Whitney Road Corridor Study relied heavily upon extensive public and stakeholder participation. The process involved stakeholder one-on-one meetings, open house format meetings with residents, business owners, developers, landowners, project steering committee meetings, Cheyenne MPO committees, Laramie County and City of Cheyenne Planning Commissions, and City and County Jurisdictional approvals or acknowledgements.

Steering Committee

The first collaboration component of the project involved enlisting the assistance of a Steering Committee during the plan development. The committee was comprised of the following staff and key stakeholders from the City, County, WYDOT and other agencies:

- Bruce Hattig, BOPU
- Nathan Beauheim, City of Cheyenne,
- Susana Montana, City of Cheyenne,
- Amy Allen, City of Cheyenne
- Anissa Gerrard, City of Cheyenne
- Randy Greisbach, WYDOT,
- Timothy Morton, WYDOT
- Mark Wingate, WYDOT,
- Jeffery Mellor, WYDOT,
- Rob Geringer, Laramie County,
- Dave Bumann, Laramie County,
- Jef McMann, Black Hills Energy,
- Lloyd Sisson, High West Energy,
- Tom Mason, MPO,
- Nancy Olson, MPO,
- Sreyoshi Chakraborty, MPO,
- Tom Cobb, AVI/MPO,
- Cassie Pickett, AVI
- Daryl Johnson, AVI
- Joe Henderson, STS, Inc.,
- Curtis Rowe, Kimley-Horn,
- Troy Russ, Kimley-Horn.

The Steering Committee formally met three (3) times during the project to guide the consultant team, review project information, provide insight, discuss public and stakeholder involvement, and collaborate to make decisions about the plan direction and recommendations. Agenda, meeting minutes, and presentations can be found in Appendix C.

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Table 3.1 Public Outreach Matrix

Activity	Date(s)
Steering Committee (2)	5.09.2017 10.19.2017 2.13.2019
Public Open House (2)	11.08.2017 6.28.2018
Individual One-on-one Meetings (12)	5.07.2018 8.08.2018 & 8.09.2018 10.30.2018 & 10.31.2018 11.13.2018 & 11.16.2018 1.15.2019 3.11.2019 & 3.12.2019 4.23.2019 5.02.2019
Utility Meetings:	
Suncor Energy USA Pipeline	5.09.2017
Plains All American Pipeline	6.23.2018
MPO Technical Advisory Committee (TAC) (5)	9.12.2018 11.14.2018 3.13.2019 5.15.2019 8.15.2019
MPO Citizen's Advisory Committee (CAC) (3)	9.12.2018 5.15.2019 8.15.2019
Planning Commissions	
City of Cheyenne	12.12.2018 7.15.2019
Laramie County	12.19.2018 7.11.2019
Governing Bodies (2)	
City Council	9.9.2019
County Commissioners	8.20.2019

Public Open House

The second collaboration component involved a combination presentation and open house style forum for stakeholder and public comments. AVI led the public involvement process with assistance and contributions from all the team members. The meetings were advertised through various media including newspaper, website, Facebook®, and electronic message boards. Planning and Engineering consultants from AVI, representatives of the Cheyenne Metropolitan Office, and Laramie County Public Works were present at both meetings to receive public comment. Information and input were collected using three different avenues; direct communication with a team member (i.e. consultant, MPO staff members, and Laramie County), having the public write comments on Post-it® notes and place them on large planning area maps, and filling out a written survey. The primary purpose of the three (3) different communication avenues was to create the most comfortable environment for individuals to convey information to the team. A total of two (2) Open Houses were conducted in November 2017 and June 2018. The meetings were very well attended, and comment card respondents identified themselves by the following demographic information shown in Figure 3.1 Who Attended Public Meetings?

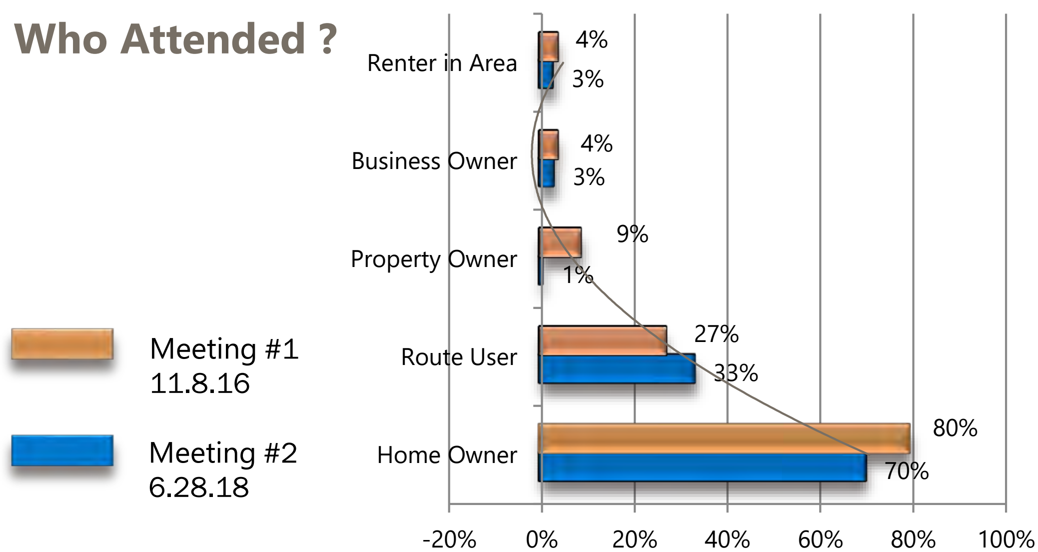

Figure 3.1 Who Attended Public Meetings?

Public Open House #1

A brief presentation, combined with an Open House, was conducted on November 8th, 2017 at Dildine Elementary School. One hundred twenty people were listed on the Sign-In-Sheet as attending the meeting. It was estimated that approximately 150 people attended. A twenty (20) minute presentation focused on the following: Introduction of Team, Project Overview and Limits, Purpose and Goals, Overall Study Process, What to expect (i.e. Schedule), Identifying the Issues, and Possible Conceptual Ideas for addressing future traffic. After the presentation attendees were asked to adjourn to two duplicate workshop station areas to ask specific questions, review exhibits, and complete comment cards. Each station was comprised with the following elements:

- Existing Conditions
  (Aerial photo map and site location photos along the corridor),
- Traffic Conditions
  (Aerial photo map with existing lane configurations, speed limits, known crash data)
- Opportunities and Constraints
  (Aerial photo map outlining physical constraints and safety concerns at U.S. 30 and Dell Range Blvd.)
- Conceptual Roadway Cross Sections
  (Existing Roadway, Conceptual Rural 2 Lane Roadway, Conceptual Rural 3 Lane Roadway, Conceptual Urban 3 Lane Roadway)

Overview

Results from the written survey were entered into the web-based program by the consultants after the open houses and the public had the option of directly providing comments electronically to the survey through the Survey Monkey® web link. The link was provided on the www.plancheyenne.org & www.avipc.com websites. A complete summary of comments, exhibits, sign in sheets, and individual comment cards are enclosed in Appendix C.

Of the one hundred thirty (130) persons attending the public open house two-hundred thirty-seven (237) written comments were returned at the rate of one-hundred eighty-two-point three percent (182.3%).

We asked the public two specific questions for comments related to the corridor summarized as follows.

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Q1. Please rate the importance of the following transportation users and issues based on what you consider to be the most important design considerations for Whitney Road?

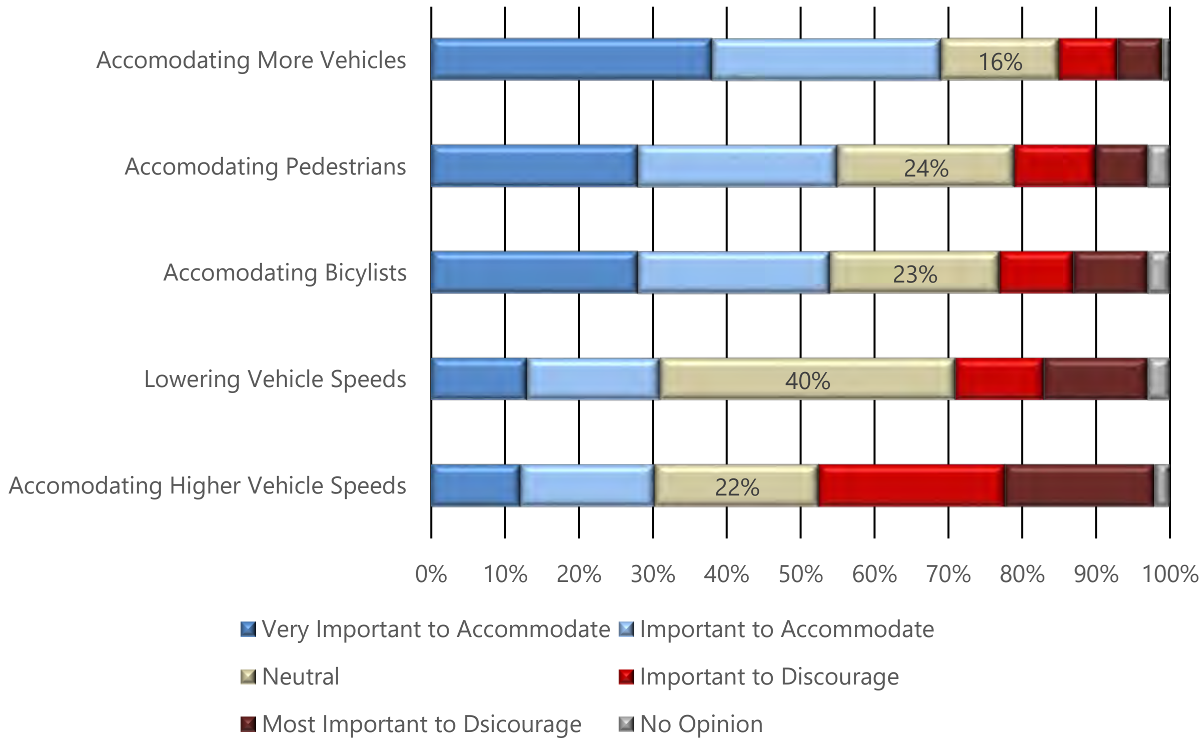

Figure 3.2 What were Considered Important Transportation Design Elements?

The rating for each category as illustrated graphically above: Very Important to Accommodate, Important to Accommodate, Neutral, Important to Discourage, Most Important to Discourage, No Opinion. It is easy to graphically view what most people consider the important design elements for the corridor in Figure 3.2 What were Considered Important Transportation Design Elements? Very Important to Accommodate and Important to Accommodate are shown in varying shades of blue while Most Important to Discourage and Important to Discourage are shown in shades of red. Neutral is shown in gold and label as a percentage of the total responses.

Most respondents believed that it is important to Accommodate More Vehicles on the roadway, Accommodate Pedestrians, and Bicyclists. Additionally, respondents believed that the speed of vehicles along the roadway corridor meets their needs after combining the two design elements of Lowering Vehicle Speeds and Accommodating Higher Vehicle Speeds.

Q2. If you could make one change to the existing Whitney Road Corridor what change would you make?

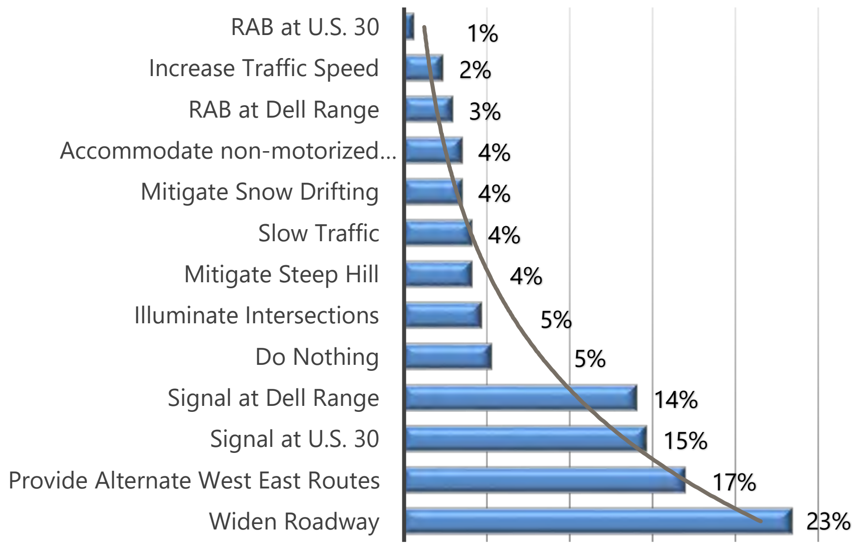

Figure 3.3 What one Change would you make?

After evaluating the raw data from the question, the most common categories were developed and tabulated. The results of the tabulation are illustrated graphically in Figure 3.3 What one Change would you make? The top four (4) most important changes requested were as follows:

- Widen the Roadway
- Provide Alternative East West Traffic Routes
- Provide Traffic Signals at U.S. 30 and Dell Range Blvd.
- Provide Intersection Illumination.

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Public Open House #2

A brief presentation combined, with an Open House, was conducted on June 28th, 2018 at Dildine Elementary School. A total of 68 people was listed on the Sign-In-Sheet as attending the meeting. It was estimated that approximately 75 people attended this meeting. A twenty (20) minute presentation focused on the following: Study Area and Primary Goals, Where we have been and what to expect, What we heard (Public Meeting No. 1), Details of the Identified Issues, and Overview of recommended Improvements. After the presentation attendees were asked to adjourn to two duplicate workshop station areas to ask specific questions, review exhibits, and complete comment cards. The station comprised the following elements:

- Proposed Conceptual Improvements
  (Aerial photo map overlaid with proposed improvements for the corridor),
- Conceptual Roadway Cross Sections
  (Beckle Road/ Storey Blvd. Intersection (Looking North), Dell Range Blvd to Beckle Road/Storey Blvd. (Looking North), U.S. 30 to Dell Range Blvd. (Looking North).

Overview

Results from the written survey were entered in the web-based program by the consultants after the open houses and the public had the option of directly providing comments electronically through the Survey Monkey® web link. The link was provided on the www.plancheyenne.org & www.avipc.com websites. A complete summary of comments, exhibits, sign in sheets, and individual comment cards can be found in Appendix C.

Of the sixty-eight (68) persons attending the public open house four-hundred thirteen (413) written comments were returned at rate of six-hundred and seven-point four percent (607.4%).

Recommendations for Conceptual Typical Cross-Sections for all segments identified received strong public consensus from 83.4% to 77.8% combining "Definitely Like" and "Like" for the section of Whitney Road from Beckle Road/Storey to Dell Range Blvd. and Dell Range Blvd. to U.S. 30, respectfully. Additionally, conceptual intersection options at U.S. 30 (Realignment to remove skew/signalized) and Dell Range Blvd (Single Lane Roundabout) received support at 56.4% and 49.4% combining "Definitely Like" and "Like", respectfully. It should be noted that adding "No Opinion" to "Definitely Like" and "Like" for the alternatives yielded 55.5% for the Single Lane Roundabout at Dell Range Blvd. and 74.8% for the realignment of U.S. 30 Intersection.

Additional ideas, information, or other comments received at this meeting included the following:

- "Traffic in this area would be significantly reduced with a connection of Storey Blvd and Four Mile Rd through Whitney all the way to Christensen RD. As well as further reductions when Christensen exit/overpass project is completed from

Interstate 80. Funds would be better spent with more effective results with the development of these alternative routes."

- "Something needs to be done for both Highway 30/Whitney and Dell Range/Whitney intersections before serious injuries start occurring from the growing traffic and pedestrian traffic Intersection Down Lighting on Existing Power Poles or Independent Poles."
- "Get the project out to bid and started before the costs go up"

One-on-one Meetings

The third type of collaboration component involved a series of one-on-one meetings with local business owners who had either expressed concerns about the design team proposals or where right-of-way was thought to be needed to accommodate the proposed improvements. The following are a list of the stakeholder groups and individuals who provided input outside of the public open house process:

- Utility Meetings
  - Suncor Energy USA Pipeline
  - Plains All American Pipeline
- Whitney Ranch Development
  - Connie and Bill Holgerson,
  - Carol and Dave Anderson
  - Joe Patterson
- U.S. 30 Service Road Business Group
  - Jeannie Spraker, Big Al's Auto & Exhaust
  - Andy Vehar, Big Al's Auto & Exhaust
  - Dave Rose, Big Al's Towing
  - Jim Hanrahan, Pinnacle Cabinet
  - Gary Everett, Pinnacle Cabinet
  - Shane Pickel, Unique Wood Design
- Restway Travel Park
  - Karen Sherman
  - Scott Sherman
  - Kelly Bartlett
- Jolley Rogers RV
  - Steve Hamlin
- Private Property Owner (6405 Hinesley Road)
  - Betty Beckle
  - Don Beckle
  - Zack Middelstadt
  - Stan Middelstadt

One-on-one Meetings (Utility Meetings)

Meeting No. 1: May 9, 2017: 2:00 p.m. to 3:30 p.m. : Suncor Energy USA Pipeline

Meeting attended by Dillon Ohrt, Barry McCann, Regan Marsh, Cameron Nuss, Suncor; Tom Cobb, AVI. The meeting was conducted at Suncor Energy USA Pipeline office on 1715 Fleischli Parkway, Cheyenne, Wyoming.

Meeting No. 2: May 9, 2017: 2:00 p.m. to 3:30 p.m. : Suncor Energy USA Pipeline

Meeting attended by Steve Sullivan, ROW, Jason Norris, Op. Supervisor, Tyler Keller, District Manager, and Eric Heap, Technical Manager; Plains All American Pipeline (PAAPL); Tom Cobb, AVI, Nancy Olson, MPO. The meeting was conducted via phone conference at the AVI office located on 1103 Old Town Lane, Cheyenne, Wyoming

Overview of Meetings

The following notes are based on the MPO's understanding of the meeting. The agenda of the meetings included: Introductions, Introduce Whitney Project, Additional available pipeline data and details, Ability to complete isolated relocation or realign a portion of the pipeline, Potential Benefits, Primary Options, and Alternatives to Consider.

After introductions and introducing the project to both groups, the discussion focused on the future development of the property west of Whitney Road, called Whitney Ranch, that is moving forward with the planning and construction of a large residential development. The purpose of the Whitney Road plan is to create a comprehensive plan that will optimize safety, growth and fiscal responsibility which meets the following goals:

- Understand the community and neighborhood vision for the roadway,
- Improve roadway and intersection safety and function and
- Address drainage and snow drifting.

The interrelationship of the petroleum pipelines and the roadway corridor planning project is the result of the horizontal and vertical location of the lines within the right-of-way and the ability of the planning project to meet the established criteria; i.e., removal or mitigation of the steep roadway grade to improve safety for users and establish a non-motorized sidewalk/path that meets the Americans with Disability Act (i.e. ADA) accessibility requirements. The current terrain of the roadway north of Dell Range Blvd. contains up to a 13% roadway profile, located south of the existing ranch house. If the roadway were lowered to accommodate a 5% profile, approximately a 26' cut would be created and require relocation of the petroleum lines. For reference and additional information refer to Figure 3.4 Existing and Proposed Profile Concept Whitney Road. It was conveyed by both petroleum groups the size, type, and location of their respective mains. Suncor's pipeline is a 12.75" steel crude line at 1,440 psi of pressure and a depth of approximately 2' to 5' deep on the east side of the corridor while the PAAPL is a 16" steel crude pipeline at a depth from 4' to 15' located on west side of the corridor. Both pipeline groups emphasized the importance of potholing the lines when the final design begins to ensure the most accurate information on the depth and location of lines. Horizontal and vertical information was furnished by both companies to assist in the preliminary design of the roadway concept. It was confirmed that the location of the pipelines roughly follows the marker locations in the field. Both companies indicated that the procedures and logistics for isolated relocation or realignment of a portion of the line would need to be accomplished approximately two years in advance of proposed roadway construction. Typical costs for relocation were given by each company at approximately $1.0 million and did not seem to depend on length of the relocation or whether the line was moved horizontally or vertically.

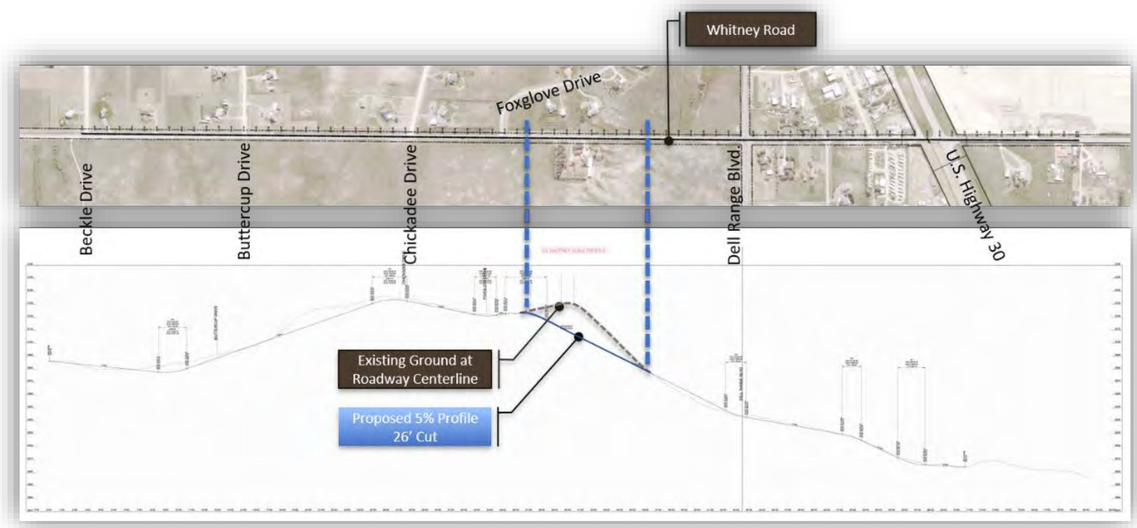

Figure 3.4 Existing and Proposed Profile Concept Whitney Road

Further discussion continued as to whether either line was scheduled for a maintenance shut-down which could provide an opportunity for relocation. No shut-downs were indicated. It was discussed whether retaining walls could be used to accommodate the roadway and pipeline. PAAPL indicated a retaining wall no closer than 10' from a footer could be utilized while Suncor did not desire retaining walls near their line.

The pipe lines companies were asked if they could furnish easement documentation and if they understood who had the responsibility of relocation under this circumstance. PAAPL forwarded easement documentation via email immediately following the meeting and furnished the recorded book and page (i.e. BK#1976, pg. 1815) while Suncor did not have the information readily available. Suncor did indicate their easement has been in place since 1950 and believed all costs to relocate the line would be the responsibility of the entity which initiated the relocation. The PAAPL document is a "Board Approval" for location within Laramie County and not an easement. It was unclear as the meaning of the "Board Approval" document, further investigation will be necessary.

One-on-one Meetings (Whitney Ranch)

Meeting No. 1: May 7, 2018: 4:00 p.m. to 5:00 p.m.

Meeting attended by Brad Emmons – AVI (Whitney Ranch), Tom Mason, MPO, Tom Cobb, AVI The agenda of the meeting included: Why Modification to Roadway Alignment, Potential Benefits, Primary Options, and Alternatives to Consider. The meeting was conducted at AVI at 1103 Old Town Lane, Suite 100, Old Town Lane, Cheyenne, Wyoming.

Meeting No. 2: August 8, 2018: 11:00 a.m. to 12:30 p.m.

Meeting attended by Joe Patterson, Guardian Development, Connie, and Bill Holgerson, Gysel Whitney, LLC, and Tom Cobb, AVI The meeting was conducted at 1103 Old Town Lane, Suite 100, Old Town Lane, Cheyenne, Wyoming.

Meeting No. 1 and 2 centered upon discussion of the primary reason for an alignment modification which is due to the existing roadway profile or longitudinal grade of up to 13% exceeds The City of Cheyenne Unified Development Code (UDC) and Laramie County Land Use Regulations (LCLU) of 8% for a Collector and Minor Collector, respectfully. This steep grade creates safety concerns due to the fact it reduces sight distance and creates hazardous conditions during ice and snow events. Two options were presented which shifted the steepest portion of the existing alignment of Whitney Road west though and/or around the existing farm house and barn structures. Potential options were discussed with these alternatives including creating a northbound and southbound lane using a combination of the shifted alignment with the existing alignment and a three-lane section in the proposed alignments with a greenway component within the unused portion of the existing right-of-way.

The second meeting further explored the original alternatives but was expanded to extend north completely within the Whitney Ranch property. A third alternative was developed which required removal of the west side of the existing barn structure. Those alternatives were developed to document the amount of impact to the property where the petroleum transmission mains were completed avoided. The right-of-way required to shift the road, ranged from 9.8 acres to 16.8 acres. The development group and current owners of the property indicated these options adversely impacted the future development of property. They believed the shifted alignments either bifurcated the property or impacted the existing barn which they wish to protect.

Meeting No. 3: October 30, 2018: 1:30 p.m. to 3:00 p.m.

Meeting attended by Joe Patterson, Guardian Development, Connie, and Bill Holgerson, Gysel Whitney, LLC, Tom Mason, MPO, Nancy Olson, MPO, and Tom Cobb, AVI The meeting was conducted at the MPO office at 615 West 20th Street.

The meeting was scheduled to present a three-dimensional exhibit which explored the possibility of shifting the roadway centerline to the west without impacting either the petroleum lines or the barn structure using a 5% vertical profile grade. Using those parameters, it was not possible to create an alignment which satisfied both conditions. The alternative created a 35 ft. deep cut at the highest portion of the existing ground. This coincides with the location of the barn structures. Potentially, retaining walls could be placed that would mitigate the width of the impacted area, however this would not be cost effective and create additional maintenance cost with snow drifting. The primary goals of a viable alternative solution were discussed and summarized below:

- Minimize impact to adjacent property owners.
- Fiscally responsible to the taxpayer, the petroleum pipeline companies, and the Whitney Ranch stakeholders.
- Meet or exceed the minimum criteria established by the UDC and LCLU documents for the City of Cheyenne and Laramie County.
- Establish a non-motorized sidewalk/path that meets the ADA accessibility requirements.

The following notes are based on the MPO's understanding of the meeting, questions, and concerns. No comments or questions are specifically attributed to allow stakeholders to speak freely and in confidence.

Comments/Questions:

- *I understand that public comments did not mention the steepness of the road as a concern with the existing road. Why is this a concern of the design?*

  Leaving the steep vertical grade is dangerous in inclement weather, especially ice. Additionally, it does not meet the current UDC, LCLU, or ADA accessibility criteria. It is possible to meet the UDC and LCLU regulations using 8% maximum, but this is not desirable. First, there is a need to get the roadway slope to an acceptable percent that meets the UDC standards and addresses safety. Second, an 8% grade does not meet the ADA accessibility requirements and really is the absolute maximum grade for snow an ice.

- *What is the maintenance and replacement schedule for the petroleum pipeline?*

  The MPO has made several attempts to inquire with Plains All American Pipelines to discuss future maintenance or replacement plans. Based on our understanding of the easement documentation, costs for lower or relocating the pipelines would fall upon the roadway construction or jurisdictional entity for the Suncor Pipeline and on the pipeline company itself for the Plains All American Pipeline. Please keep in mind this is based on conversations with Suncor and not easement documentation.

- *Could an alternate alignment be considered which abandons north Whitney to Dell Range where the roadway would head west from Foxglove into the development and then down to Dell Range? Additionally, Van Buren is the only North/South road within the development at this point.*

The MPO has some concern with this option which potentially could force unnecessary additional traffic on Dell Range Blvd. corridor west of the proposed location.

- *The Barn is the main obstacle in shifting the alignment and will create an isolated large parcel of land from the rest of the subdivision that would become virtually worthless.*

  The MPO noted the concern by the developer but believe some connection could be maintained.

- *Could an option be developed to move southbound and keep northbound in the right of way as mentioned in the previous meeting?*

  The City, County and WYDOT are under pressure to have the MPO get the plan complete and move forward with solutions, due to the recent accidents. The MPO will develop this option further to investigate the feasibility.

- *The pipeline should be moved to accommodate the needs of the roadway. Can an option be looked at that impacts the west pipeline only and not the barn structures?*

  The MPO will investigate the possibility of an option which moves the roadway as close to the Barn as possible without impact and assuming the pipeline will be moved.

  If a consensus cannot be reached, the Plan may need to present up to three alternative alignments with pros and cons of each including estimated construction costs. The Planning Commission and governing bodies would be required to make a final decision on the selected alternative.

Meeting No. 4: November 16, 2018: 10:00 a.m. to 11:30 a.m.

Meeting attended by Joe Patterson, Guardian Development, Connie, and Bill Holgerson, Gysel Whitney, LLC, Tom Mason, MPO, Nancy Olson, MPO, and Tom Cobb, AVI The meeting was conducted at the MPO office at 615 West 20th Street.

The meeting was scheduled to present, review, and gather feedback on the six (6) alternatives. Detailed three-dimensional exhibits of all alternatives were presented with the brief pros and cons summarized.

- Alternative 1: Do Nothing Alternative
- Alternative 2: Existing Alignment with Maximum Profile (3 Lane Section) and Pedestrian Path
- Alternative 3: Existing Alignment with Accessible Profile (3 Lane Section)
- Alternative 4: NBL/SBL Independent Roadways w/Maximum NBL and Accessible SBL Profiles
  - Alternative 4a: SBL Alignment placed east of Whitney-Gysel Barn Structure
  - Alternative 4b: SBL Alignment placed West of Whitney-Gysel Barn Structure

- Alternative 5: Three-lane Roadway, Revised Alignment, Accessible Profile, and Impact to Plains All American Pipeline (PAAPL)
- Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney-Gysel Barn Structure**.**

The MPO presented the north alignment options to the City of Cheyenne and Laramie County staff. Based solely on the information and exhibits as shown, the jurisdictional or public perspective the preferred alternatives in order were Alternative #6, Alternative #3, and Alternative #2. This was based on construction cost, maintenance cost, objectives and goals, multi-modal corridor, accessibility, potential snow and ice accumulation and safety.

The following notes are based on the MPO's understanding of the meeting, questions, and concerns.

Comments/Questions:

The developer understood the perspective and order of preference of the alternatives and added the following comments for record.

Alternative #2 was the favorable option with the developer. They believed that it would go together with their concept of a trail system. Asked if the alignment for the path could be changed to fit in with their ideas?

The alignment was a concept only. It could easily be modified but would need to stay at or under a 5% vertical profile.

Alternative #4a was the developers preferred option prior to reviewing the three-dimensional plan and profile. Based on the available information, it appears that it is not possible to avoid both the barn structures or petroleum pipeline (PAAPL) using a 5% grade on the SBL. This option requires either the pipeline or barn to be relocated. A pedestrian underpass connects the "proposed park area" to the rest of the development. Alternative #4b divides the property and is not preferred.

The developer expressed that they would like to receive a legal opinion from Mark Voss, County Attorney, on the easement documents for the pipelines and not get locked in to the design for the old ranch buildings until more information is available. They contend that the best option is to have the pipeline relocated.

The MPO will continue to investigate and inquire about the easement documentation and opinion of the County Attorney. As we previously discussed, we have not been able to acquire the documentation of all the pipeline easements through investigation at the Courthouse. We will again request the documentation through the pipe line companies. It is the intent that the documentation will provide some insight into financial responsibility for relocation of the petroleum transmission mains.

Alternative #6 is the least desirable option for the landowner and developer. They acknowledged the need for the detention and amenities like a playing field, gazebo, playground, and use of the existing buildings within the development plan. However, it was noted that Guardian (developer) CEO, Ross Malinski's "vision was to preserve the history of the Barn and have nice overlooks of the city". The developer is looking into the feasibility of creating a venue for weddings or to add a recreation center in the historic area.

They also noted that within the 588 acres of land available that there will be some undevelopable portions. These areas have already been identified as open space or parkland. They see this separated section as over and above the dedicated undevelopable land. They believed that this area as shown in Alternative #6 is a double hit where the developer must pay for the road relocate and lose the developable land used as right-of-way.

It was reiterated that fiscal responsibility is an important criterion for both the jurisdictional entities, tax payers, petroleum companies, and the Whitney Ranch stakeholders. Alternative #6 fulfills all but one of the primary goals of a viable alternative solution previously discussed:

- Minimize impact to adjacent property owners
- Fiscally responsible to the taxpayer, the petroleum pipeline companies, and the Whitney Ranch stakeholders ✓
- Meet or exceed the minimum criteria established by the UDC and LCLU documents for the City of Cheyenne and Laramie County ✓
- Establish a non-motorized sidewalk/path that meets the ADA accessibility requirements. ✓

The developer presented another version of Alternative 4a, where the southbound alignment would be forced to the west near Chickadee or Foxglove and then commence south onto Dell Range Blvd., half-way between Gysel Place and Whitney Road. Additionally, this alignment could work well with approximately 35 acres in the southeast corner they have "reserved" for commercial purposes and multi-family in the southern portion of the development.

The MPO indicated that this realignment option would require a reassessment by the developers traffic engineer, Kimley-Horn to determine traffic impacts and feasibility. Concerns to the impact on Dell Range Blvd. were discussed.

Additionally, east – west connections or alternate routes like Storey Blvd. were discussed which will directly improve congestion and impacts to Dell Range Blvd.

Guardian does not have an immediate plan to construct Storey Blvd. at this point due to constraints with water distribution pressure and serviceable gravity sewer boundaries. Guardian will be meeting with BOPU on December 14th to get answers for the water issue to the north along Storey Blvd. and Summit Drive. Depending on the meetings and information, this might allow Storey to be built sooner than anticipated for the development.

The MPO will require AutoCAD or detailed sketches indicating the approximate boundary limits of the proposed commercial area to review an Alternative #4c. Additionally, Kimley-Horn will need to update the traffic impact assessment report.

Has an alternative been investigated shifting the alignment to the east of the existing centerline?

The MPO will investigate the feasibility of shifting the roadway alignment to the east. It is our understanding this would impact the Suncor pipeline which we understand the cost would fall onto the developer or jurisdictional agency reconstructing the road which would impact the pipeline.

Meeting No. 5: March 11, 2019: 1:00 p.m. to 2:30 p.m.

Meeting attended by Joe Patterson, Guardian Development, Connie, and Bill Holgerson, Gysel Whitney, LLC, Tom Mason, MPO, Nancy Olson, MPO, and Tom Cobb, AVI The meeting was conducted at the Municipal Complex at 2101 O'Neil Avenue, Room 208.

The meeting was scheduled to review additional details and gather feedback on the top two (2) feasible alternatives for a north alignment of Whitney Road along with a new third alternative (Alternative #7). This alternative was discussed as a possibility in our last meeting. It shifts the existing alignment east to avoid impacting Whitney Ranch and the Guardian development. Detailed three-dimensional exhibits of all alternatives were presented with additional electronic information on the PAAPL and Suncor petroleum pipelines vertical profile projected onto the conceptual design exhibits.

- Alternative 2: Existing Alignment with Maximum Profile (3 Lane Section) and Pedestrian Path
- Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure**.**
- Alternative 7: Three-lane Roadway, Revised Alignment East, Accessible Profile.

Alternative #7 was investigated at the request of the developer at the last meeting. The option appeared to be viable in theory however, after close examination, the option could not be shifted far enough east to prevent impacting one of the petroleum lines (i.e. PAAPL and Suncor). The only way to avoid impact to a petroleum line (PAAPL) was to install a 15' retaining wall on the west side. Furthermore, residential properties are burden with major impacts to small lots on the east side of the alignment due to the large movement of earthwork required to realign the roadway.

After the initial alignments were reviewed by the group, they discussed the latest information on the petroleum pipeline easements and County Attorney opinion. First, the group was reminded by the MPO that the PAAPL is located on the west side of the right-of-way of Whitney Road while the Suncor pipeline is located on east side of the right-of-way. Second, Mark Voss, Laramie County Attorney reviewed the PAAPL Board Approval documentation on Whitney Road (Book#1976. PG#1815, REC# 460462). Mr. Voss' basic answer to the question about who would bear the cost for relocation of the lines was stated to be "complicated". He reviewed a copy of the resolution issued by the Board of Commissioners allowing for the installation of the PAAPL line in 2006. That resolution references to sections of the 1988 zoning ordinances which have been supplanted by a revision done in 2011. In any case, the resolution does not contain any language regarding the cost of relocation. He further indicated that given the cost of relocation of pipelines, there will be a "fight" over the payment with the entities owning or using the pipelines. He referenced case law and state statutes that require utilities pay the cost of removing and relocating their facilities placed upon public highways when necessitated by highway improvements. At the time of the correspondence with the County Attorney, Suncor pipeline apparently had no easement documentation whatsoever. Mr. Voss believed there may be somewhat stronger grounds to have the company relocate the utility at their cost. However, whether documentation exists or not, he believed that we should anticipate a strong and forceful objection to paying the cost of moving the line. After corresponding with Mr. Voss, Suncor furnished some documentation of the easements on Whitney Road north of Beckle Road. No documentation can be located for Suncor pipeline easements from Beckle Road to U.S. 30 at this time.

Consequently, based the fact that relocation was not specifically addressed in the resolution by the County in 2006, the MPO agrees it is unclear who would bear the cost of improvements. Therefore, the MPO believes that the plan or alternatives considered should assume that the cost of relocation of the PAAPL would be assumed to be on the developer or jurisdiction making the roadway improvements.

The following notes are based on the MPO's understanding of the meeting, questions, and concerns.

Comments/Questions:

The developer understood the easement issues and constraints, the preference of the alternative #2 or #6 and elimination of Alternative #7 for further consideration. They added the following comments for record.

Indicated that a Land Planner had been hired to complete a Master Plan for the development. Would like to have MPO meet with the land planner.

The MPO would be happy to coordinate and meet with new Land Planner. However, we are trying to complete the plan as soon as practically possible.

One-on-one Meetings (U.S. 30 Service Road Business Group Foster Tracts Subdivision)

Meeting No. 1: August 9, 2018: 8:00 a.m. to 10:30 a.m.

Meeting attended by Jeannie Spraker, Big Al's Auto, Jim Hanrahan, Pinnacle Cabinet, Gary Everett, Pinnacle Cabinet, Shane Pickel, Unique Wood Designs, Dave Rose, Big Al's Towing, and Tom Cobb, MPO. The meeting was conducted at Big Al's Auto 6526 U.S. 30 Service Rd Cheyenne, WY.

Local business owners had previously attended the first public meeting and expressed concerns about an original proposal by the design team which eliminated the U.S. 30 Service Road and Whitney Road connection using a cul-de-sac on the west end of the service road. The proposed improvements were developed to address existing and potential safety concerns. Those safety concerns were as follows:

- Proximity of the service road intersection to the U.S. 30/Whitney Road Intersection (171.6′ CL to CL spacing).
- Cut-through traffic observed to and from Saddle Ridge Subdivision via Saddle Ridge Trail to the U.S. 30 Service Road to Whitney Road and back;
- Projected increase in ADT on Whitney Road anticipated to increase from 2,746 (2017) to 9,400 (2040) or 10.54% per year.

The business owners within the Foster Tracts Subdivision understood the safety concerns and the need to control access to and from the U.S. 30 Service Road onto Whitney Road. However, they indicated that elimination of the connection and the creation of a cul-de-sac would drastically impact their businesses. Additionally, not allowing proper ingress/egress for large semi-truck deliveries and business-owned tow truck haulers (37′) hauling tractor-trailer combinations up to 80′ long is a problem. They stated that most of the business deliveries and tow trucks access the businesses from the interstates to U.S. 30 then to Whitney Road and finally onto the U.S. 30 Service Road. If the cul-de-sac was constructed, they would be forced to use the U.S. 30 Service Road access onto U.S. 30 at the Saddle Ridge Trail intersection (i.e. east of Whitney Road) for both ingress and egress. Delivery vehicles would not be able to turn around to egress at the same location due to the size of vehicles used and limitation on the cul-de-sac radius (i.e. maximum cul-de-sac 50′ radius to accommodate future 12′ travel lane, 12′ deceleration/auxiliary lane, 8′ shoulder, and a 22′ clear-zone for 55 mph ADT > 6,000). Consequently, to address safety concerns, the business owners and design team developed a compromise solution where an access control median would be installed on Whitney Road north of U.S. 30 to prevent left turns in and out of the U.S. 30 Service Road. The business owners requested that if an access control median is installed, could a full access be constructed at Woodhouse Road onto U.S. 30 to improve business access and visibility into the Foster Tracts area. They indicated that other access points into the area on Hinesley Road and Woodhouse Road do not allow easy access for large trucks due to the lack of roadway maintenance and poor surfacing, as well as, snow drifting issues. It was conveyed that any new access proposed on U.S. 30 would need to be approved by WYDOT. WYDOT has the jurisdictional control over access onto U.S. 30 and the U.S. 30 Service Road.

Meeting No. 2: October 31, 2018: 10:30 a.m. – 11:00 a.m.

Meeting attended by Jeannie Spraker, Big Al's Auto, Andy Vehar, Big Al's Auto, Nancy Olson, MPO, and Tom Cobb, MPO. The meeting was conducted at Big Al's Auto 6526 U.S. 30 Service Rd Cheyenne, WY.

This meeting was a follow-up to the previous meeting to update the group on the progress of developing an option for the extension of Woodhouse Road and future anticipated public meetings.

<u>One-on-one Meetings (Jolley Rogers RV)</u>

Meeting No. 1: October 31, 2018: 9:00 a.m. to 10:30 a.m.

Meeting attended by Steve Hamlin, Jolly Rogers, Nancy Olson, MPO, and Tom Cobb, MPO. The meeting was conducted at Jolly Rogers RV, 6102 U.S. 30.

An exhibit was presented of the latest proposed re-alignment of the intersection of Whitney at U.S. 30 which removes the skew angle and installs an access control median for improved safety. U.S. 30 would have a full movement access as it is currently. The Whitney access would be right in right out. The proposed improvements were developed to address existing and potential safety concerns. Those safety concerns were as follows:

- Proximity of the service road intersection to the U.S. 30/Whitney Road Intersection (171.6' CL to CL spacing).
- Cut-through traffic observed to and from Saddle Ridge Subdivision via Saddle Ridge Trail to the U.S. 30 Service Road to Whitney Road and back.
- Projected increase in ADT on Whitney Road anticipated to increase from 2,746 (2017) to 9,400 (2040) or 10.54% per year.

The discussions focused on the current design proposal which requires approximately 4,727 sq. ft. of land and removal/replace trees within a portion of Jolley Roger's RV property. This included approximately 10' of reserved right-of-way on the east side of the Jolley Roger RV property. It was explained that the negotiations for right-of-way would be done through the Wyoming Department of Transportation (WYDOT) and that land owners are compensated at fair market value and that trees are normally replaced at least 2 to 1 to sometimes a 3 to 1 ratio depending on the project and type of impact. Further discussion centered on the timeframe of the reconstruction project(s). Currently, Whitney Road is programed to be redesigned and built in 2022 and WYDOT has U.S. 30 reconstruction programed for 2024.

Mr. Hamlin expressed his support for the project and realignment proposal if they are fairly compensated for the value of the property required. Some concern was expressed that an estimated 50% of his customers and employees turn left onto Whitney to avoid the U.S. 30 intersection. Mr. Hamlin stated that he would need to discuss the proposed improvements with his partner and let us know the final answer. Mr. Hamlin contacted the MPO the following day and expressed his support of the proposed improvements and reiterated his stipulations to fair compensation for the property and would like the access approach location relocated farther south to better accommodating the turning movement of employee and recreational vehicles using the right-in-right-out on Whitney Road.

One-on-one Meetings (Restway Travel Park)

Meeting No. 1: October 31, 2018: 1:00 p.m. to 3:00 p.m.

Meeting attended by Karen Sherman, Restway Travel Park, Scott Sherman, Restway Travel Park, Nancy Olson, MPO, and Tom Cobb, MPO. The meeting was conducted at Restway Travel Park, 4212 Whitney Road.

The purpose of the meeting was to introduce them to the project, design team, and set up a future meeting to discuss details of the conceptual improvements and to understand their business operation and needs. A brief overview of the current plan was presented which included an access control median on Whitney Road preventing left turns at their existing approach. They were concerned over the realignment as it impacts a RV dump station, an existing mobile home/trailer they are renting, a picnic shelter, and their sign as well as trees and some landscaping.

Meeting No. 2: November 13, 2018: 9:00 a.m. to 10:30 a.m.

Meeting attended by Karen Sherman, Restway Travel Park, Scott Sherman, Restway Travel Park, Kelly Bartlett, Restway Travel Park, and Tom Cobb, MPO. The meeting was conducted at Restway Travel Park, 4212 Whitney Road.

An exhibit was presented of the latest proposed re-alignment of the intersection of Whitney at U.S. 30 which removes the skew angle and installs an access control median for improved safety. The Whitney access into their existing business would be right-in right-out. The proposed improvements were developed to address existing and potential safety concerns. Those safety concerns were as follows:

- Proximity of the service road intersection to the U.S. 30/Whitney Road Intersection (171.6’ CL to CL spacing);
- Cut-through traffic observed to and from Saddle Ridge Subdivision via Saddle Ridge Trail to the U.S. 30 Service Road to Whitney Road and back;
- Projected increase in ADT on Whitney Road anticipated to increase from 2,746 (2017) to 9,400 (2040) or 10.54% per year.

The discussions where related to the approximate 5,238 sq. ft. of land and remove/replace trees within a portion of Restway Travel Park property. It was explained that the negotiations for right-of-way would be done through the Wyoming Department of Transportation (WYDOT) and that land owners are compensated at fair market value and that trees are normally replaced at least 2 to 1 to sometimes a 3 to 1 ratio depending on the project and type of impact. Further discussion centered on the timeframe of the reconstruction project(s). Currently, Whitney Road was explained to be programed to be redesigned and built in 2022 and WYDOT has U.S. 30 programed for 2024.

The owners expressed concern over the proposed improvements' direct impact to their business due to access being removed from U.S. 30 by a median. They indicated that all current patrons access their business from U.S. 30. The MPO indicated that the storage and deceleration length of southbound right and left turn lanes dictate the length of the access control median. It was further explained that the project goals are to improve safety and not destroy or hinder business. Alternatives will be developed to improve access and a follow-up meeting will be scheduled.

Meeting No. 3: January 15, 2019: 2:00 p.m. to 4:30 p.m.

Meeting attended by Karen Sherman, Restway Travel Park, Scott Sherman, Restway Travel Park, Kelly Bartlett, Restway Travel Park, and Tom Cobb, MPO. The meeting was conducted at Restway Travel Park, 4212 Whitney Road.

The purpose of the meeting was to follow-up the previous November 13, 2018 meeting after developing an alternative to allow full access into the current business. This proposed option added an ingress access north to align with Hinesley Road in conjunction with keeping the current access as a restricted right-in-right-out. The alternative required some reconfiguration of the RV sites in the northwest portion of the property. The RV sites were placed at 40' long x 16' wide at a 60° angle to optimize placement. The current sites in that location are approximately 40' long x 16' wide at varying angles. See Figure 3.5 Restway Travel Park Alternative 2.

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Figure 3.5 Restway Travel Park Alternative 2

The following notes are based on the MPO's understanding of the meeting, questions, and concerns.

Comments/Questions:

> *The owners expressed concern over the cost to reconfigure the RV sites and asked if they would they be compensated for the reconfiguration?*
>
> > The MPO indicated that the design is only in the planning stages and a final design will need to be completed. Right-of-way negotiations for this project will be conducted by the WYDOT Right-of-way Section and they would be contacted during the final design phase of the project. It is our understanding that compensation is based on right-of-way area and damages (i.e. number and type of sites impacted) by the roadway modifications. The owners indicated that the impacts occur to different types of sites. Water, electric; water, sewer, and electric; tent sites. The MPO stated that each site would likely be valued at different levels depending on the type of site.
>
> *They also indicated that a one-way in and one-way out configuration is not the most desirable and could an alternative be developed for a two-way entry at each approach location?*
>
> > The MPO will investigate the feasibility of developing a two-way entry/exist at each approach.

Could we review an option with increased RV site size and reconfiguration of the non-discharging sewer lagoon area and west portion of the site?

The MPO will investigate the feasibility of developing an alternative for re-imagined site for the lagoon area and the west portion of the site that could potentially add large RV sites.

Additional discussions:

Existing RV site sizes on the property are approximately 16′ wide: south sites 50′ depth, middle sites are 60′ depth, and the northwest sites are 40′ in depth. The angles and total length vary depending on angle of the site.

The minimum width of any reconfiguration of site shall be 25′ to account for width of RV, extensions, and vehicle (16′ +9′ = 25′).

What are the costs to connect to the City of Cheyenne Board of Public Utilities sanitary sewer main south of the property?

The MPO will investigate the costs and the sizes of the RV sites are noted for future reference and information.

Meeting No. 4: March 12, 2019: 2:00 p.m. to 4:30 p.m.

Meeting attended by Karen Sherman, Restway Travel Park, Scott Sherman, Restway Travel Park, Kelly Bartlett, Restway Travel Park, and Tom Cobb, MPO. The meeting was conducted at Restway Travel Park, 4212 Whitney Road.

The purpose of the meeting was to present two additional conceptual plans for the owners to review and comment. The third conceived concept plan reconfigured the west and northwest portion of the RV park site utilizing a two-way entry/exit at each of the approaches previously shown. The north approach is a full movement access aligning with Hinesley Road while the south approach is widened in its current location with restricted right-in-right-out access. The RV campsites were placed at 60′ long x 25′ wide and were placed at 60° angle to optimize placement. The fourth concept similarly reconfigured the northwest and west portions of the RV Park as outlined in the third option except for a new two-lane drive realigned into the site office. The concept was also different in that it eliminated the south approach and shifted the north approach south. See Figure 3.6 Restway RV Travel Park Concept 4.

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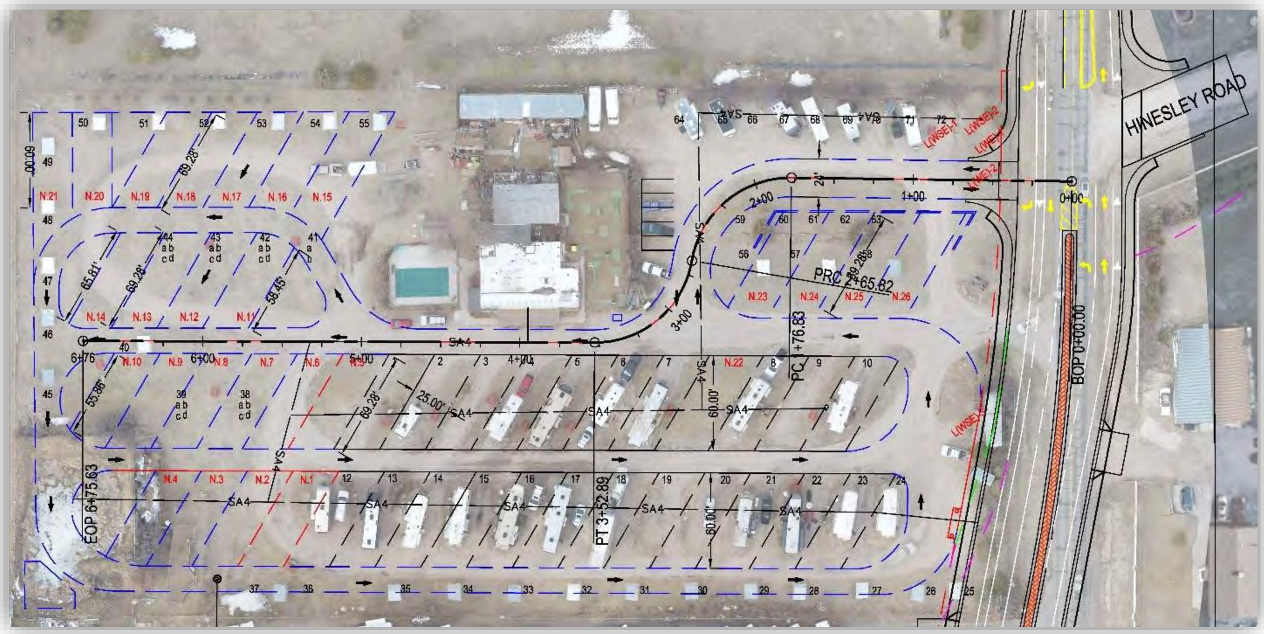

Figure 3.6 Restway RV Travel Park Concept 4

The following notes are based on the MPO's understanding of the meeting, questions, and concerns.

Comments/Questions:

> *The owners expressed deep concern over the cost to reconfigure of the RV sites and remove the evaporative lagoon on the southwest corner of the site.*
>
> *They are concerned over the removal of the permanent mobile home on the west side of the site. They indicated it is a constant revenue source.*
>
>> The MPO reiterated that this a planning study and a final design will need to be completed. The only modification required at this point of the Whitney Road Construction would be the northwest and west portion of the site. Additionally, the intent of the concept was to show the owners another way to look at the site. In this case, how many large RV sites could fit within your existing property.
>
> *Could the MPO look at the feasibility of realigning Hinesley Road to line up the Restway RV Travel Park approach rather than moving the approach to align with Hinesley?*
>
>> The MPO will investigate the feasibility of developing an option to realign Hinesley Road to the south and coordinate with the adjacent property owners. Realigning Hinesley Road will require additional right-of-way acquisition.

Meeting No. 5: May 2, 2019: 2:00 p.m. to 3:30 p.m.

Meeting attended by Karen Sherman, Restway Travel Park, Scott Sherman, Restway Travel Park, Gay Woodhouse, Roden, Nethercott, LLC, Dave Bumann, Laramie Count Public Works, Tom Mason, MPO, Tom Cobb, MPO. The meeting was conducted at the MPO office at 615 West 20th Street. The purpose of the meeting was to introduce the legal team hired by the owners to the MPO and briefly discuss the history and answer any questions.

The meeting began with an MPO overview and graphical presentation of the four concept plans developed along with the Concept Plan #5. Concept #5 realigned Hinesley Road to the south and relocated the approach for Restway RV Travel Park to the north Figure 3.7.

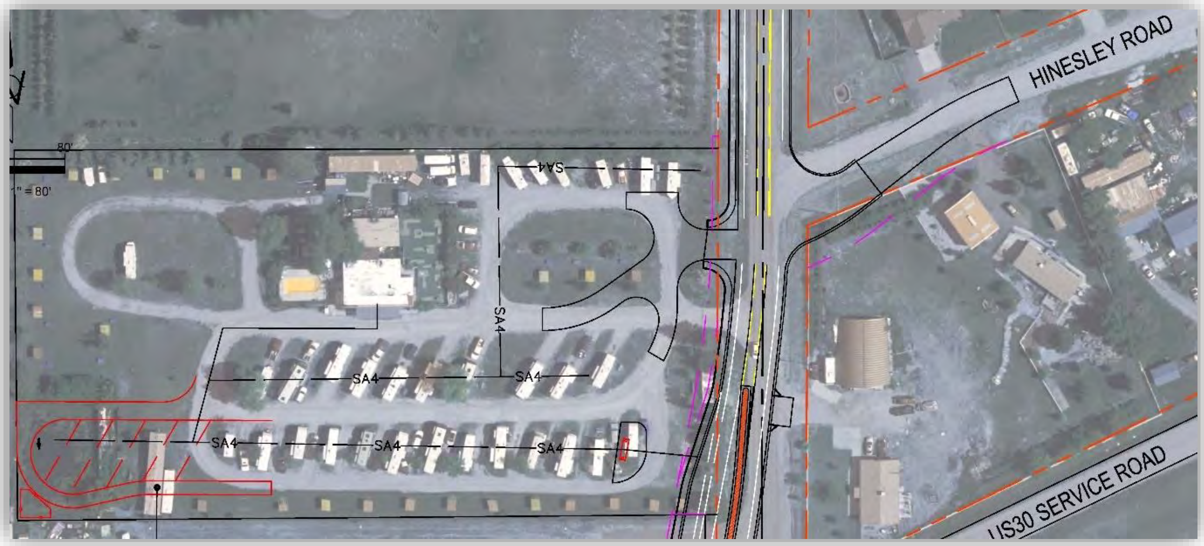

Figure 3.7 Restway Travel Park Concept 5

The following notes are based on the MPO's understanding of the meeting, questions, and concerns.

Comments/Questions:

The legal team had a question as why the U.S. 30 and Whitney Road Intersection was shifted to the west instead of the east which would have less burden on their client?

The MPO explained the reason to shift the intersection alignment to the west and not to the east was to remove the skew angle from Whitney to U.S. 30. This was based on two factors: first, the Saddle Ridge developers had just completed the new single-family homes and duplexes on the southeast corner of the intersection of U.S. 30 and Whitney Road; second, two underground petroleum transmission mains run parallel and follow the existing ground grade on each side of Whitney Road. The Suncor line is on the east side while the Plains All American Pipeline is on the west. We understand from the pipe line companies that the transmission lines generally follow the existing ground grade and as a result begins to rise due to the topography on the east side of the right-of-way. Consequently, a significant intersection shift to the east will likely require relocating or lowering of the Suncor pipeline. Any adjustments to the Suncor pipeline on the east side of Whitney Road within the area of Saddle Ridge would require the jurisdiction (i.e. Laramie County/WYDOT) to pay for that relocation. This is based on the original and revised easement agreements (BK#1937, PG# 484). See Appendix G for additional information. To better illustrate the difference in the existing ground or depth of the petroleum lines see Figure 3.8 Whitney Road at U.S. 30 (Looking South) east is to the left in the photo.

Figure 3.8 Whitney Road at U.S. 30 (Looking South)

The owners expressed concerns over the negative impacts to the property and potential impact to the business because of the property change and construction period that would limit access.

The MPO explained that the construction activity would obviously disrupt normal business but, access would need to be maintained. This would be coordinated with WYDOT during final design and construction.

Additionally, the Restway Travel Park Concept incorporated more than just the realignment of Hinesley Road. The traffic engineering consultant (Kimley-Horn and Associates) for the Whitney Ranch developed the original traffic volume projections previously used to calculate the storage que lengths for this project (Sustainable Traffic Solutions). Those volume projections and turn lane storage que lengths were examined and recalculated by Kimley-Horn on the U.S. 30/Dell Range Corridor Study. Concept #5 utilized the revised storage que lengths for the Whitney southbound left and right-turn lanes which were significantly reduced. The MPO would like to develop a Concept #6 which shifts the alignment by minimizing the design speed, incorporate new storage que lengths, and independent parallel left turns for southbound Whitney Road and the northbound Restway RV Park access. The MPO optimistically believes this option could provide significant reduction to the impact to the Restway RV Travel Park and meet the goals of the Whitney Road project.

The MPO will develop the Restway Travel Park Concept #6 and send to group for review.

One-on-one Meetings (Private Property: 6405 Hinesley Road)

Meeting No. 1: April 23, 2019: 2:00 p.m. to 4:00 p.m.

Meeting attended by Betty Beckle, Don Beckle, Zack Middelstadt, Stan Middlestadt, and Tom Cobb, MPO. The meeting was conducted at 6405 Hinesley Blvd. The purpose of the meeting was to present the Restway Travel Park Concept #5 conceptual plan for review by the impact owner and residences for review and comment.

The following notes are based on the MPO's understanding of the meeting, questions, and concerns. No comments or questions are specifically attributed.

Comments/Questions:

Placing a median on Whitney restricts access into their property and prevents them from backing in a tractor trailer combination headed southbound. What is the purpose of the median?

The proposed improvements addressed existing and potential safety concerns. Those safety concerns were as follows:

- Proximity of the service road intersection to the U.S. 30/Whitney Road Intersection (171.6' CL to CL spacing);
- Cut-through traffic observed to and from Saddle Ridge Subdivision via Saddle Ridge Trail to the U.S. 30 Service Road to Whitney Road and back;
- Projected increase in ADT on Whitney Road anticipated to increase from 2,746 (2017) to 9,400 (2040) or 10.54% per year.
- Conflicting northbound and southbound left turn movements overlap at the Restway RV Travel Park and Whitney Road.

The MPO discussed an option with the owners to have an access off the U.S. 30 Service Road in conjunction with the approach on Whitney Road. An access permit would need to be submitted to WYDOT.

The owner indicated that they were in favor of the combination of approaches to allow access and provide an opportunity for future commercial development. They indicated that a previous access permit was denied several years ago.

The MPO will introduce the concept to WYDOT for initial comment. The MPO cannot speak on behalf of WYDOT but, believes that based on the proposed future restricted access to the service road the new approach would likely not be denied at this time.

The owner and residence had no issue with realigning Hinesley Road and the impact to the northwest corner of the property. They indicated that portion of the property is not really being utilizing but, they would like to be compensated fairly if the right-of-way is required.

They indicated that two households occupy the single property at this time and the structures to the north and steel Quonset building are both garages. A single underground water well supplies water to the two homes and a single septic and leach field are located north of the west house on Whitney Road.

Storm runoff from Whitney Road and Hinesley Road significantly impacts the house on the southeast corner of the property due to existing grading and ditches. Additionally, a single pipe install by others conveys runoff from the property onto the U.S. 30 Service Road north ditch. The lowest elevation or invert elevation of pipe is close to the finished floor elevation of the west house. Could the pipe be modified to improve drainage on this project?

The MPO indicated that it would illustrate an "WYDOT M-1" inlet and relayed pipe be placed on the plan to alleviate the effect of storm water from the site. Additionally, the plan already shows curb and gutter, inlets, and a storm water conveyance system which will reduce the impact of small storms to the residence.

Planning Commission
The fourth structure component of the project involved updates and a final presentation to the Laramie County and City of Cheyenne Planning Commissions. The primary purpose of the meetings was to convey the comments received from the public input, present recommended solutions for the corridor, and have a forum for any additional comments from the public or the commissioners.

Cheyenne Metropolitan Planning Organization (Committee Meetings)
The fifth type of structure component involved presenting design development updates, soliciting input, and final approvals from the established Cheyenne Metropolitan Planning Organizations Technical Committee and Citizens' Advisory Committee, and Policy Committee.

Jurisdictional Meetings
The fifth type of structure component involved presenting design development updates and final adoption or reception of the plan by the Cheyenne Governing Body and Laramie County Commissioners.

Reference
The Collaboration or public involvement phase of the project provided one of the components utilized for development of the Design portion of the plan. Please see the "Glimpse" section of the plan, which encompasses the culmination of the collaboration components and rationale behind the recommendations set forth in the plan.

4.0 PROFILE

The Profile section contains a set of foundations which help frame the boundary of the plan. The four (4) foundations are listed and detailed in the following chapter:

- Foundation 1: Cheyenne's Future Land Use Plan
- Foundation 2: Key Planning Considerations
- Foundation 3: Potential Funding Mechanisms
- Foundation 4: Environmental Constraints

Foundation 1: Future Land Use Plan

The Future Land Use Plan is a long-range growth-focused map that provides the basis to guide future development in the City of Cheyenne and Laramie County areas of the Whitney Road Corridor. The map focuses on areas where new development will likely occur in the future and redevelopment areas. The Land Use for this area was not revised and was used as the basis for future traffic volumes. Please see Figure 4.1 Future Land Use Plan Detail and Figure 4.2 Future Land Use Plan Cheyenne Urban Area.

Foundation 2: Key-Planning Considerations

The Glimpse, Collaboration, and Profile phase of the project provide a framework for the future land development and corridor vision of the various stakeholders. The Whitney Road Corridor area has the potential to grow and develop as additional utility and roadway infrastructure become available and are appropriately sized for future capacity needs. The following structure considerations shape the corridor:

- Transit and Non-motorized Transportation
- Provide a safe, accessible and continuous pedestrian connection along the entire corridor
- Provide street lighting at intersections and non-motorized crossings where appropriate
- Provide shoulder bike lanes per the Cheyenne On-Street Bicycle Plan and Greenway Plan Update, Volume 1 by Update by Alta Planning + Design in 2012.
- Review options to expand the Greenway north of Dell Range Blvd. within the future developments for connectivity to schools and existing greenway components.
- Minimize impacts to nearby residential properties and businesses.

<u>Traffic Safety and Operation</u>

- Build a roadway cross section that enhances travel efficiency and accommodates all modes of transportation.
- Provide peak hour intersection operations with a minimum Level of Service (LOS) C through horizon year 2040.
- Attempt to maintain commercial and residential access approaches.
- Where appropriate, provide for proper turning radius at intersection to accommodate a conventional single unit truck, bus, or semi-trailer combination with a minimum wheelbase

of forty (40) feet (i.e. 3 to 4 axle), and maximum of sixty-five (65) feet (i.e. 5 to 6 axles).

Roadway Connectivity
- Review options to promote development in undeveloped open space.
- Review existing roadways and provide additional or enhanced street connectivity.

Utility Companies
- Consult with wet and dry utility companies to provide enhanced or improved facilities to that will facilitate redevelopment.
- Attempt to provide a dry utility corridor within the current or proposed road right-of-way corridor.

Cooperation
- Multiple public agencies or wet utilities that have areas of jurisdiction in the area: Laramie County Government, City of Cheyenne, WYDOT, Board of Public Utilities.

Foundation 3: Potential Funding Mechanisms
Keys to successful development and revitalization in the corridor will be predicated on the following:

- A clear vision, considering the market and economic reality.
- A proactive strategy for reinvestment (public and private).
- Educated citizenry and policy makers.
- Calculated strategy to attract investment and remove barriers.
- Quantifiable leveraged public investment.
- Fiscally and economically responsible phasing plan.
- Equalization of economic risk vs. reward.
- On-going project support (political).

The public sector (City of Cheyenne, Laramie County, Cheyenne MPO, and WYDOT) will play an important role in "readying the area for private investment" through infrastructure improvements, public planning and policy initiatives. From these initiatives and/or investments, private sector development and redevelopment can be leveraged.

Funding mechanisms for public infrastructure could include loans and grants (e.g., Wyoming Business Council's Business Ready Community Program and Community Facilities Grant and Loan Program); Community Development Block Grant (CDBG) funds; 5th and 6th Penny Sales Tax projects revenue bonds; general obligation bonds; and Surface Transportation Program – Urban Systems (federal funds).

One of the "truths" in corridor development and revitalization is that private investment will typically follow public investment. The types of public infrastructure recommended in the Corridor Plan will not only encourage new development on vacant and/or underutilized parcels, but redevelopment of existing sites and buildings. This new private investment represents the "leveraged" return to the public sector from their initial investments.

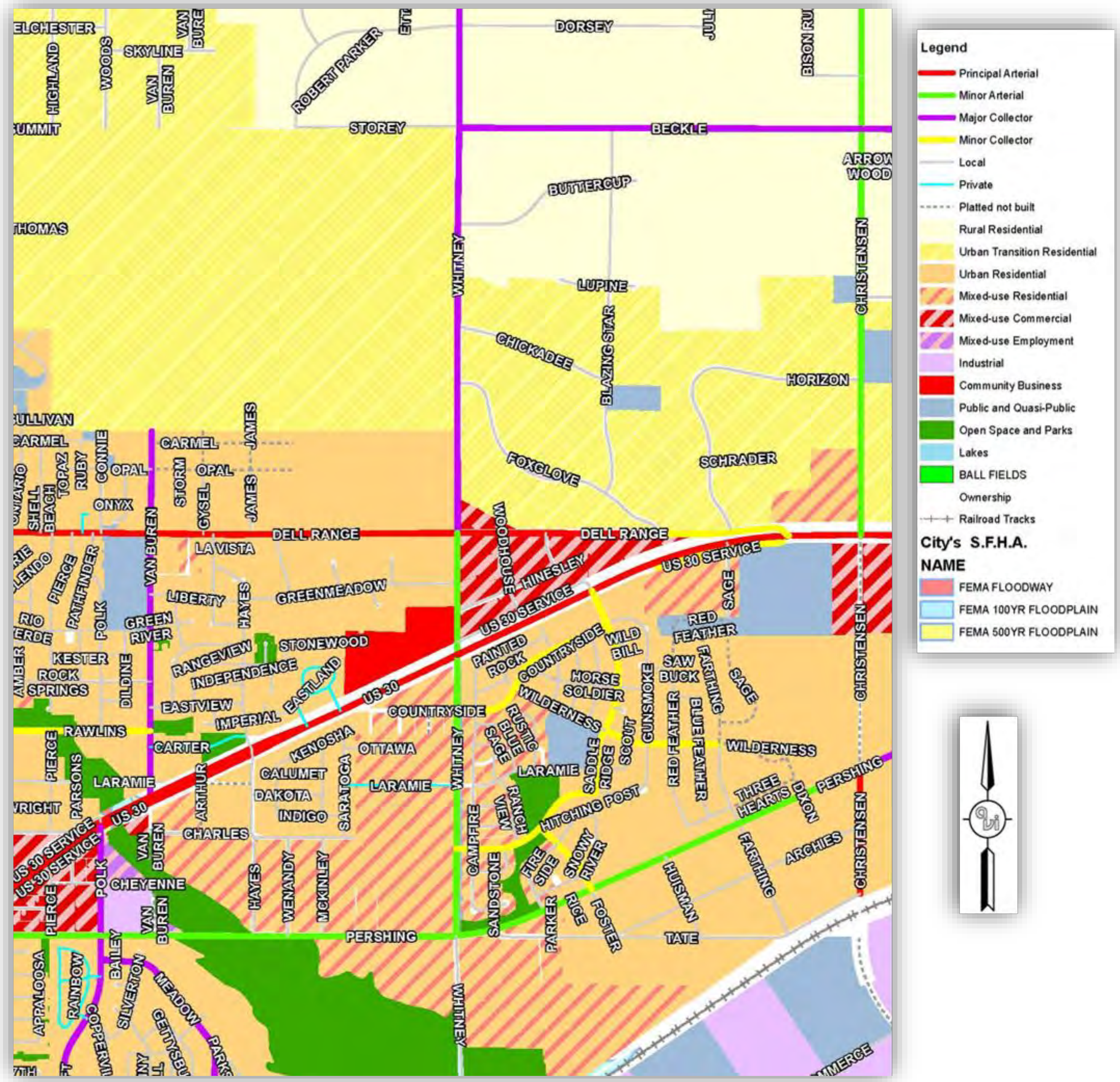

Figure 4.1 Future Land Use Plan Detail

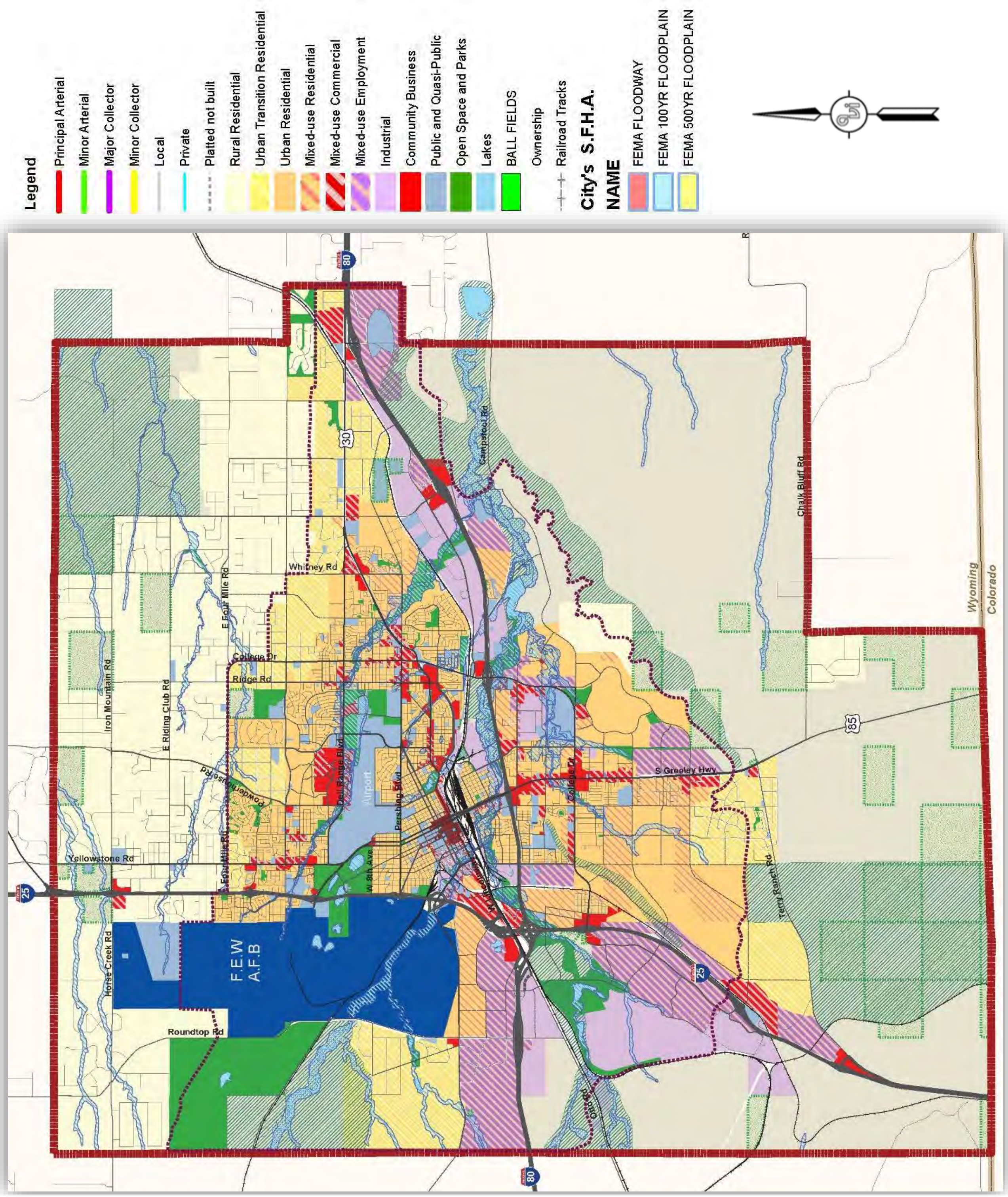

Figure 4.2 Future Land Use Plan Cheyenne Urban Area

Foundation 4: Environmental Constraints

The following environmental checklist Table 4.1 Environmental Review Corridor Checklist was reviewed for the corridor to identify any areas of environmental concern that may need to be addressed in future development of the corridor plan, roadway design, and construction.

A formal environmental report will likely be required to secure funding before and/or during the final design phases of the project.

The MPO conducted a desktop survey for the existing and potential alternatives and identified potential wetlands that are regulated by the Army Corps of Engineers (ACOE). No waters of the U.S. were identified. Please see Figure 4.3 Potential Wetlands Whitney Road and desktop environmental report contained in Appendix F for additional information and reference.

Figure 4.3 Potential Wetlands Whitney Road

Table 4.1 Environmental Review Corridor Checklist

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Natural Environment				
Threatened or Endangered Species	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	✓Yes ☐ No ☐Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Further investigation will be required during final design but not anticipated to be a factor. Review of area and U.S. Fish & Wildlife website. Unofficial US fish and Wildlife Service online database suggests the following: Mammals : Preble’s meadow jumping mouse, Least Tern, Piping Plover, Whooping Crane, and Pallid Sturgeon. Flowering Plants: Colorado Butterfly Plant, Ute Ladies'-tresses, Western Prairie Fringed Orchid. While these species have some potential, it is unlikely they are present. However, specific species/habitat surveys may be required once an alignment is selected. We are still waiting on response from the FWS from our letter request.
Wildlife Corridors	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ☐Unknown ✓Not applicable	Further investigation will be required during final design but not anticipated to be a factor. Based on WGFD GIS data, no wildlife corridors cross or are in the area.
Invasive Species	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Further investigation will be required during final design but not anticipated to be a factor.

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Natural Environment (Continued)				
Wetland Areas	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Further investigation will be required during final design but not anticipated to be a factor. Please see Appendix F and Figure 4.3 for additional information and reference.
Riparian Areas	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☐ Unknown ✓ Not applicable	Observation
100-Year Floodplain	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☐ Unknown ✓ Not applicable	FEMA website and County GIS review. (see Glimpse: Drainage; Figure 2.7)
Clean Water Act Sections 404/401 Waters Of The United States	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☐ Unknown ✓ Not applicable	WYDEQ identified no Class I waters, but further detailed design/layouts will be needed to determine what if any permits will be required from the Army Corps of Engineers and WYDEQ-WQD.
Prime Or Unique Farmland	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	The USDA National Resources Conversation Service of Laramie County Custom Soil Survey identified Sections of Prime or Unique Farmlands in the area (i.e. Map Unit Symbol: 100) and areas of Prime Farmland, if irrigated (Map Unit Symbol 102, 104, 158). See Appendix F Soil Survey.

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Natural Environment (Continued)				
Wild and Scenic Rivers	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Observation and public process. Visual leisure in the case is "open space/aerial". Although this is subjective it may have impacts throughout the corridor.
Designated Scenic Road/Byway	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Formal survey was not completed; however, the Disturbed nature of the area would suggest that it is unlikely to find surface deposits. Buried artifacts may be possible. Formal surveys are likely once an alternative is selected. We are still waiting on a response from SPHO from our letter request.
Cultural Resources				
Archaeological Resources	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Formal survey was not completed; however, the Disturbed nature of the area would suggest that it is unlikely to find surface deposits. Buried artifacts may be possible. Formal surveys are likely once an alternative is selected. We are still waiting on a response from SPHO from our letter request.
Historical Resources	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Observation

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Section 4(f) and Section 6(f) Resources				
Section 4(f)[1] Wildlife and / or Waterfowl Refuge	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	No impacts are anticipated based on observation.
Section 4(f) Historic Site	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	A section 106 Study will be required to determine potential impacts however, the area was not listed on the SHPO website.
Wild and Scenic Rivers	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	Observation
Section 4(f) Park	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Observation
Section 6(f)[2] Resource	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	

[1] Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S. Code § 303, as amended); see <Section 4(f)>.

[2] Section 6(f) of the Land and Water Conservation Fund Act

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Human Environment				
Existing Development	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Existing approaches, fences and right-of-way will be necessary to complete the project based on the preliminary plan.
Planned Development	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Potential development is anticipated on underdeveloped properties based on discussions with adjacent boundaries.
Displacements	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Possible impacts to adjacent business adjacent to the existing Whitney because of realignment of south Whitney.
Access Restriction	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Observation
Neighborhood Continuity	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Observation

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Human Environment (Continued)				
Community Cohesion	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Public Involvement process.
Physical Environment				
Title VI/Environmental Justice Populations[3]	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ✓ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☐ Unknown ✓Not applicable	
Utilities	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Observation See Section Glimpse; Utilities.
Hazardous Materials	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	Observation

[3] refers to Title VI of the 1964 Civil Rights Act and 1994 Executive Order 12898 on environmental justice

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Physical Environment (Continued)				
Sensitive Noise Receivers[4]	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	✓ Yes ☐ No ☐ Unknown ☐ Not applicable	Adjacent Neighborhoods
Air Quality	☐ Yes ☐ No ☐ Unknown ✓ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	
Energy	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	☐ Yes ☐ No ✓ Unknown ☐ Not applicable	

Resource Areas Requiring Potential Further Review

Based on a desktop review and observation, the following resource areas may require additional review and are summarized below:

- Threatened or Endangered Species
- Visual Resources
- Wetland Areas
- Prime or Unique Farmland
- Archaeological Resources
- Displacements
- Existing Development
- Planned Development
- Utilities
- Energy.

[4] under FHWA's Noise Abatement Criterion B: picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals

5.0 DESIGN

The Glimpse, Collaboration, and Profile phase of the project provided a solid basis for development of the Design portion of the plan. The design section of the plan encompasses the culmination of the groundwork components and rationale behind the recommendations set forth in the plan.

The overall recommendations are specifically designed to address the modes of transportation and safety needs of the present and future users of the Whitney Road. All recommendations have been examined carefully to ensure the requests of the stakeholders have been considered as well as their practicality, functionality, aesthetic appeal, sustainability, and successful implementation. The physical layout of the improvements are detailed in the following pages and can be found on the corridor plan and profile sheets contained in Appendix A. Detailed cost estimates are shown in Appendix D.

Roadway Concept Alternatives

The conceptual roadway "typical" alternatives were developed and evaluated using a multi-modal framework as a base. At intersections and other locations with unique design challenges (e.g. driveways, areas with limited sightline, skew, etc.), special designs and modifications may be needed to address issues of road geometry, adjacent land uses, traffic volumes and other characteristics. The Whitney Road Corridor Study evaluated conceptual improvement alternatives for the roadway segments and streetscape with the following framework components:

- What are the existing and future adjacent conditions and uses?
- What variations can be made to create a more user-friendly corridor?
- What movements and interactions will take place on the corridor?
- What is the corridor vision of the stakeholders?
- What can we do to add low maintenance streetscape to "soften" the corridor for non-motorized modes of transportation?
- Current City of Cheyenne Unified Development Code (UDC) and Laramie County Land Use Regulations (LCLU) typical sections based on roadway classifications.

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Design Guide Criteria

The roadway corridor is comprised of two different roadway classifications with corresponding criteria developed from industry standards and a merging of two independent jurisdictional criteria (i.e. Laramie County and City of Cheyenne). [1 2 3]

(Minor Arterial: South of Dell Range Blvd.)

- Roadway Classification: Minor Arterial
- Minimum Design Speed: 30 mph (Intersection of U.S. 30); 40 mph (Corridor)
- Clear Zone Width: 16 feet (ADT > 6,000), 1V:5H to 1V:4H
  14 feet (ADT > 6,000), 1V:6H
- Stopping Sight Distance: 30 mph: 200 feet; 40 mph: 305 feet
- Passing Sight Distance: 30 mph: 500 feet; 40 mph: 600 feet
- Crest Vertical Curve: K = 89 (30 mph); K= 129 (40 mph): Passing Sight Distance
  K = 19 (30 mph); K=44 (40 mph): Stopping Sight Distance
- Sag Vertical Curve: K = 37 (30 mph); K=64 (40 mph)
- Grade (Max./ Min.): 6%/ 0.5%
- Design Vehicle: WB-67
- Horizontal Curve CL: R = 333' (30 mph); R = 762' (40 mph): Adverse Crown: -2.0%
- Transitions: $L = WS^2/60 = W(30 \text{ or } 40)^2 /60$

(Major Collector: North of Dell Range Blvd.)

- Roadway Classification: Major Collector
- Minimum Design Speed: 35 mph
- Clear Zone Width: 12 feet (ADT 1,500-6,000), 1V:5H to 1V:4H
  10 feet (ADT 1,500-6,000), 1V:6H
- Stopping Sight Distance: 35 mph: 250 feet
- Passing Sight Distance: 35 mph: 550 feet
- Crest Vertical Curve: K = 108 (Passing Sight Distance)
  K = 29 (Stopping Sight Distance)
- Sag Vertical Curve: K = 49 (Stopping Sight Distance)
- Grade (Max./ Min.): 8%/ 0.5%
- Design Vehicle: WB-40
- Horizontal Curve CL: R = 510' (Adverse Crown: -2.0%)
- Transitions: $L = WS^2/60 = W(35)^2 /60$

1 A Policy on Geometric Design of Highways and Streets (Officials, A Policy on Geometric Design of Highways and Streets, 2018)
2 City of Cheyenne Unified Development Code (Last Amended Cheyenne, 2017), (Cheyenne, 2017)
3 The Laramie County Land Use Regulations (2019 Edition Laramie County, Effective January 1, 2019)

Future Traffic Volume Conditions

Traffic volume projections were developed for Year 2040 by Kimley-Horn to estimate the impacts of the traffic growth on the corridor. Projected peak hour volumes were developed for the key intersections along the corridor as well as daily volumes for the links along the corridor using the following process.

- **Background Traffic**, the existing peak hour and daily volumes were inflated by 1.25% annually to estimate the growth in background traffic along the corridor. This rate is used by the MPO and WYDOT to estimate traffic growth in the Cheyenne metropolitan area which was developed in the City of Cheyenne Transportation Plan.
- **Development Traffic,** the year 2040 estimated trips that are expected to be generated by the new development/ redevelopment areas adjacent to the corridor were distributed and assigned to the intersections utilizing Figure 4.1 Future Land Use Plan Detail and Figure 4.2 Future Land Use Plan Cheyenne Urban Area in addition to the Whitney Ranch Traffic Impact Study.
- **Total Traffic,** the background traffic was combined with the development traffic to estimate year 2040 total traffic. The year 2040 volumes peak hour and daily volumes are summarized in *Figure 5.2 Today and 2040 Projected Volumes (ADT)* and *Figure 5.3 2040 Projected Peak Hour and ADT Overall Volumes*.

Cross Sectional Elements

Lane Widths
As shown in Table 5.1 Ultimate Typical Section Jurisdictional Comparison, lane width requirements vary between the jurisdictional entities from ten to twelve (10-to-12) feet. According to AASHTO *(Officials A. A., A Policy on Geometric Design of Highways and Streets, 2018)* and our experience, smaller lane widths may be used in more constrained areas where truck and bus volumes are relatively low and where speeds are less than 45 mph. Lane widths of eleven (11) feet wide are frequently used in urban street designs while twelve (12) foot wide lanes are desirable on high speed, free flowing corridors.

After extensive discussion between the design team and Steering Committee, we recommend the use of eleven (11) foot wide travel lanes on Whitney Road. This width still accommodates larger design vehicles and allows increases the available tree lawn width, which can be used for snow storage, pedestrian separation, and drainage.

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Table 5.1 Jurisdictional Cross Section Elements Comparisons

Description	Minor Arterial			Major Collector		
	City of Cheyenne (1)	Laramie County (2)	2018 AASHTO (3)	City of Cheyenne (1)	Laramie County (2)	2018 AASHTO (3)
Travel Lane width	12′	12′	10′ – 12′	12′	11′	11′
Turn Lane width	12′	12′	Context	12′	12′	Context
Parking	none	none	Context	none	None	7′ to 10′
Roadway Width	48′	48′	Volume	48′	44′	Volume
Sidewalk/ Pedestrian Area	6′	6′	Context	6′	6′	Context
Parkway/ Tree Lawn	8′	8′	-	8′	5′	-
Bike Lane/ Shoulder	6′	6′	8′	6′	6′	6′
Volume Capacity (ADT)	7,500 – 18,000	7,500 – 15,000	>2,000	6,000 – 10,000	3,500 – 7,500	>2,000

Curbs

The type and location of curbs affect driver behavior and safety. Curbs serve many purposes including drainage control, roadway edge delineation, delineation of pedestrian walkways, and access control. Although curbs are not considered fixed objects in the context of a clear zone obviously, they will affect impacting or overriding car movements, after discussion within the public, design team and Steering Committee, we recommend the use of curb and gutter on Whitney Road. Curb and gutter will provide better access control and pedestrian delineation for use by pedestrians, young school children, and control drainage.

Bicycle Facilities

Bicycling is becoming increasingly popular as a means of transportation and recreation in Cheyenne. To promote and support multi-modal transportation both the Unified Development Code of the Cheyenne, Wyoming (UDC) and the Laramie County Land Use Regulations make provisions for bike lanes on both the major collector and minor arterial street sections (See Table 5.1 Jurisdictional Cross Section Elements Comparisons).

This ensures a comprehensive, continuous, safe, and efficient bicycle system network within the urban boundary of Cheyenne and Laramie County. Multi-modal corridor design emphasis provides safe, efficient, and convenient movement of all modes of transportation including vehicles, bicycles, and pedestrians. A Bike Lane is defined as a designated area of the roadway favored or exclusive to bicyclists while a separated multi-use pathway provides the broadest opportunity for a variety of non-motorized transportation modes. Advanced commuter cyclists seem to prefer riding within the roadway.

Whitney Road was designated for a “Shoulder Bikeway” while Dell Range Blvd has been designated for a “Buffered Bike Lane,” and US 30 for a “Greenway” in the *September 2012 Cheyenne On-street Bicycle Plan and Greenway Plan Update* [4].

The Urban Bikeway Design Guide by the *National Association of City Transportation Officials (Officials N. A., 2014)* recommends the following conventional bike lane standard.

- **Conventional Bike Lanes.** A 6-inch to 8-inch stripped area with a minimum width of four (4) feet when no curb and gutter is present, five (5) feet when adjacent to curb and gutter, and six (6) feet where right-of-way allows.
- **Buffered Bike Lanes.** The buffer shall be no less than 18 inches wide and marked with two 6 to 8-inch-wide solid white lines. If the width is three (3) feet or wider, the buffer area shall have interior diagonal cross hatching or chevron markings. The chevron markings shall be 4 inch white angled at 30 to 45 degrees at intervals of 10 to 40 feet.

After discussion with the public, design team and Steering Committee, we recommend the use of additional on-street shoulder / bike lane on the Whitney Road Corridor.

Pedestrian Facilities

The need for continuous and updated pedestrian facilities and accessible facilities are fundamental to encourage redevelopment, development, and promote an efficient and fair transportation system. All people benefit from pedestrian facilities, however youth, seniors, physically, economically, and socially disadvantaged people require non-automobile options which provide convenient and safe multi-modal connectivity.

The need for pedestrian facilities received moderate support during the public process for Whitney Road. This is likely due to the rural nature of the area which naturally promotes the use of motorized vehicle transportation. As this area begins to develop and redevelop the need for pedestrian facilities will become a paramount necessity on the corridor. Discussions during the planning process centered on utilizing two types of facilities:

- *Shared Use Path.* A multi-use path designed primarily for use by bicyclists and pedestrians, including pedestrians with disabilities for transportation and recreation purposes. Shared use paths are physically separated from motor vehicle traffic by an open space or barrier. They are either within the right-of-way or within an independent right-of-way or easement.
- *Sidewalks.* A well-maintained sidewalk provides a safe and accessible conduit for pedestrian movement and access which enhances connectivity and promotes walking. The Urban Street Design Guide by the National Association of City Transportation Officials (Officials N. A., 2014) recommends that sidewalk have a desired minimum through zone of 6 feet and absolute minimum of 5 feet. Where sidewalk is directly adjacent to moving traffic, the desired minimum is 8 feet, providing a two-foot buffer for street furnishings and utilities.

After discussion with the public, design team and Steering Committee, we recommend the use of 6' sidewalks on each side of the roadway south of Dell Range Blvd. and a 7' multi-use path on the east side of the corridor north of the Dell Range Blvd. on the Whitney Road Corridor.

Safety Medians

The primary function of medians is safety. They separate traffic streams, guide turning movements at intersections, and provide access control to/from minor access drives and intersections. It is very important that medians be delineated in a way that makes them visible and distinguishes them from the adjacent driving lanes. Curbed medians and traffic islands provide an added benefit by "softening" the urban roadway edge and subjectively enhance the aesthetic quality when utilizing a combination of the material types.

Three (3) types of medians are most common in the urban roadway environment: raised, flush, and two-way left-turn lanes.

- *Raised Medians.* A raised median is used in urban streets where it is desirable to control or restrict mid-block left turns and cross maneuvers. Installing a raised median can result in the following benefits:
  - Improve traffic safety
  - Restrict left-turn and crossing maneuvers to specific locations or certain movements
  - Increase capacity and reduce delays
  - Provide a pedestrian refuge area (minimum of six (6) feet wide).
  - AASHTO (Officials A. A., A Policy on Geometric Design of Highways and Streets, 2018) recommends that intersection median turn lanes have a minimum medial separator of four (4) feet between turning lane and opposing traffic. Additionally, they recommend that with wider medians, consideration should be given to offsetting the left-turn lanes to provide maximum visibility between opposing traffic volumes.
- **Flush Medians.** Flush medians are surface painted medians that can be traversed. (Although they discourage left-turn and crossing maneuvers by their striping configuration, they do not prevent left turns because the median can be easily crossed).
- *Two-way Left-turn Lane.* Two-way left-turn lanes (TWLTL) are flush medians that may be used for left turns by traffic from opposing directions on the street. AASHTO (Officials A. A., A Policy on Geometric Design of Highways and Streets, 2018) recommends the use of a TWLTL on arterials with numerous cross streets, commercial, residential drives, or where it is impractical to limit left turn movements.

After discussion and evaluation by the public, design team, and Steering Committee, we recommend the use of all three types of medians at appropriate locations along the corridor. Please see Appendix A for additional detail. The medians will only be used at locations near major intersections at Dell Range Blvd. and U.S. Highway 30 for safety and access control.

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Auxiliary Lanes (Speed-Change Lanes)

The existing corridor would be governed under the jurisdiction of WYDOT, Laramie County, and the City of Cheyenne. Their criteria along with AASHTO, and the National Cooperative Highway Research Program (Kay Fitzpatrick, 2014)) Report 780, Design Guidance for Intersection Auxiliary Lanes was utilized for reference and information. A summary of the individual criteria is summarized in Table 5.2 Jurisdictional Left and Right Turn Warrant Criteria and careful consideration was given to the proposed conceptual alternatives to use the safest and most practical deceleration length on the corridor. Therefore, due to the proximity of access approaches, and expected relatively lower speeds approaching intersections, a one-hundred (100) foot deceleration length is recommended to be applied to the auxiliary lane development on Whitney Road and four hundred fifteen (415) foot on U.S. 30 with corresponding tapers 100' and 150' minimum tapers, respectively. If specific site conditions did not allow development of a full deceleration lane, it was so noted. Consequently, for a twelve (12) foot auxiliary lane, this equates to approximately an 8.3:1 on Whitney Road and 12.5:1 on U.S. 30.

Left Turn Lane, AVI recommends that a left-turn deceleration lane and taper are required for any access with a projected peak-hour ingress turning volume greater than 10 vehicles per hour (vph). The taper length shall be included with the required deceleration length

Right Turn Lane, A right-turn deceleration lane and taper is required for any access with a projected peak hour ingress turning volume greater than 25. The taper length should be included within the deceleration length.

Table 5.2 Jurisdictional Left and Right Turn Warrant Criteria

Criteria	Through	Left-turn	Right-turn	Notes
	Turning Volume [Vehicles per hour (vph)]			
City of Cheyenne	NA	>10 vph	>25 vph	12' (no less than 10')
Laramie County	>10 vph	>10 vph	>25 (Program, 2014) vph	12' (no less than 10')
NCHRP 780	250	15	-	-

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Table 5.3 Jurisdictional Requirements for Deceleration and Tapers for Auxiliary Lanes

Design Speed	Stop Condition	15 MPH Turns	Minimum Taper Ratio
	Deceleration Length (feet)		
AASHTO 2018			
30	150′	-	8:1
35	205′	-	8:1 to 15:1
40	265′	-	8:1 to 15:1
50	415′	-	15:1
55	505′	-	15:1
60	600′	-	15:1
City of Cheyenne			
35	275′	235′	10:1
40	315′	295′	11.5:1
50	435′	350′	13:1
Laramie County			
30	235′	185″	8:1
35	275′	235′	10:1
40	315′	295′	11.5:1
50	435′	405′	15:1
WYDOT			
40	275′	-	150′ (12.5:1)
50	410′	-	150′ (12.5:1)
55	485′	-	150′ (12.5:1)
NCHRP 788			
30	170′	80′	180′ (15:1)
35	230′	120′	245′ (20.4:1)
40	290′	170′	320′ (26.7:1)
50	460′	290′	600′ (50:1)
60	650′	460′	720′ (60:1)

Intersection Storage Lengths

All intersection storage lengths in the study were calculated by Kimley Horn using Synhro® 10 Signal Timing and Analysis Software based on future signalization, 2040 traffic volumes, signal cycle length, and signal phasing assumptions. Assumption details can be found in Appendix E. The lengths shown were used to develop the recommended intersection layouts shown in Appendix A and the document.

Table 5.4 Intersection Storage Lengths

Intersection/ Movement	Minimum Turn Bay Length (ft)[4]		Thru Movement Storage		Recommended Auxiliary Turn Lane Lengths (ft)			
	AM	PM	AM	PM	Storage	Decel.	Taper	Total
Whitney Road (DS = 30 mph) at Dell Range Blvd. (DS = 40 mph)								
Eastbound Left (EBL)	28′	m 23′	82′	#599′	**125′**	**265′**	**100′**	**290′**
Westbound Left (WBL)	M 21′	m10′	#506′	355′	**100′**	**265′**	**100′**	**265′**
Northbound Left (NBL)	168	m#134	134′	#451	**100′**	**150′**	**100′**	**250′**
Southbound Left (SBL)	56	#107	#452′	318′	**100′**	**150′**	**100′**	**250′**
Whitney Road (DS = 30 mph) at U.S. 30 (DS = 50 mph)								
Eastbound Left (EBL)	53′	m 227′	28′	m 126′	**375′**	**415′**	**150′**	**790′**
Eastbound Right (EBR)	0′	m 15′			**100′**	**415′**	**150′**	**365′**
Westbound Left (WBL)	m 4′	55′	204′	98′	**100′**	**415′**	**150′**	**365′**
Westbound Right (WBR)	13′	50′			**100′**	**415′**	**150′**	**365′**
Northbound Left (NBL)	192′	112′	96′	95′	**100′**	**150′**	**100′**	**250′**
Southbound Left (SBL)	m 4′	m 19′	m 34′	m 70′	**150′**	**150′**	**100′**	**300′**
Southbound Right (SBR)	m 193′	m 130′			**200′**	**150′**	**100′**	**350′**

Provision for Dry Utilities

As previously described in the study, utilities are interlaced in the corridor area and are both underground and overhead. Obviously, utilities should desirably be located underground or at the edge of the right-of-way, when practical. Based on the constrained right-of-way width of 80 feet, we would recommend that new developments have dry utility facilities relocate underground and within easements outside of the existing corridor.

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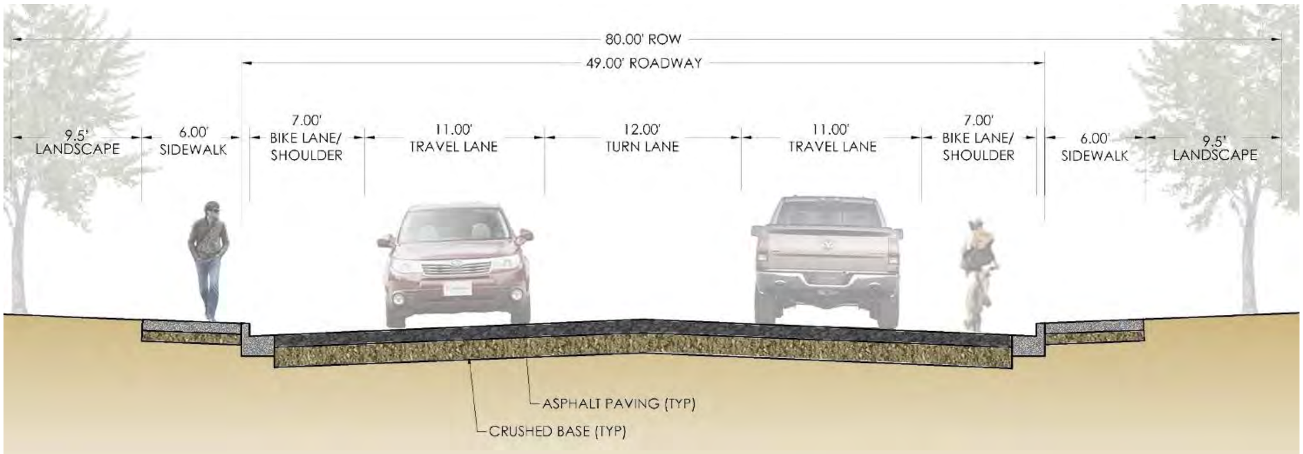
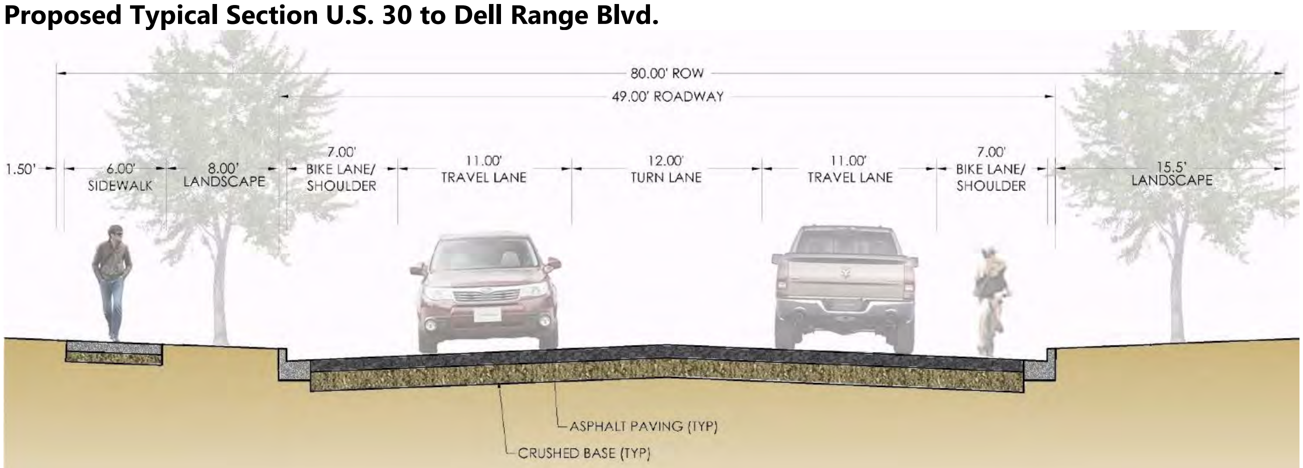
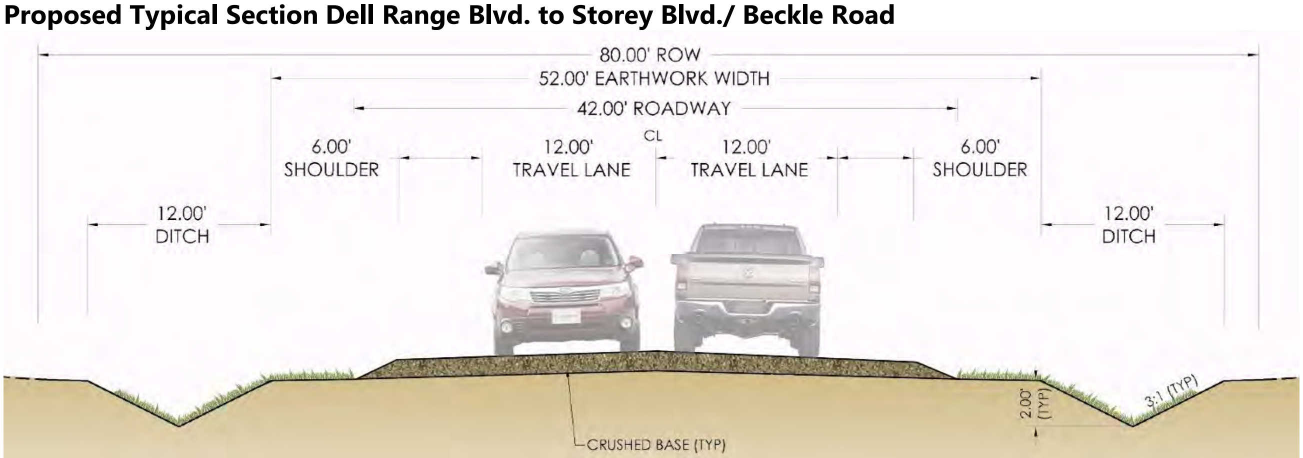
[4] m - Volume for 95 percentile queue is metered by upstream signal
- 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after two cycles



Proposed Typical Section U.S. 30 to Dell Range Blvd.



Proposed Typical Section Dell Range Blvd. to Storey Blvd./ Beckle Road



Proposed Typical Section Beckle Road North

Figure 5.1 Recommended Typical Sections Whitney Road (Looking North)

Figure 5.2 Today and 2040 Projected Volumes (ADT)

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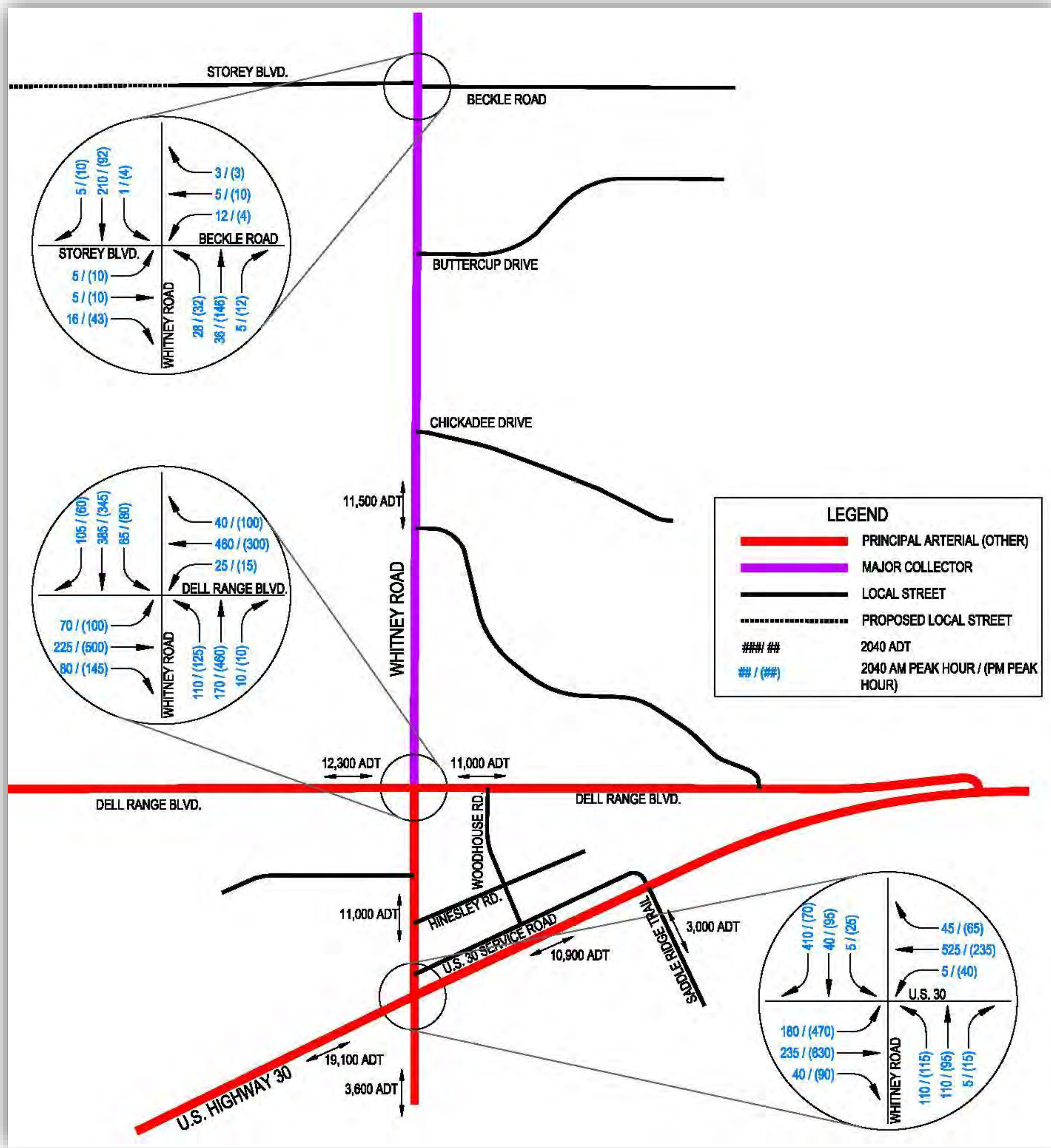

Figure 5.3 2040 Projected Peak Hour and ADT Overall Volumes

Drainage and Detention

The requirements for drainage and detention for the City of Cheyenne and Laramie County differ in policy. We understand that the roadway at this time is in Laramie County however, it is within the City of Cheyenne Planning Area Boundary.

The primary requirements for each jurisdiction are briefly outlined below:

Laramie County

- *Detention*. Stormwater detention is based on the one hundred (100) year design frequency.
  - Post development design requirements shall be for a system to maintain total contributory site discharge at no greater than a pre-development (i.e. historic) fifty (50) year release rate for a 100-year storm event.
  - Drainage planning shall include a design to maintain post-development runoff rates to historic rates for all return periods.
  - Emergency spillways shall be included in the design planning facilities.
- *Drainage Conveyance*. Drainage conveyance system elements shall be based on the following minimum criteria for a minor arterial street to accommodate both sections of Whitney Road:
  - *Minor Storm*
    - No curb overtopping and one interior drive lane clear of spread
  - *Major Storm (100-year)*
    - Maximum depth in gutter flowline 12 inches, 6 inches flow across street intersections.
    - Drainage Swales (Major Storm within easement)

City of Cheyenne

- *Detention*. Detention of stormwater shall be based on the more restrictive of the following:
  - No increase in peak discharge rates.
  - 100-year post-project peak rate no greater than the pre-project fifty (50) year release rate.
  - The downstream conveyance capacity of a project.
  - As provided for in Section 3.2.3.a.3(a). Drainage facilities shall be designed to, at a minimum, not adversely impact downstream properties. Proposals to increase downstream conveyance capacity of an area may be considered in-lieu of over-detention on a project, with justification.
  - Drainage planning and design shall provide for stormwater detention based on a design storm up to a 100-year frequency. The design shall maintain post-development runoff rates to predevelopment rates for return periods up to a 50-year frequency.
  - Emergency spillways shall be sized to convey the 100-year inflow peak. Spillway design velocities exceeding 5 fps shall require buried soil riprap.

- Embankments shall be no steeper than 4:1 below the 100-year water surface elevation and no steeper than 3:1 above the 100-year water surface elevation. The top width shall be 40 percent of the maximum dam height plus 4 feet.
- A 15-foot maintenance access with an 8 foot all weather surface shall be provided to assure access to all pond components.
- Post-construction Stormwater Best Management Practices (BMPs) are required to treat a minimum of the Water Quality Capture Volume (WQCV) as defined in the Urban Storm Drainage Criteria Manual (UDFCD) published by the Mile High Flood District (District, 2010, 2019). The WQCV shall be added to the detention volumes up to the 50-year and may be incorporated within the 100-year detention volume.

- *Drainage Conveyance.* Drainage conveyance system elements shall be based on the following minimum criteria for a minor arterial street:
  - *Minor Storm*
    - No curb overtopping and one 10 foot interior drive lane clear of spread
    - Maximum depth of 6 inches in cross pans, where allowed.
  - *Major Storm (100-year)*
    - Maximum depth of 12 inches in gutter flowline and cross street intersections.
  - Channels (100 cfs or greater). Design for the 100-Year frequency with one foot of freeboard. Maximum velocities 5 fps for erosive soils and 7 fps for non-erosive soils. Bank slopes 4:1 desirable; steeper slopes require review and approval.
- *Storm Sewers.* Storm sewers shall not be designed to surcharge in the minor storm (surcharge is a depth of flow greater than 80 percent of the height). The maximum hydraulic head shall be 0.5 feet below the lip of drop inlets for the minor storm. The minor storm varies depending on zoning and land use from 2-Year to 10-Year.

The design team developed a conceptual drainage plan for the corridor. Due to the minimum size of the right-of-way at approximately 80 feet and level of design, planning level opportunities exist for improving the post development drainage adjacent to the corridor. After careful review, we recommend a combination of detention methods and storm sewer be implemented at the final design phase:

- Roadside drainage that capture and treat water via longitudinal gravel beds, and the use of roadside ditches as linear detention/water quality facilities
- Conventional offsite detention as available from adjacent landowners.

Redirect flows along Whitney and Dell Range east down Whitney south via storm sewer system.

North Alignment Alternatives

The north alignment or namely Whitney Road from Dell Range Blvd. to Storey Blvd./Beckle Road was the only section of the corridor considered for realignment during the study process. This is due to the fact this section of Whitney Road contains an elevation change of approximately 95 feet from Dell Range with grades in excess ten (10) percent. This grade and elevation change create unsafe sightlines as you near the top of the hill heading north and coming over the crest heading south.

Additionally, the grade becomes dangerous in inclement weather with icy and hydro-plane conditions. However, just mitigating the steep grades in this area of the corridor potentially has significant impacts to both adjacent landowners and the petroleum lines located within the right-of-way of the corridor as previously mentioned in other sections of this report. The interrelationship of the petroleum pipelines and the roadway corridor planning project is the ability of the planning project to meet the established criteria; i.e., removal or mitigation of the steep roadway grade to improve safety for users and establish a non-motorized sidewalk/path that meets the Americans with Disability Act (i.e. ADA) accessibility requirements while minimizing impacts. Many different concepts were suggested, reviewed, and evaluated for consideration for the Whitney Road north alignment from Dell Range Blvd. to Storey Blvd./Beckle Road during the study process. Those considered included the following:

- Do Nothing
- Existing Alignment with Maximum Allowable Profile (3 Lane Section)
- Existing Alignment with Accessible Profile (3 Lane Section)
- NBL/ SBL Independent Roadways and Maximum Allowable NBL and Accessible Profile SBL
  - Alignment placement east of Whitney Gysel Barn Structure
  - Alignment placement west of Whitney Gysel Barn Structure
- Three-lane Roadway, Revised Alignment, Accessible Profile, and Impact to Plains All American Pipeline (PAAPL)
- Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure.
- Three-lane Roadway, Revised Alignment East, Accessible Profile.

A detailed description of each Alternative, it is advantages and disadvantages, are detailed in the following portion of the study.

Alternative 1: Do Nothing. This alternative utilizes the existing Whitney Road right-of-way north of Dell Range Blvd without any improvements.

Advantages:

- No construction cost.
- No impact to adjacent property.
- No impact to existing utilities within the right-of-way.

Disadvantages:

- Future development would be limited due to the limited vehicle capacity of a rural two-lane roadway.
- Safety concerns.
  - The longitudinal profile of the roadway is steep with limited visibility for stopping site distance. The posted speed limit exceeds the stopping site distance on the crest hills, as well as, the sags of the roadway.
  - Snow and ice issues related to the steep incline would remain a potential threat.

- o Shoulders to do not provide the width to accommodate emergency parking.
- Roadway does not provide for non-motorized transportation modes (i.e. pedestrians and bicycles).

Alternative 2: Existing Alignment with Maximum Allowable Profile (3 Lane Section) with Independent Accessible Non-motorized Route. This alternative utilizes the existing alignment and available right-of-way. Improvements would be required to the roadway including widening for shoulders and center turn lane to accommodate future anticipated traffic volumes. Potential independent detached sidewalk alignment to accommodate a maximum of a 5% grade for pedestrian and/ or non-motorized modes of travel on the west side. See Figure 5.4 Alternative 2: Existing Alignment with Maximum Allowable Profile.

Figure 5.4 Alternative 2: Existing Alignment with Maximum Allowable Profile

Advantages:
- Lower impact to adjacent property owner property.
- No impact to existing barn structure.
- Minimal impact to existing utilities within the right-of-way.
- Provides independent accessible route for pedestrians and non-motorized transportation.
- Adjacent property is not bifurcated by roadway development.
- No additional right-of-way required.

Disadvantages:
- Snow and ice issues related to the steep incline would remain a potential threat.
- Although roadway provides width for non-motorized transportation modes, the steep incline limits the type of bicyclist using the facility.
- Potential impact to underground petroleum transmission lines exist. Further underground investigation would be required to determine impact(s).

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Alternative 3: Existing Alignment with Accessible Profile (3 Lane Section). This alternative utilizes the existing alignment and available right-of-way. Improvements would be required to the roadway including widening for shoulders and center turn lane to accommodate future anticipated traffic volumes. Additionally, the longitudinal slope of the roadway would be lowered to accommodate a maximum of a 5% grade for pedestrian and/ or non-motorized modes of travel on the roadway, as well as, a sidewalk on the west side.

Figure 5.5 Alternative 3: Existing Alignment with Accessible Profile

Advantages:

- Provides accessible route for pedestrians and non-motorized transportation.
- Adjacent property is not bifurcated by roadway development.
- Roadway provides full accessibility for non-motorized transportation modes and pedestrians.
- No additional right-of-way required.

Disadvantages:

- Significant impact to adjacent property and barn structure.
- Significant impact to underground petroleum transmission lines and existing utilities.
- Significant snow drifting and maintenance due to prevailing wind and depth of roadway below adjacent ground.

Alternative 4: NBL/ SBL Independent Roadways and Maximum Allowable NBL and Accessible Profile SBL. This alternative creates two independent travel lane roadways for a Northbound lane (i.e. NBL) and a Southbound lane (SBL), respectfully. The roadways are comprised of 3.5′ inside and 7′ outside shoulders and an 11′ travel lane. The NBL longitudinal profile was developed with a maximum of an 8% vertical grade without sidewalk and the SBL was developed with an accessible profile of 5.0%. As a part of the alternative, backslopes were reviewed at both 4:1 and 3:1 with a retaining wall option to minimize adjacent impacts.

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Alternative 4a: Alignment placement east of Whitney Gysel Barn Structure

Advantages:

- Adjacent Whitney Gysel property not bifurcated by roadway development.
- Provides accessibility for non-motorized transportation modes and pedestrians on SBL.

Disadvantages:

- Significant impact to adjacent property and barn structure.
- Significant impact to one of the two (2) underground petroleum transmission lines and existing utilities (West or Plains All American Pipeline).
- Although roadway provides the width for non-motorized transportation modes, the steep incline limits the type of bicyclist using the NBL facility.
- Snow and ice issues related to the steep incline would remain a potential threat on NBL.
- Significant snow drifting and maintenance due to prevailing wind and depth of roadway below adjacent ground for SBL.
- Additional right-of-way required.

Figure 5.6 Alternative 4a: Alignment placement east of Whitney Gysel Barn Structure

Alternative 4b: Alignment placement West of Whitney Gysel Barn Structure

Advantages:

- No impact to existing barn structure or existing petroleum transmission lines.
- Provides accessibility for non-motorized transportation modes and pedestrians on SBL.
- Mitigates snow drifting and ice on SBL facility.

Disadvantages:

- Adjacent property somewhat bifurcated by roadway development.
- Although roadway provides the width for non-motorized transportation modes, the steep incline limits the type of bicyclist using the NBL facility.
- Snow and ice issues related to the steep incline would remain a potential threat on NBL.
- Additional right-of-way required.

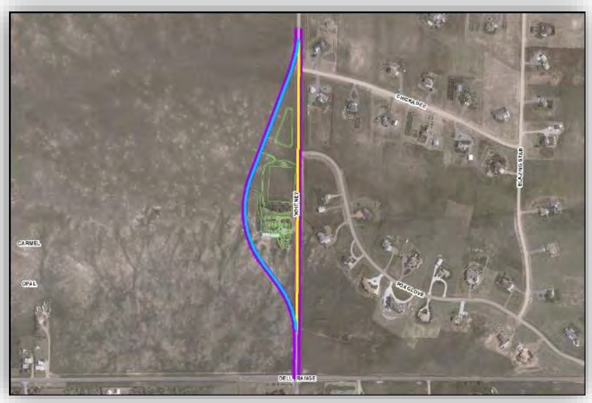

Figure 5.7 Alternative 4b: Alignment placement west of Whitney Gysel Barn Structure

Alternative 5: Three-lane Roadway, Revised Alignment, Accessible Profile, and Impact to Plains All American Pipeline (PAAPL). This intent of this alignment alternative was to only impact one of the two parallel petroleum pipelines within the Whitney Road right-of-way. This alternative utilized a three-lane roadway section, snow storage ditches, 4:1 backslopes, and an accessible profile of 5%. The roadway itself consisted of a two (2) 11' travel lanes, 12' center turn lane, and 7' shoulder/ bike lanes. As a part of the alternative, backslopes were reviewed at both 4:1 and 3:1 with a retaining wall option to minimize adjacent impact to the existing barn structure on the Whitney Gysel property.

Figure 5.8 Alternative 5: Three-lane Roadway, Revised Alignment, Accessible Profile, and Impact to Plains All American Pipeline (PAAPL)

Advantages:

- Adjacent Whitney Gysel property not bifurcated by roadway development.
- Roadway provides limited accessibility for non-motorized transportation modes and pedestrians on SBL.
- No impact to existing PAAPL petroleum transmission line with use of retaining walls.
- Provides accessibility for non-motorized transportation modes and pedestrians

Disadvantages:

- Significant impact to adjacent property.
- Impact to existing barn structure.
- Retaining walls required to mitigate the impact to the PAAPL petroleum pipeline.
- Additional right-of-way required.
- Significant snow drifting and maintenance due to prevailing wind and depth of roadway below adjacent ground.

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Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure. This intent of this alignment alternative was to have no impact to either of the two parallel petroleum pipelines within the Whitney Road right-of-way and the Whitney Gysel Barn Structure. The alternate utilized a three-lane roadway section, snow storage ditches, and 4:1 backslopes. The roadway itself consisted of a two (2) 11′ travel lanes, 12′ center turn lane, and 7′ shoulder/ bike lanes. As a part of the alternative, backslopes were reviewed at both 4:1 and 3:1 with a retaining wall option to eliminate adjacent impact to the existing barn structure on the Whitney Gysel property.

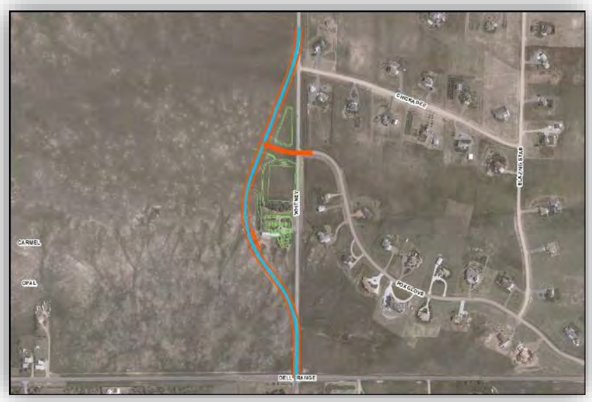

Figure 5.9 Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure

Advantages:

- Provides accessibility for non-motorized transportation modes and pedestrians on SBL.
- No impact to existing barn structure.
- No impact to existing petroleum transmission lines.
- Provides accessibility for non-motorized transportation modes and pedestrians.
- Mitigates snow drifting and ice.

Disadvantages:

- Whitney Gysel development property bifurcated by roadway development.

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Alternative 7: Three-lane Roadway, Revised Alignment East, Accessible Profile, No Impact to Whitney Gysel Barn Structure. This intent of this alignment alternative was to have no impact to the Whitney Gysel Barn Structure and Petroleum lines. The alternate utilized a three-lane roadway section, snow storage ditches, and 4:1 backslopes. The roadway itself consisted of a two (2) 11' travel lanes, 12' center turn lane, and 7' shoulder/ bike lanes, 6' attached walk west side of roadway. The option appeared to be viable in theory however, after close examination, the option could not be shifted far enough east to prevent impacting one of the petroleum lines (i.e. PAAPL and Suncor). The only way to avoid impact to a petroleum line (PAAPL) was to install a 15' retaining wall on the west side. Furthermore, residential properties are burdened with major impacts to small lots on the east side of the alignment due to the large movement of earthwork required to realign the roadway.

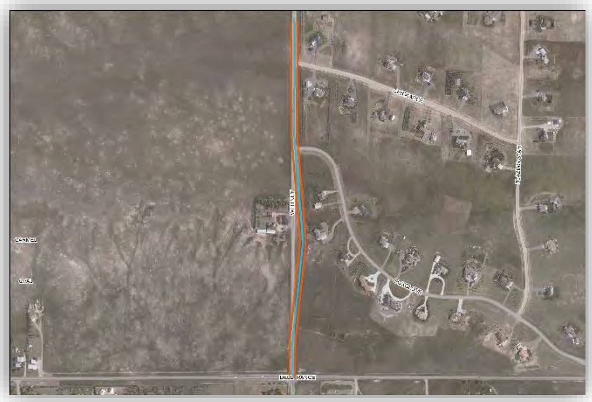

Figure 5.10 Alternative 7: Three-lane Roadway, Revised Alignment East, Accessible Profile, No Impact Whitney Gysel Barn Structure

Advantages:

- No impact to existing barn structure.
- Provides accessibility for non-motorized transportation modes and pedestrians.

Disadvantages:

- Significant impact to both existing petroleum transmission lines.
- Significant snow drifting and maintenance due to prevailing wind and depth of roadway below adjacent ground.
- Significant impact to adjacent property east of roadway.

North Alignment Alternative Analysis

The north alignment alternatives summarized above were qualitatively evaluated and compared based on select four (4) criteria group, questions, and sub-weight outlined as follows. Please note the sub-weight criteria was based on engineering judgement but is subjective and therefore depends on the perspective of the person assessing measures. The evaluation categories and questions are listed in Table 5.5 Alignment Analysis Criteria and Questions. The performance of each alternative was evaluated according to these criteria and results of the evaluation are compiled in Table 5.6 North Alignment Alternatives Analysis. The performance of each criteria was based (1) – Excellent, (2) – Fair, (3) – Poor, and (4) – Unacceptable.

Table 5.5 Alignment Analysis Criteria and Questions

Criteria	Questions?	Sub-weight
Traffic Safety	1. Does the alternative worsen traffic safety conditions? 2. Does the alternative meet the minimum criteria established by the UDC and LCLU documents for the City of Cheyenne and Laramie County? 3. Does the alternative provide for the projected future volumes anticipated for the area?	50%
Developable and Compatible	1. Is the alternative sensitive to the needs and impacts of stakeholders?	20%
Fiscally Responsible	1. Is the alternative too costly to construct? 2. Could the alternative construction be phased to minimize future expense? 3. Does the alternative minimize long term maintenance cost?	25%
Accessible	1. Does the alternative serve all transportation users?	5%

Table 5.6 North Alignment Alternatives Analysis [5]

Criteria	Alternative							
	1 Do Nothing	2 Sep. Trail 8% Road	3 5% Road	4a 5% SBL East of Barn 8%	4b 5% SBL West of Barn 8%	5 5% Road East of Barn	6 5% Road West of Barn	7 5% Road East of ROW
Traffic Safety	3	2	2	2	2	2	1	2
Developable and Compatible	4	1	3	4	3	4	3	4
Fiscally Responsible	3	1	3	3	2	3	2	3
Accessible	4	2	1	2	2	1	1	1
Weighted Average	3.25	**1.55**	2.4	2.65	2.2	2.6	**1.65**	2.6

[5] Performance Criteria: (1) – Excellent, (2) – Fair, (3) – Poor, and (4) – Unacceptable.

Selection of Recommended North Whitney Alignment Alternative

The results of the alternatives analysis were vetted through the design team, steering committee, and various stakeholders. Based on the criteria, the most viable alternatives are Alternative 2: Existing Alignment with Maximum Allowable Profile (3 Lane Section) and Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure. Both alternatives meet the primary objectives of the alignment to mitigate the steep roadway grade, improve safety for users, and establish a non-motorized sidewalk/path that meets the Americans with Disability Act (i.e. ADA) accessibility requirements while minimizing impacts. However, these alternatives distinctively counter each other. For example, Alternative 2 requires no additional right-of-way and minimizes the impact to adjacent property while Alternative 6 bifurcates the private property and impacts the adjacent property. Conversely, potential for ice and snow issues related to steep grades remains a disadvantage with Alternative 2 and is removed in Alternative 6. Both alternatives do not necessitate relocation of the petroleum lines but, further subsurface utility investigations will be needed prior to final design. A summary of the advantages and disadvantages of the top two alternatives is shown in Figure 5.11 Direct Comparison of Highest Rated Whitney North Alignment Alternatives.

Alternative 2:

Existing Alignment with Maximum Allowable Profile (3 Lane Section) with Independent Accessible Non-Motorized Route

Advantages:
- Little to no impact to adjacent property
- No impact to barn structure
- Minimal impact to existing utilities
- Provides independent accessible route
- No additional right-of-way required.

Disadvantages:
- Snow and ice issues related to the steep incline would remain a potential threat.
- Steep incline limits the type of bicyclist
- Potential impact to underground petroleum transmission lines.
- Non-motorized path not ideally located

Alternative 6:

Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure

Advantages:
- Provides accessible route.
- No impact to existing barn structure
- Minimal impact to existing utilities
- Mitigates snow drifting and ice.

Disadvantages:
- Whitney Gysel development property bifurcated by roadway development.

Figure 5.11 Direct Comparison of Highest Rated Whitney North Alignment Alternatives

Consequently, after careful consideration AVI recommends Alternative 2: Existing Alignment with Maximum Allowable Profile (3 Lane Section) with accessible non-motorized route as the recommended alternative for the north alignment with the following stipulation: Alternative 6: Three-lane Roadway, Revised Alignment, Accessible Profile, No Impact to Plains All American Pipeline (PAAPL) or Whitney Gysel Barn Structure should remain as a possible solution for the roadway development. This will allow flexibility to both the developer and the jurisdictional entity as development agreements and land use plans are formalized.

Conceptual Intersection Options and Recommended Alternatives

The goal of the intersection improvements is to create practical solutions that result in a multi-model corridor which fulfills the following objectives:

- Is sensitive to the needs of the property owners,
- Promotes safety,
- Minimizes long term maintenance,
- Fiscally responsible,
- Efficiently serves all transportation users.

Intersection alternatives were developed and vetted through a collaborative planning process which included known stakeholders. These included the design team, roadway users, land owners, business owners, interested stakeholders, jurisdictional planning commissions, governing bodies, and the project steering committee. The recommended alternatives summarized in the following sections of the report considered every stakeholder's unique opinions and prospective and attempted to achieve consensus. However, in order to properly evaluate and ultimately make an objective recommendation, a systematic data-driven and performance-based approach was utilized to evaluate and identify an optimal recommended alternative. Consequently, a majority and not complete consensus was achieved due to the unique prospective and diverse opinions of all the stakeholders. The following primary intersections required an alternative analysis:

- Whitney Road at U.S. 30
- Whitney Road at Dell Range Blvd.

The following Table 5.6 Intersection Alternative Evaluation Criteria summarizes the evaluation criteria and context developed and used to determine the recommended intersection improvements. Please note the sub-weight for each criteria component was based on engineering judgement and is somewhat subjective and therefore depends on the perspective of the person assessing measures.

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Table 5.7 Intersection Alternative Evaluation Criteria

Criteria	Context	Sub-weight
Construction Cost	Preliminary level construction costs are summarized in Table 5.7 Cost Estimates and detailed in Appendix D.	20%
Right-of-way	The alternative minimizes the amount and cost of required right-of-way area requirements.	10%
Constructability	The constructability parameter is based the ease of construction and the ability to minimize impacts to adjacent landowners, businesses, and the traveling public.	2.5%
Ability to Phase Construction	The relative ease of constructing an alternative in sequential phases or layered components.	5%
Maintenance Cost	This consists of operating costs and indirect costs for maintenance. Maintenance includes routine upkeep, replacements. Indirect costs are unforeseen expenditures that may occur as a result of implementation of an alternative (e.g. impact cost to other roadways, etc.).	10%
Stakeholder Consensus	Input from the public involvement process based on the written and verbal comments received and summarized in the Collaboration section of the study. Is the alternative acceptable by the public, local jurisdictions, and other stakeholders?	15%
Environmental Impact	The alternative has potential to affect environmental constraints such as wetlands, waterbodies, floodplains, etc. Please see the Environmental Review, Appendix F.	2.5%
Qualitative Traffic Analysis	The alternative that best provides the highest operation level or service at the horizon year 2040. See Appendix D Traffic Analysis for additional information.	10%
Traffic Safety	Does the intersection alternative address the safety need by enhancing safety performance? Does the alternative meet the minimum criteria established by the UDC and LCLU documents for the City of Cheyenne and Laramie County?	25%

Intersection of Whitney Road at U.S. Highway 30

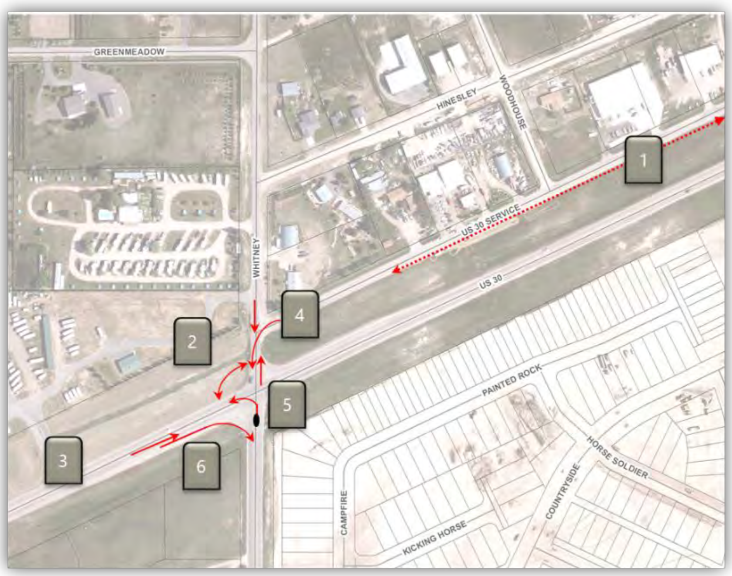
This intersection is currently under jurisdictional control of the State of Wyoming Department of Transportation. Large vehicles use the intersection regularly including semi-truck and trailer combinations, recreational vehicles, mobile homes, and tow trucks for local business access on Whitney Road and the U.S. 30 North Service Road.

The current post speed limits are as follows:

U.S. 30, 55 mph; Whitney Road, 30 mph. Upon review of the existing intersection the following observations were noted as significant and are illustrated in Figure 5.12 Significant Observations Intersection of Whitney Road at U.S. 30.

Cut-thru traffic from and to Saddle Ridge Subdivision using the U.S. 30 Service Road and Saddle Ridge Trail during peak hour demands.

- The intersection is skewed at an angle > 10° at 25.8°
- The proximity of adjacent driveway accesses creates unsafe turning movements
- Unsafe opposing cross maneuver from U.S. 30 North Service Road southbound onto Whitney Road
- Inadequate storage que length as a result of the installation of pedestrian refuge island
- "Ghosted" thru and auxiliary turn lane related to the skew angle of the intersection for vehicles traveling northbound on Whitney Road.
- Lack of pedestrian facilities exception on the south leg of intersection.



1	Cut-thru traffic from Saddle Ridge Trail during peak hours
2	Intersection Skew 115.8°(25.8°)
3	Proximity of driveway accesses to intersection
4	Unsafe opposing cross maneuver
5	Inadequate storage length due to pedestrian refuge
6	"Ghosted" thru lane to auxiliary right turn lane

Figure 5.12 Significant Observations Intersection of Whitney Road at U.S. 30

Three primary alternatives appeared to be the most viable to consider during the design and collaboration process. Those alternatives were No build, Signalization, and Realign Intersection to Remove skew angle. The latter alternatives are illustrated in Figure 5.14 Realign Intersection/ Remove Skew and Figure 5.13 Signalize and Widen Intersection.

Conceptual Options and Recommended Alternative

No Build Alternative. Based on the anticipated increased traffic volumes the No Build alternative from the onset was virtually eliminated during the evaluation process. It was not a consensus option from the stakeholders, does not provide any traffic safety improvements, and will continue to see an increase in maintenance cost. Given the crash history, severity of crashes, and traffic operation based on increased volumes, a No build option does not appear to be the best alternative option.

Signalize and Widen without Removing Skew. See Figure 5.13 Signalize and Widen Intersection without Removing Skew for reference. Widening and signalizing the intersection provides a viable option for this intersection that has a lower construction cost and does not require any right-of-way. However, from the traffic safety criterion, the intersection signalization provides a better intersection than the No Build option. What remains is the visibility issues caused by the substantially-different from 90-degree angle of the intersection. Even with signalization, drivers making right-turn-on-red (RTOR) maneuvers will still have difficulty seeing on-coming traffic at the intersection with a severe skew. This is due in part to the geometry of roadway, vehicle structural frames or other parts blocking a driver's field of vision, and the added difficulty of a driver turning their head at an obtuse angle. A Policy on Geometric Design of Highways and Streets, 2018 indicates that in new or redesigns of existing facilities where right-of-way is restricted the intersection design, should meet at an angle of not less than 75 degrees. Additionally, the policy indicates that at skewed intersections where the approach leg to the left intersects the driver's approach leg an angle less than 75 degrees, the prohibition of RTOR is desirable. The current intersection intersects at an angle of 65.2 degrees which is also the opposing leg to left which intersects the driver's approach leg (i.e. southbound Whitney Road to eastbound U.S. 30).

Realign Intersection to Remove Skew. See Figure 5.14 Realign Intersection/ Remove Skew for reference. Realigning, widening, and signalizing when warranted provides a very viable option from the traffic safety and stakeholder consensus criterion. The challenges of the alternative are the required right-of-way acquisition to remove the skew from the intersecting roadways and the increased cost. Improving the intersecting angle while increasing the width and corner radii will improve the operational use of the facility for large tractor trailer combinations and dramatically improve the safety of intersection as noted above in the discussion of the Signalize and Widen without Remove Skew alternative.

Figure 5.13 Signalize and Widen Intersection without Removing Skew

Figure 5.14 Realign Intersection/ Remove Skew

The following Table 5.8 Alternative Analysis Whitney at U.S. 30 summarizes the alternative analysis and identifies the preferred alternative based on the evaluation criteria. The performance of each criteria was based (1) – Excellent, (2) – Fair, (3) – Poor, and (4) – Unacceptable in conjunction with the context and weight established illustrated in Table 5.7 Intersection Alternative Evaluation Criteria. Based upon the scoring criteria, the option with the lowest average is the highest-ranking option and is the Realign Intersection to Remove Skew.

Table 5.8 Alternative Analysis Whitney at U.S. 30

Criteria	Whitney at U.S. 30		
	No Build Option	Signalization without Removing Skew	Realign Intersection to Remove Skew
Construction Cost	1	1	2
Right-of-way	1	1	3
Constructability	1	1	2
Ability to Phase Construction	1	1	2
Maintenance Cost	4	2	2
Stakeholder Consensus	4	2	1
Environmental Impact	1	1	1
Qualitative Traffic Analysis	4	1	1
Traffic Safety	4	3	1
Weighted Average	2.8	1.75	1.575

AVI recommends the alternative, Realign Intersection to Remove Skew based on the following:

- Provides the most improved traffic safety
- Improved traffic flow and efficiency
- Accommodates multi-modal transportation
- Signalization can be phased to be constructed or installed as warranted
- Adjacent property owners amicable to right-of-way acquisition purchase based on fair market value.

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The final recommended alternative is illustrated in Figure 5.15 Recommended Intersection Alternative Whitney Road at U.S. 30.

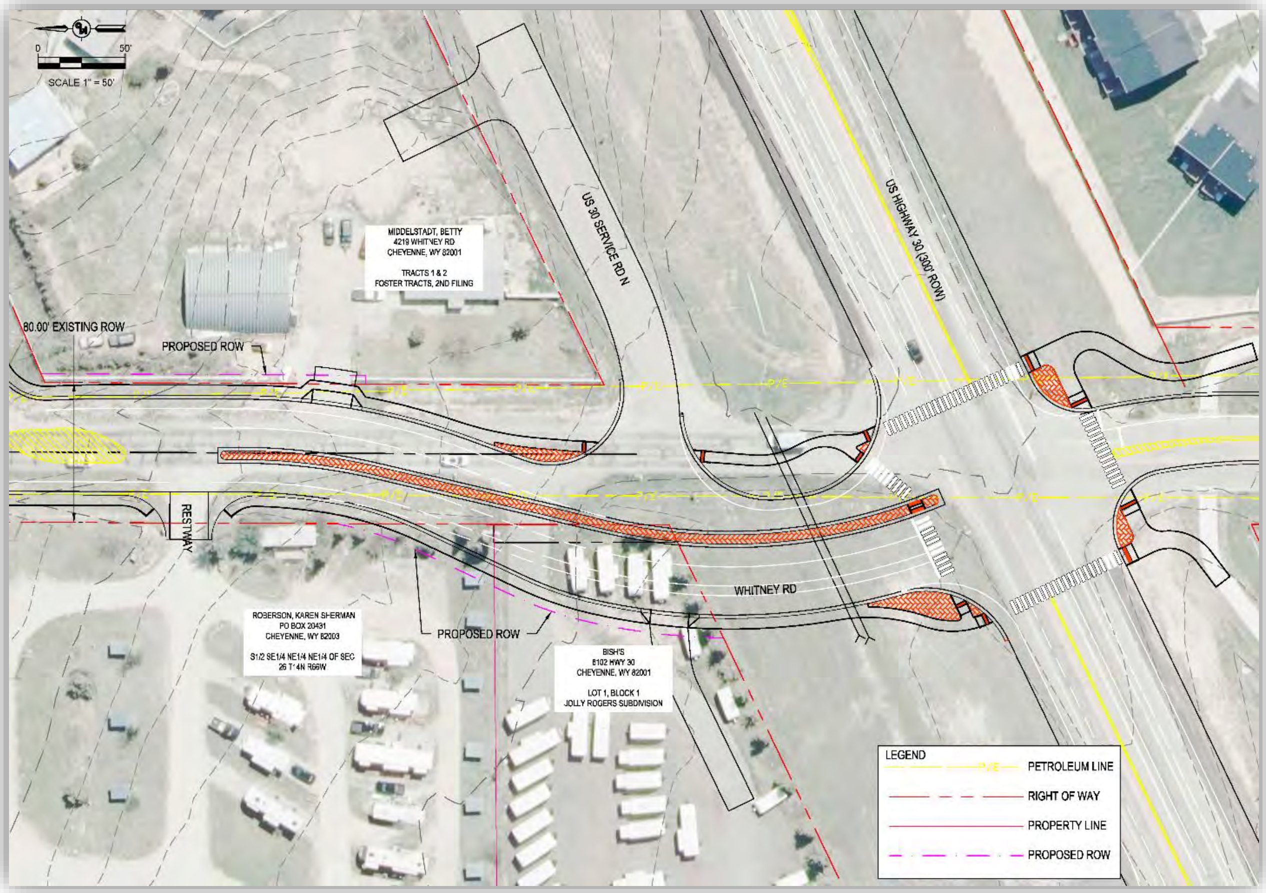

Figure 5.15 Recommended Intersection Alternative Whitney Road at U.S. 30

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Intersection of Whitney Road at Dell Range Blvd.

This intersection is currently under jurisdictional control of Laramie County. Large vehicles use the intersection regularly including semi-truck and trailer combinations, recreational vehicles, mobile homes, and truck and horse trailer combinations accessing the rural residential areas and oil production pads north of Dell Range Blvd. The current posted speed limits are as follows: Dell Range Blvd., 45 mph; Whitney Road, 30 mph (South of Dell Range Blvd.), 40 mph (North of Dell Range Blvd.), and 45 mph (North of Foxglove Road). Upon review of the existing intersection the following observations were noted as significant and are illustrated in Figure 5.16 Significant Observations Intersection of Whitney Road at Dell Range Blvd.

- Snow and ice issues related to wind direction, surroundings, and steep grades.
- Steep vertical profile of Whitney Road up to 13%.
- The proximity of adjacent driveway accesses creates unsafe turning movements
- The intersection of Whitney Road at Dell Range Blvd. has limited visibility at early morning, dusk, night, and significant weather which creates potentially unsafe driving conditions.

Figure 5.16 Significant Observations Intersection of Whitney Road at Dell Range Blvd.

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Conceptual Options and Recommended Alternative

The Whitney Road and Dell Range Blvd. intersection is situated within Cheyenne's and Laramie County's high growth corridors. While currently rural in character, the land uses surrounding the intersection are transitioning into a more suburban development pattern. The Whitney Ranch and Saddle Ridge developments are the two largest influencing land use and traffic changes occurring in the area. This intersection is a very important component in the Cheyenne and Laramie County roadway network. Intersections control the amount of traffic able to use the intersecting roadways and together with the capacity of the connecting roadways determines network capacity. The appropriate intersection design and control solution at this intersection will provide improved safety, increase operational performance, and encourage the development and redevelopment of the surrounding area and corridor. The primary objective of the recommended alternative should be a fiscally responsible control that balances the safety, operational efficiency, road environment, roadway users, and physical constraints of the site.

Three primary alternatives were evaluated at the Dell Range and Whitney Road intersection: No Build, Standard Intersection, and Roundabout. These options are summarized below followed by an overview and summary of the alternative's analysis.

No Build Alternative. The No Build alternative was not a consensus option from the stakeholders, does not provide any traffic safety improvements, and will continue to see increases in maintenance cost. Given the current traffic use, anticipated future volumes, and crash history, the no build alternative was eliminated from consideration.

Standard Intersection Alternative. See Figure 5.20 Standard Intersection Alternative for reference. A standard four-way intersection alternative would include widening, signalizing, and providing auxiliary lanes where appropriate and provides a viable option for this intersection that has a lower construction cost and does not require any right-of-way. Signalization would be determined by warrants and is predicated on development occurring within and adjacent to the corridor. With new developments like Whitney Ranch, Woods Landing, ERA, and redevelopment projects like Mission Village, and surrounding property redevelopment potential surrounding the corridor, this does not seem unrealistic.

One of the major objectives of any traffic signal design is to maintain the free flow of traffic. This design requires that important decisions be made about assigning green time to vehicle movements (e.g. signal phasing). Exclusive phasing such as left-turn arrows generally increase the cycle length and add delay. In this case, the recommended future roadway has dedicated left turn lanes on all intersection legs. Design factors such as progression efficiency (i.e. signal coordination with signals in series), pedestrian times, protected and clearance intervals need to be incorporated into final signal design. All these design features can lead to increased delays at an intersection. The proposed signalized intersection configuration is summarized on the following page:

- **Whitney Road southbound approach**: One (1) right-turn (RT) lane, one (1) thru lane, one (1) left-turn (LT) lane.
- **Whitney Road northbound approach**: One (1) combined right-turn (RT) and thru lane, one (1) left-turn (LT) lane.
- **Dell Range Blvd. east and west approach:** One (1) right-turn (RT) lane, one (1) thru lane, one (1) left-turn (LT) lane.

Roundabout Alternative. See Figure 5.19 Single Lane RAB Alternative for reference. A rural roundabout alternative was conceptualized for this alternative. The roundabout is proposed with a one-hundred thirty (130) foot inscribed circle diameter with a design speed of 25 mph. The roundabout would include one lane approaches for all legs with channelized islands, pedestrian, and bicycle accommodations. Due to higher anticipated vehicle speeds on Dell Range Blvd., horizontal chicanes were included in the conceptual design elements of the channelized islands. During the Collaboration portion of the planning stakeholders believed trucks, emergency vehicles, RV campers, and horse trailers would have a difficult time negotiating the roundabout. The major concern is related to the larger vehicles negotiating too small of inscribed interior circle radius and too high of curb height on the apron of the central interior island. Most of the surrounding area roundabouts have such high drive over apron curbs that trailer tires are dragged and rub around the apron curb as the truck is turning within the roundabout. Through proper design, roundabouts can easily accommodate emergency and larger size vehicles.

Alternative Analysis

During the early stages of the planning and design process this intersection received consensus from the Steering Committee, design team, and public stakeholders for a single lane roundabout as a long-term solution. The recommendation was based on a safety assessment and the 2016 traffic projections and analysis documented in the approved City of Cheyenne Whitney Ranch Traffic Impact Assessment. However, it was later discovered that the original study did not estimate the redistribution of projected future traffic utilizing the Christensen Road Extension to Interstate 80. This project which is currently under construction will significantly change driver patterns which allows another network connection to cross over the Union Pacific Railroad tracks into the City of Cheyenne. The additional traffic routed to the intersection negatively impacted the level of service (LOS) and a third alternative was evaluated. This alternative is a One lane Roundabout Alternative w/ EB and SB Right Turn Lanes. The analysis within this report documents both the most recent and historic operational assessment for context and record.

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Intersection Capacity

Year 2040 traffic operational assessment was conducted by Kimley-Horn for the Whitney Road and Dell Range Blvd. intersection. The alternatives evaluated included the no build; a single lane roundabout; a single lane roundabout with eastbound and southbound additional right-turn slip ramps; and, a signalized intersection with left-turn and a shared through and right-turn travel lane on each approach. The level of service (LOS) and delay analysis is shown below Table 5.9 Kimley-Horn 2040 Traffic Level of Service (LOS) and Delay.

The revised or updated analysis by Kimley-Horn shows the signalized intersection and the roundabout with additional right turn lanes meet the minimum traffic operation expectation in both the AM and PM peak hours. The roundabout operates at a LOS D with an overall delay of 31. 8 seconds in the PM peak hour while the signalized intersection operates slightly better with a LOS C with an overall delay of 27. 5 seconds in the PM peak hour. The software used to analyze the signalized intersection was Synchro 10®. Sidra Intersection 8.0® was used for the roundabout.

Table 5.9 Kimley-Horn 2040 Traffic Level of Service (LOS) and Delay

Movement	Delay [Second] (HCM:LOS, RAB: LOS)							
	No Build Two-Way Stop Control		One Lane Roundabout		One Lane Roundabout w/ EB & SB Right Turn		Signalized Intersection	
	AM	PM	AM	PM	AM	PM	AM	PM
Overall	-	-	19.9 (C)	45.5 (E)	11.9 (B)	31.8(D)	33.7(C)	27.5(C)
NB Approach	>300	>300	-	-	-	-		
EB Approach	8.8 (A)	8.5 (A)	-	-	-	-		
WB Approach	8.0 (A)	9.1 (A)	-	-	-	-		
SB Approach	>300	>300	-	-	-	-		

The original analysis conducted by Sustainable Traffic Solutions (STS) included a single lane roundabout; and a signalized intersection with one (1) right-turn (RT) lane, one (1) thru lane, one (1) left-turn lane on the south, east, and west approaches and a combined right-turn and thru lane and one (1) left-turn lane on the north approach. The level of service (LOS) and delay analysis is shown in Table 5.10 STS 2040 Level of Service (LOS) and Delay.

STS showed the signalized intersection and single lane roundabout meet the minimum traffic operation expectation in both the AM and PM peak hours. The roundabout operated the best with a LOS A in the AM peak hour with a delay of 9.7 seconds and a LOS C with an overall delay of 16.9 seconds in the PM peak hour. The signalized intersection operates slightly worse with a LOS D in the AM peak hour with an overall delay of 38.5 seconds and a LOS C in the PM peak hour with a delay of 29.1 seconds. STS utilized PTV Vistro 6® to analyze the intersection.

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Table 5.10 STS 2040 Level of Service (LOS) and Delay

Movement	Delay [Seconds] (LOS)			
	One Lane Roundabout		Signalized Intersection	
	AM	PM	AM	PM
Overall	9.7 (A)	16.9 (C)	38.5(D)	29.1 (C)
NB Approach	5.9 (A)	23.3 (A)	-	-
SB Approach	14.2 (B)	11.6 (B)	-	-
EB Approach	7.0 (A)	16.4 (C)	-	-
WB Approach	7.4 (A)	14.6 (B)	-	-
NB LT	-	-	42.1 (D)	34.5 (C)
NB Thru + RT	-	-	31.6 (C)	46.0 (D)
SB LT	-	-	31.0 (C)	39.8 (D)
SB Thru	-	-	87.8 (F)	33.3 (C)
SB RT	-	-	30.0 (C)	22.5 (C)
EB LT	-	-	15.8 (B)	23.3 (C)
EB Thru	-	-	10.6 (B)	19.5 (B)
EB RT	-	-	9.8 (A)	15.3 (B)
WB LT	-	-	12.2 (B)	24.3 (C)
WB Thru	-	-	12.6 (B)	17.3 (B)
WB RT	-	-	9.6 (A)	14.5 (B)

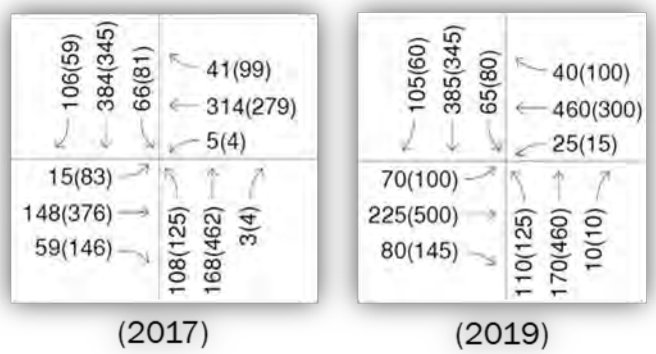

Figure 5.17 2040 Peak Hour AM/ (PM) Volumes Whitney Road at Dell Range Blvd.

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Looking closer at the Peak Hour volumes between the original and revised distribution of Christensen Road, it appears the most significant increase in traffic volumes were on the EB PM Peak Hour and WB AM Peak Hour of Dell Range Blvd. The volumes increased by 33% and 46.5%, respectively.

Ultimately, operational efficiency is only one of many important components for evaluating this intersection. Different methods/ software used to calculate delays and LOS produce different results as illustrated in Table 5.9 and Table 5.10. Two independent Professional Traffic Engineers using the same Peak Hour volume data yielded different level of service grades and total delay values. This does not indicate whether one method or another is correct, incorrect, or more accurate. All the methods used to calculate the operational assessment are considered state of the practice and a model of an intersection. The model uses data that has been projected to emulate driver behavior (i.e. peak hour volumes) and development that has not been observed. The results and different methods should be relatively compared to each other and not be interpreted as exact.

Additionally, the delay thresholds set for LOS grades for signalized intersection and roundabouts by the Highway Capacity Manual, Sixth Edition (HCM) merit careful evaluation. The HCM Level of Service (LOS) delay thresholds for roundabouts are set to the same standard as stop sign-controlled intersections. Meaning that the same delay experienced by drivers at a signalized intersection considered acceptable can be unacceptable at standard stop control intersection or roundabout. For example, A level of Service E for an unsignalized intersection is set >35-50 seconds while a signalized intersection is set at >55-80 seconds. We believe this creates a LOS bias against roundabouts when compared with signalized intersection treatments when showing a LOS grade equal to or lower than a B. The actual computed delay was used to compare alternatives not just the Level of Service letter grade.

Consequently, the analysis generally indicates that the roundabout alternatives operate at a high level of service in the 2040 Peak AM while the signalized intersection operates more efficiently in the 2040 Peak PM.

Right-of-way Requirements

The signalized intersection alternative configuration can be accommodated within the existing 80' south of the Whitney Road right-of-way limits. The roundabout option requires additional right-of-way in northwest and southeast portions of the intersection to accommodate the required improvements. However, the Dell Range Blvd. portion of the intersection will require additional seventeen (17) feet of right-of-way on the north regardless of the alternative selected. This is to allow for additional lanes required as a result of future anticipated development.

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Costs

Cost estimates for the alternatives were developed using the following information and assumptions:

- Engineering estimated at 10% of Estimated Construction cost excluding contingency or right-of-way costs.
- Cost estimates were development using data from the Weighted Bid Prices compiled by the Wyoming Department of Transportation (WYDOT); Colorado Department of Transportation (CDOT); and from historical AVI project data and experience.
- Quantities were based on conceptual layouts and are not intended to be used as final quantities.
- Please note that the costs and unit prices were calculated in Present Worth or Present Value dollars. Adjustments should be made for years beyond the present to better estimate the needed dollars for any future improvement plan(s).

Alternative	Estimated Costs					
	Construction	Right-of-way	Engineering	Contingency	Total	For Estimate
No Build Option	$ -	$ -	$ -	$ -	$ -	**$ -**
Single Lane Roundabout	$1,010,035.50	$ 6,413.40	$101,004.00	$151,505.00	$1,268,957.90	**$1,270,000.00**
Single Lane Roundabout w/ Slip Lanes	$1,142,608.50	$ 119,700.00	$114,261.00	$171,391.00	$1,547,960.50	**$1,550,000.00**
Signalized Intersection	$1,058,671.00	$ -	$105,867.00	$158,671.00	$1,323,209.00	**$1,330,000.00**

The cost difference between roundabout and a traffic signal is comparable. Where long-term costs are considered, roundabouts eliminate hardware, maintenance and electrical costs associated with traffic signals, which have been estimated at $3,500 to $10,000 per year.

Safety

Studies have shown that roundabouts are safer than traditional stop sign or signal controlled intersections. Washington State Department of Transportation have found a 37% percent reduction in overall collisions, a 75 percent reduction in injury collisions, and a 90% reduction in fatality collisions (Transporation, 2020). It is generally accepted by the engineering design community that roundabouts provide proven benefits to vehicle traffic in terms of safety. They dramatically reduce the incidence of fatal and severe-injury crashes compared to traditional signalized intersections. However, roundabouts have generated a significant number of subjective complaints from pedestrians and bicyclists both nationally and locally suggesting difficulties and safety concerns. In addition, recent observational and safety data at the nearby roundabout at Converse Avenue and Pershing Blvd. confirm that local drivers misunderstand the rules of the roundabout, resulting in improper use and avoidable collisions (Mark T. Johnson, 2019). The majority or 75% of all crashes in this local roundabout where a result of entering vehicles failure-to-yield.

Driver Familiarity, Public Opinion, Involvement, and Impact

Researchers have conducted studies on public opinion of roundabouts in the US. Public opinion polls of drivers in Hutchinson, Kansas; Harford County, Maryland; and Reno, Nevada (communities where roundabout construction was planned) show that more than half of surveyed drivers (55%) were opposed to roundabout construction and were not aware of their operational characteristics (Dr. Aemal Khattak, 2009). Drivers surveyed stated safety, confusion, or that they would rather have a traffic signal as the main reasons for opposing roundabouts both before and after construction. The reasons given for opposing roundabouts were the same before and after roundabout construction, but the overall proportion of drivers opposed to roundabouts reduced by 27 percent after roundabout construction.

In our public involvement efforts, we specifically asked stakeholders to evaluate the a "Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout". Respondents were given the option of Definitely Like, Like, No Opinion, Do Not Like, and Definitely Do Not Like as options. The results indicated that 49.4% of the stakeholders were in favor of the single lane roundabout with 45.3% opposing the recommendation. 6.2% of the respondents had "No Opinion". Concerns varied by some of the primary concerns were related to the following:

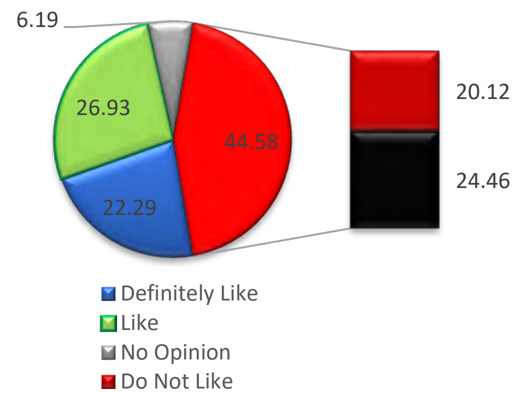

Figure 5.18 Stakeholder Evaluation: Single Lane Roundabout

- The ability of the roundabout to accommodate larger vehicles including trailers, recreational vehicles, and emergency services
- Snow, ice, and weather concerns
- Incompatible with the current and future use of Dell Range. Specifically, placing a roundabout within a corridor of signalized intersections
- More crashes than a standard intersection
- Perceived high speeds witnessed on the corridor
- Adjacent longitudinal steep grades north of the intersection
- Drivers misunderstanding of the rules of a roundabout.

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Environmental

The Whitney Road and East Dell Range intersection is situated within Cheyenne's and Laramie County's high growth corridors. While currently rural in character, the land uses surrounding the intersection are transitioning into a more suburban development pattern. Whitney Ranch and Saddle Ridge are the two largest developments influencing land use and traffic changes occurring in the area.

A zoning and infrastructure assessment of the area shows Whitney Road will function as the City of Cheyenne's eastern boundary for many years. Sewer service expansion in the area is limited east of Whitney Road. Furthermore, most of the properties east of Whitney Road are large lot residential parcels and likely not to redevelop. The Whitney Road and East Dell Range intersection will function as a gateway between the urban and suburban patterns of development within Whitney Ranch, the City of Cheyenne with the more rural development pattern of Laramie County.

Between the two alternatives a roundabout presents a stronger gateway and urban design opportunity for transitioning land uses than a signalized intersection. The roundabout creates a physical transition between the higher travel speeds anticipated in rural areas east Whitney Road and the lower traffic speeds in the more suburban pattern west of Whitney Road. The roundabout balances mobility demands while providing a distinctive place-making opportunity.

Summary of Findings

The following Table 5.11 Alternatives Analysis Whitney Road at Dell Range Blvd. summarizes the alternative analysis and identifies the preferred alternative based on the evaluation criteria. The performance of each criteria was based (1) – Excellent, (2) – Fair, (3) – Poor, and (4) – Unacceptable in conjunction with the context and weight established illustrated in Table 5.7 Intersection Alternative Evaluation Criteria.

Based upon the scoring criteria, the option with the lowest average is the highest-ranking option is the Single Lane Roundabout by a small margin over the Signalized Intersection.

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Table 5.11 Alternatives Analysis Whitney Road at Dell Range Blvd.

Criteria	Whitney at Dell Range Blvd.				Sub-weight
	No Build Option	Single Lane Roundabout	Single Lane Roundabout w/ Slip Lanes	Signalized Intersection	
Construction Cost	1	2	3	2	**15.00%**
Right-of-way	1	2	3	1	**10.00%**
Constructability	1	2	2	1	**2.50%**
Ability to Phase Construction	1	1	1	1	**5.00%**
Maintenance Cost	4	2	2	3	**10.00%**
Stakeholder Consensus	4	3	3	1	**15.00%**
Environmental Impact	1	1	1	1	**2.50%**
Qualitative Traffic Analysis					
Kimley-Horn Analysis	4	3	3	2	**7.50%**
STS Analysis	4	2	2	2	**7.50%**
Traffic Safety	4	1	2	3	**25.00%**
Weighted Average	2.95	1.90	2.40	2.00	**100.00%**

Figure 5.20 Standard Intersection Alternative

Figure 5.19 Single Lane RAB Alternative

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After careful review and consideration of the alternatives and the alternative analysis of the Whitney Road at Dell Range Intersection, AVI concludes that either a Single Lane Roundabout or Signalized Intersection could feasibly be integrated in the future design of Whitney Road. We recommend that a careful and prudent design approach be incorporated with either approach as WYDOT and Laramie County move forward with the final design. Those additional design elements include further evaluation and incorporation of the following, when available:

- Final TransCAD model data from the Metropolitan Planning Organization's Connect 2045 Project when complete
- Review of continuity and compatibility with intersection plans on adjacent corridor intersection on Dell Range Blvd. at Van Buren Avenue and U.S. 30.
- Incorporation of more accurate traffic impacts and generation from future Whitney Ranch Commercial and Residential components for scale and impact
- Compatibility with the needs and vision of the rural residential users and commercial traffic surrounding the intersection (i.e. larger trucks, recreational vehicle movements, and stock and horse trailers.

We understand that Laramie County and WYDOT were moving forward with the Single Lane Roundabout design. Therefore, we have illustrated that alternative into the final recommendation and implementation portion of the report.

Proposed Corridor Right-of-way Requirements

During this preliminary design phase of the project, the team researched the Laramie County GIS website (GreenwoodMap.com, 2020) and recorded documents in the Laramie County Clerk's office in order to identify potential needs for future right-of-way. The purpose was two-fold; first, to identify the preliminary physical property needs and ownerships and second, to commence open communication with the present landowners.

The planning and design team have made recommendations for right-of-way acquisition that we believe were necessary to fulfill the goals of the project and minimize the impact to existing landowners. Please note that a Wyoming Professional Land Surveyor will be required to establish the existing right-of-way along the corridor and determine the acreages required for the project. The following table and figures summarize the parcels and ownerships which have been identified at the ten (10) percent design level for proposed right-of-way acquisition. These are outlined in the following Table 5.12 Summary or Right-of-way requirements and illustrations.

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Table 5.12 Summary of Right-of-way Requirements

Parcel	Parcel No.	Property Address	Area (Acres)	Anticpated Right-of-way	Owner	Address	Reference
1	14662310000100	DELL RANGE BLVD	1.04	Platting	GYSEL WHITNEY LLC	PO BOX 72, ALBIN, WY 82050	FIGURE 5.21
2	14662520300200	DELL RANGE BLVD	0.12	Vacant	HARRINGTON, HUGH M ET UX	4501 WHITNEY RD	FIGURE 5.22
3	14662520300100	DELL RANGE BLVD	0.15	Level 1 Commercial	CALHOON, RANDY R ET UX	4506 WOODHOUSE DR	FIGURE 5.22
4	14662610100800	4512 WHITNEY RD	0.01 (509 SF)	Residential	MUELLER, MARTIN REV TR ET AL	4512 WHITNEY RD	FIGURE 5.23
5	14662610000100	4212 WHITNEY RD	0.03 (1,407 SF)	Level 2 Commercial	ROBERSON, KAREN SHERMAN	PO BOX 20431	FIGURE 5.24
6	14662611600100	6102 HWY 30	0.14	Level 2 Commercial	JOLLY ROGER LLC	6102 HWY 30	FIGURE 5.24
7	14662520400400	4219 WHITNEY RD	0.02 (921 SF)	Residential	MIDDELSTADT, BETTY	4219 WHITNEY RD	FIGURE 5.24
Total			1.51				

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Figure 5.21 Parcel 1 Exhibit

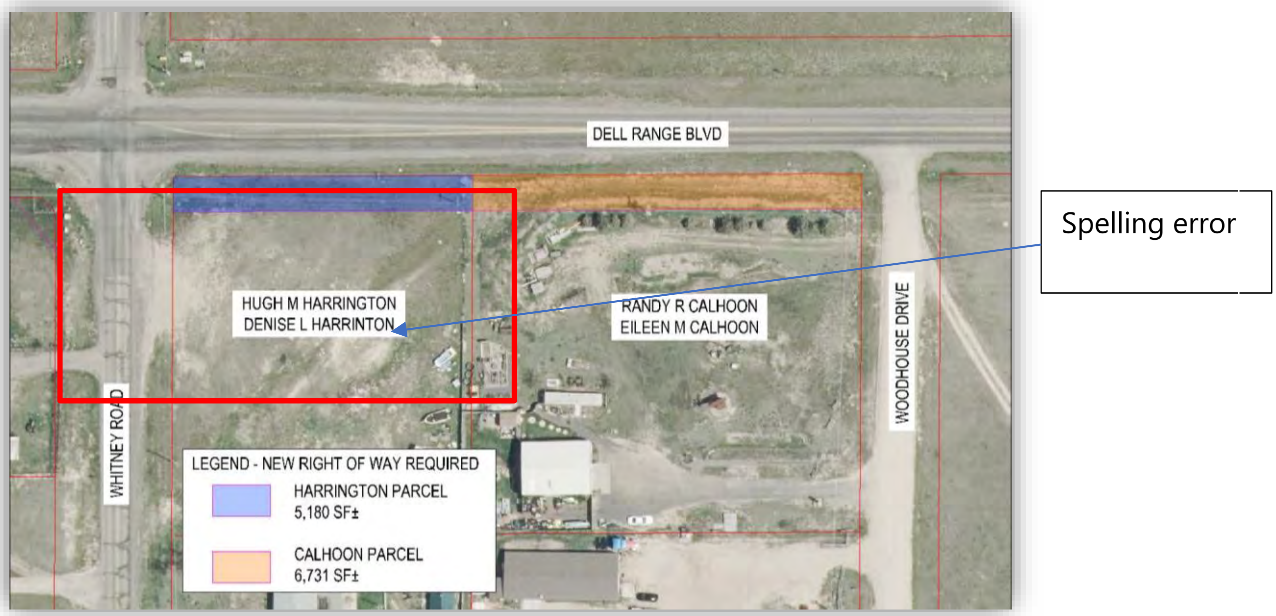

Figure 5.22 Parcel 2 and 3 Exhibit

Figure 5.23 Parcel 4 Exhibit

Figure 5.24 Parcel 5,6, and 7 Exhibit

Post Development Drainage

The corridor, as previously described, is located within the Child's Draw and Dry Creek Drainage Basins. The entire contributory drainage area encompasses about 18 square miles (CH2M Hill, November 1988). Child's Draw is predominantly a rural basin but, is in the process of urbanization. The topography in and around the study area generally slopes to the northeast within Childs Draw basin (brown) and Southwest within the Dry Creek basin (purple) in Figure 5.25 Drainage Basin Overview.

Initially we recommend that the roadway drainage criteria utilize the requirements of the *Laramie County Land Use Regulations 2019*. (County, The Laramie County Land Use Regulations 2019 Edition, 2019) Drainage planning and design shall provide for stormwater detention based on a design storm up to a one-hundred (100) year frequency. Post development design requirements shall be for a system to maintain total contributory site discharge at no greater than a pre-development (i.e. historic) fifty (50) year release rate for a 100-year storm event.

Figure 5.25 Drainage Basin Overview

Additionally, at a minimum, drainage conveyance system elements shall be based on the following criteria for an arterial street:

- Minor Storm (5-year) – No curb overtopping and one interior drive lane clear
- Major Storm (100-year) – Maximum depth 12" above gutter flow line, 6" flow across street intersections.
- Downstream conveyance paths shall be reviewed to ensure no adverse impacts to downstream property or property owners.

The design team developed conceptual drainage plan opportunities for the Whitney Road Corridor. The layout outlined planning level opportunities for improving the post development drainage along the corridor. A brief summary of the systems and critical constraints are outlined below and in Figure 5.26 Conceptual Drainage Plan.

Conceptual Storm Sewer Trunk Line N-1. This sub-basin roughly encompasses Whitney Road from the high point north of Chickadee Drive proceeding north to Storey Blvd./ Beckle Road. The proposed profile mimics the existing topography which creates a low point for the basin on South of Storey Blvd./ Beckle Road. The conveyance system would require a series of inlets at locations along the roadway necessary to capture runoff to meet the minor and major conveyance criteria outlined above.

Conceptual Storm Sewer Trunk Line S-1. This basin roughly encompasses Whitney Road from a natural high point north of Chickadee Drive to south U.S. 30 right-of-way. This basin eventually runs west to the Dry Creek drainage. The proposed profile mimics the existing topography which creates a couple of low points within the profile. The conveyance system would require a series of inlets at the low point locations and along the roadway necessary to capture runoff to meet the minor and major conveyance criteria outlined above. The runoff would then be conveyed to stormwater detention ponds either north of Dell Range Blvd. on the east or west side of the roadway or combination of both. A local offsite inlet near the northeast side of U.S. 30 Service road should be installed to mitigate localized flooding occurring on adjacent properties.

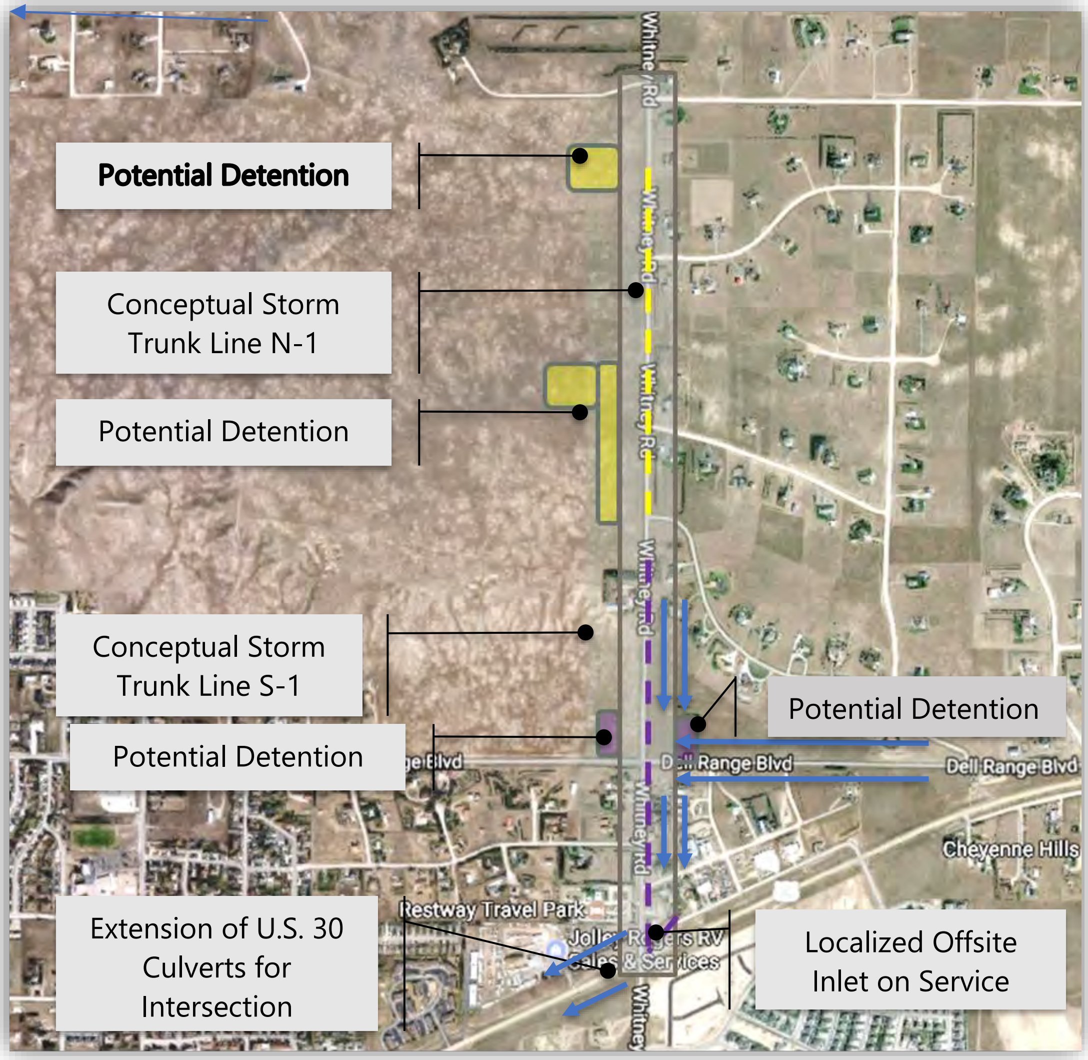

Figure 5.26 Conceptual Drainage Plan

Special Features

Snow Fence. Another concern expressed about the future construction of the Whitney Road corridor was snow drifting due to the natural topography and predominant wind direction. Every effort was made in this design to incorporate design features within the roadway cross section, alignment, and vertical profile to mitigate snow drifting, improving visibility, and reducing slush and ice. However, in most areas, it was impractical to include such design features to mitigate snow movement.

Consequently, we recommend that those areas utilize snow fence as a mitigation method until housing and structures to the northeast mitigate drifting. Unfortunately, the fence will need to be installed on private property due to right-of-way constraints. The basic design benefits and constraints are illustrated in Figure 5.27 Porous and Solid Snow Fence Drift from the *Design Guidelines for the Control of Blowing and Drifting Snow* by Ron Tabler of Tabler & Associates (Ronald D. Tabler, 2003). Benefits include reductions in Snow removal costs, Accidents, Property damage, Road closures, and Pavement maintenance.

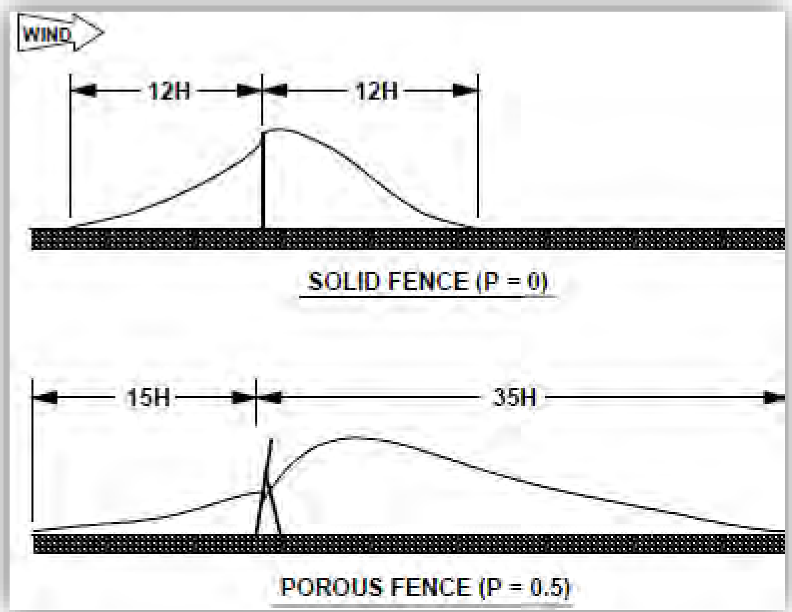

Figure 5.27 Porous and Solid Snow Fence Drift Comparisons

Engineer's Opinion of Probable Costs and Funding Options

Cost estimates for the preferred alternative were developed using the following information and assumptions. Please note that the total costs and unit prices are calculated in Present Worth or Present Value dollars. Adjustments should be made for years beyond the present to better estimate the needed dollars for any future improvement plan(s).

Table 5.13 Cost Estimates 2020

Description of Area	Estimated Costs					
	Construction	Right-of-way	Engineering	Contingency	Total	For Estimate
Whitney Road at Dell Range Blvd. Intersection (RAB W\Slib Lane)	$ 1,142,609	$ 19,700	$ 114,261	$ 171,391	$1,547,961	**$ 1,550,000**
Dell Range Blvd. to U.S. 30	$ 1,245,878	$108,070	$ 124,588	$ 249,176	$1,727,712	**$ 1,730,000**
Sub-total Phase I	$ 2,388,487	$ 227,770	$ 238,849	$ 420,567	$ 3,275,673	**$ 3,280,000**
Storey Blvd. to Dell Range Blvd.	$ 2,446,254	$ -	$ 244,625	$ 489,251	$ 3,180,130	**$ 3,190,000**
					Whitney Road Totals	**$ 6,470,000**

Assumptions:

1. Engineering estimated at 10% of Total Construction costs.
2. Cost Estimates were developed using data from the 2019 Weighted Average Bid Prices, complied by WYDOT; Colorado Department of Transportation (CDOT) 2019 Cost Data Book, compiled by the Engineering Estimates and Marketing Analysis Unit; Typical Costs from historical AVI project experience.
3. Quantities are based on the Conceptual Improvement Plan layouts. Please see Appendix A for additional information.
4. Right-of-way costs are based on listed values of adjacent similar properties gathered by the City of Cheyenne and historical AVI project experience in the region and projects of similar characteristics.

AVI recommends that future costs from the present 2020 dollars and should be updated using the United States Department of Labor and Bureau of Labor Statistics. Quantities are based on the Conceptual Improvement Plan layouts. Please see Appendix A and Appendix D for additional information.

Funding Opportunities
Based on AVI's experience in securing funding for other municipalities, we identified the following potential funding sources for improvements to the City of Cheyenne and Laramie County.

- The public sector: City of Cheyenne, Laramie County, and WYDOT, etc. will play important roles in "readying the area for private investment" through infrastructure improvements, public planning, and policy initiatives. From these initiatives and/or investments, private sector development can be leveraged.
- Funding mechanisms for public infrastructure could include loans and grants (e.g., Wyoming Business Council's Business Ready Community Program and Community Facilities Grant and Loan Program); Community Development Block Grant (CDBG) funds; Federal Surface Transportation Program (STP) revenue bonds; and general obligation bonds; and Sixth Penny Special Use Tax.
- A public-private partnership for development will likely take many forms and have many partners, responsibilities, and funding alternatives. In the end, a successful partnership will ensure that both the public and private sectors will realize reasonable returns on their investments and the community will realize their long-term vision for this portion of Laramie County and the City of Cheyenne.

Implementation Program

Key Planning Considerations. The decisions and directions made in the Whitney Corridor Plan were developed as a collaborative effort and were shaped by several influences. Those decisions and directions that are documented in this plan were shared with the community during the public outreach and engagement process. Every effort was made for complete transparency through open communication with participants of the team, stakeholders, and community participants.

There is a natural tendency to believe that a Corridor Plan will be applied in its entirety with minimal changes. However, that would not appropriately respond to natural and unforeseen opportunities that arise in a community. Decisions within the plan need to be periodically updated to reflect new or emerging circumstances. Each succeeding jurisdictional entity also has the discretion to reconsider long-range policy and plan decisions and may choose to modify this Plan.

Summary of Corridor Recommendation. The overall recommendations are specifically designed to address all modes of transportation, and safety needs of the Whitney Road Corridor. All recommendations have been examined carefully to ensure practicality, functionality, sustainability, and successful implementation. The physical layout of the improvements are detailed on the following in Plan of Appendix A. Detailed cost estimates are shown in Appendix D.

Action Plan Summary

Table 5.14 Short Term Action Plan Summary

Short Term Plan Implementation

Action / Goal		Specific Tasks	Roles & Responsibilities	Time Frame
Interim Safety Improvements Whitney Road at Dell Range Blvd.	1	Install larger Stop Signs (30" x 30" to 36 x 36 or 48 x 48)	Laramie County	Now
	2	Install Stop Bars on Whitney Road at Dell Range Blvd.	Laramie County	Now
	3	Install Stop Bars on Dell Range Blvd.	Laramie County	Now
	4	Install solar powered Flashing Beacon on Stop Signs at Dell Range Blvd.	Laramie County	Near
	5	Install Intersection Down Lighting on Existing Power Poles at Dell Range Blvd.	Laramie County/ City of Cheyenne	Near
Interim Safety Improvements Whitney Road at U.S. 30	1	Install larger Stop Signs (30" x 30" to 36 x 36 or 48 x 48)	WYDOT	Complete
	2	Install Stop Bar pavement markings on Whitney Road	WYDOT/ City of Cheyenne	Complete
	3	Install Flashing Beacon for Stop Control and Warning	WYDOT	Complete
	4	Remove pedestrian refuge median for improved stacking	City of Cheyenne	Complete
	5	Widen EB to SB auxiliary turn to improve visibility and remove "ghosting" effect	WYDOT	Complete
	6	Extend center pavement markings on the north leg of the intersection at U.S. 30	Laramie County WYDOT	Now
	7	Relocate pedestrian greenway crossing until intersection is reconstructed	City of Cheyenne	Mid

Table 5.15 Long Term Action Plan Summary

Long Term Plan Implementation

Action / Goal		Specific Tasks	Roles & Responsibilities	Time Frame
	1	Implement Construction Phased Strategies along the Corridor	Laramie County City of Cheyenne	Mid to Long
	2	Install Uniform Roadway and Pedestrian Lighting	Laramie County City of Cheyenne	Long
	3	Investigate Possible Posted Speed Reduction a. U.S. 30 East West of Whitney (Pershing to Christensen Road) from 55 mph to 45 mph b. Whitney Road from Storey Blvd. from 45 mph to 30 mph	Laramie County WYDOT	Mid
	4	Implement wet and dry utility priority projects as funding resources become available or development becomes the catalyst.	City of Cheyenne BOPU	Mid
	5	Develop/ Create additional egress/ access routes north of Dell Range (i.e. Storey Blvd. West, Four Mile, Riding Club)	Laramie County/ City of Cheyenne	Mid to Long
	6	Reserve and/ or purchase right-of-way as development occurs along the undeveloped corridor.	Laramie County/ City of Cheyenne	Near, Mid, Long
	7	Explore opportunities, as area develops, to provide roadway storm water detention / retention features / facilities.	Laramie County/ City of Cheyenne	Near, Mid, and Long
	8	Explore public/ private partnerships to implement	Laramie County/ City of Cheyenne	Near, Mid, and Long

APPENDIX A

Improvement Plans

ENGINEERING
PLANNING
SURVEYING
PC

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CONCEPTUAL ROADWAY PLANS FOR

35% DESIGN WHITNEY ROAD IMPROVEMENTS

US 30 TO STOREY BLVD

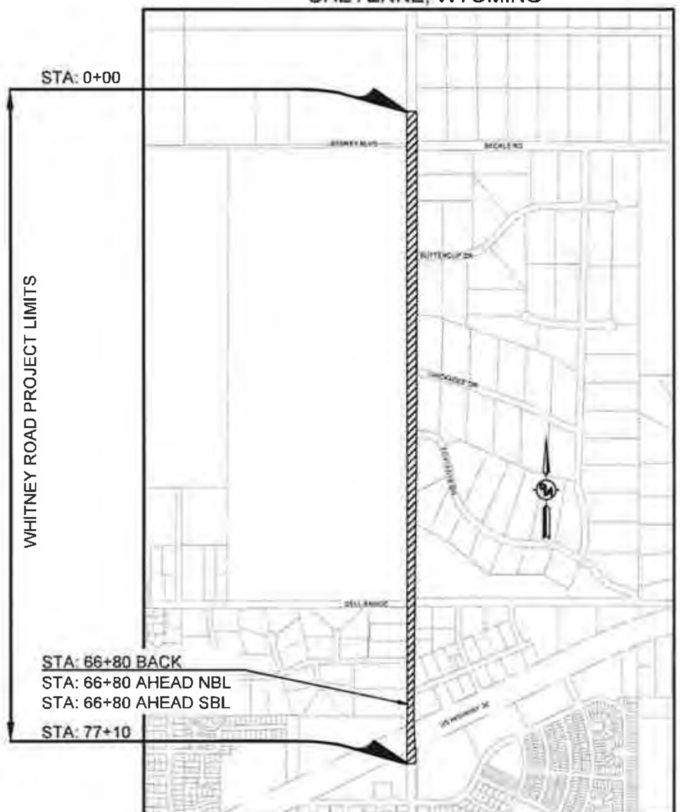
OWNER:

CHEYENNE METROPOLITAN
PLANNING ORGINAZATION
615 WEST 20TH STREET
CHEYENNE, WY 82001

ENGINEERS:

AVI PC
1103 OLD TOWN LANE,
SUITE 101
CHEYENNE, WYOMING 82001
307.637.6017 WWW.AVIPC.COM

CHEYENNE, WYOMING

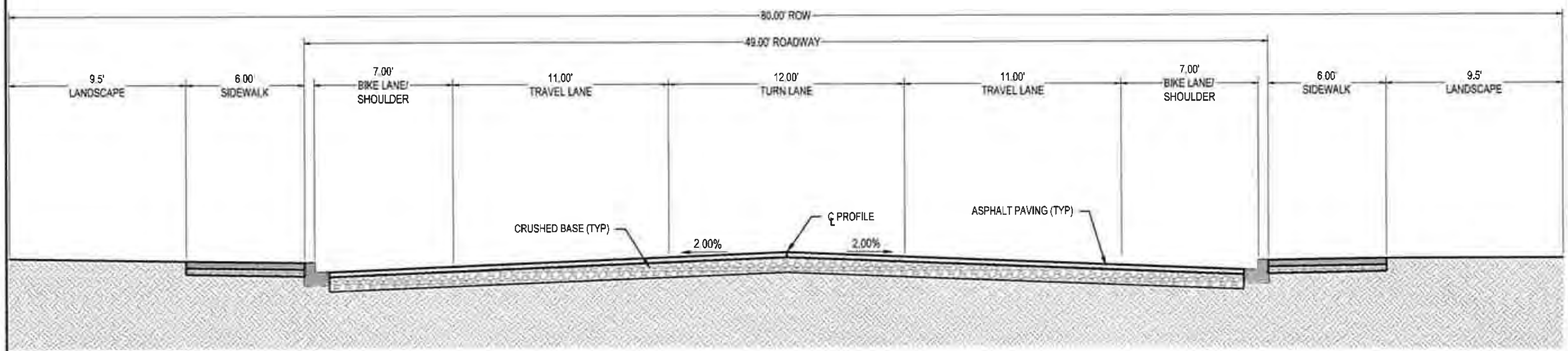


Project Extents

Vicinity Map - Cheyenne, Wyoming

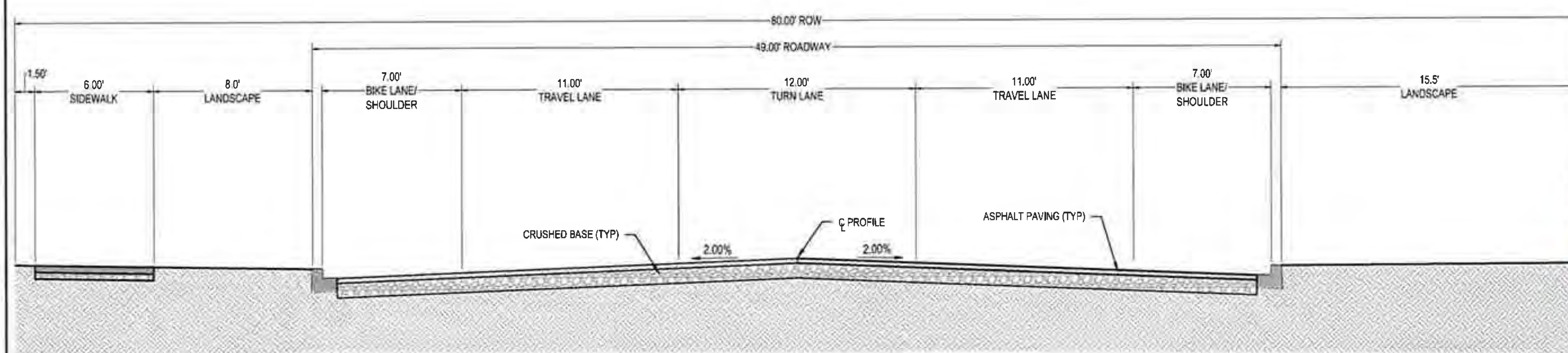
INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
T1	TYPICAL SECTION
R1-R11	WHITNEY ROAD PLAN & PROFILES
R12-R13	WHITNEY ROAD SOUTHBOUND LANE PLAN & PROFILES
R14-R15	WHITNEY ROAD NORTHBOUND LANE PLAN & PROFILES
R16	WHITNEY ROAD AND DELL RANGE INTERSECTION
R17	WHITNEY ROAD AND US HIGHWAY 30 INTERSECTION



PROPOSED TYPICAL SECTION

U.S. 30 TO DELL RANGE BLVD.



PROPOSED TYPICAL SECTION

DELL RANGE BLVD. T0 STOREY BLVD./ BECKLE ROAD

NO.	REVISION	DATE
1	COUNTY REVISIONS	9/20/19

PREPARED FOR:
CHEYENNE MPO
615 W 20TH STREET
CHEYENNE, WY 82009

PROJECT: WHITNEY ROAD

DRAWING TITLE: TYPICAL SECTIONS

DATE PLOTTED: Aug 10, 2020
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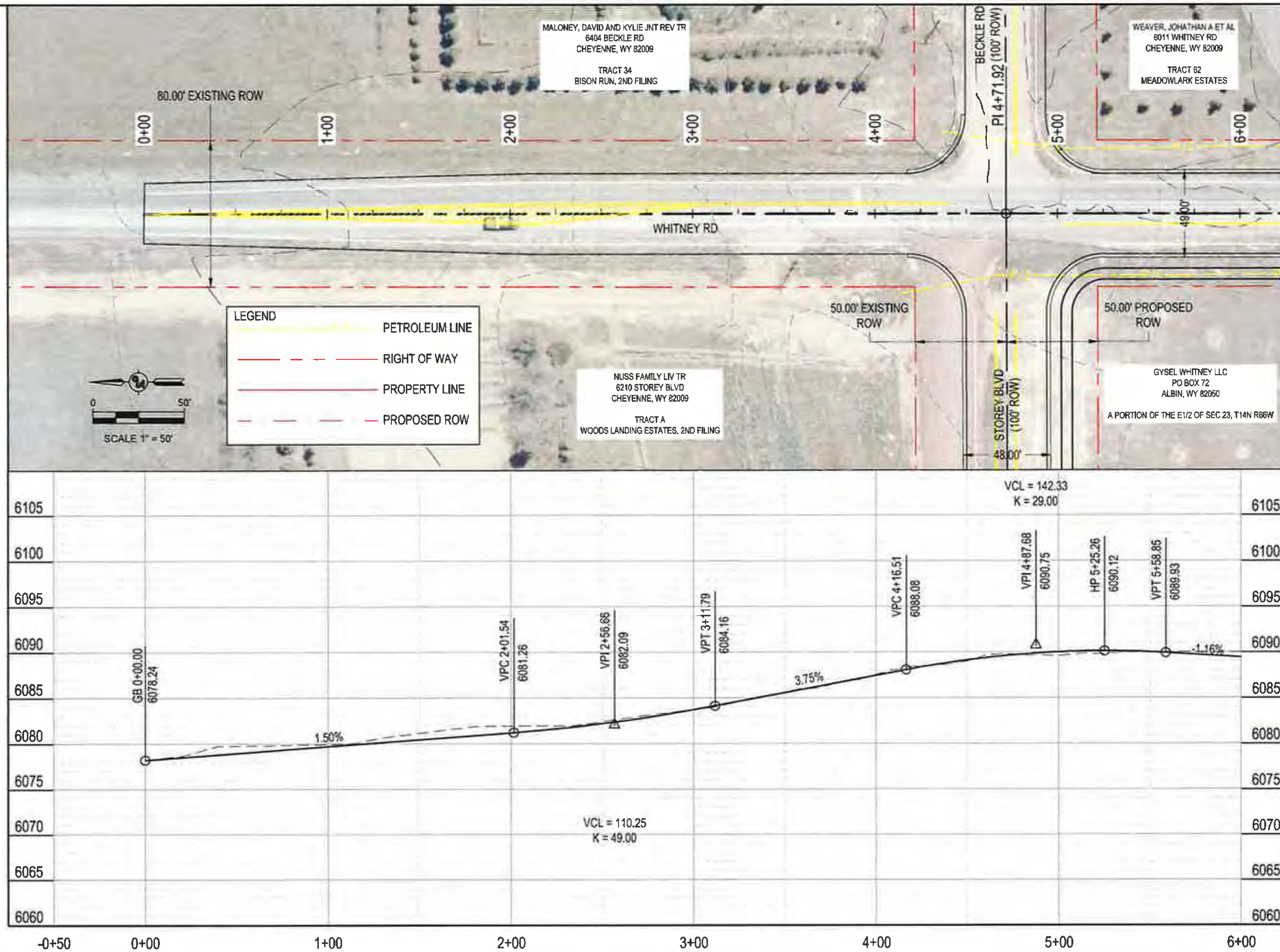

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PROJECT: WHITNEY ROAD CORRIDOR STUDY

DRAWING TITLE: WHITNEY ROAD PLAN AND PROFILE

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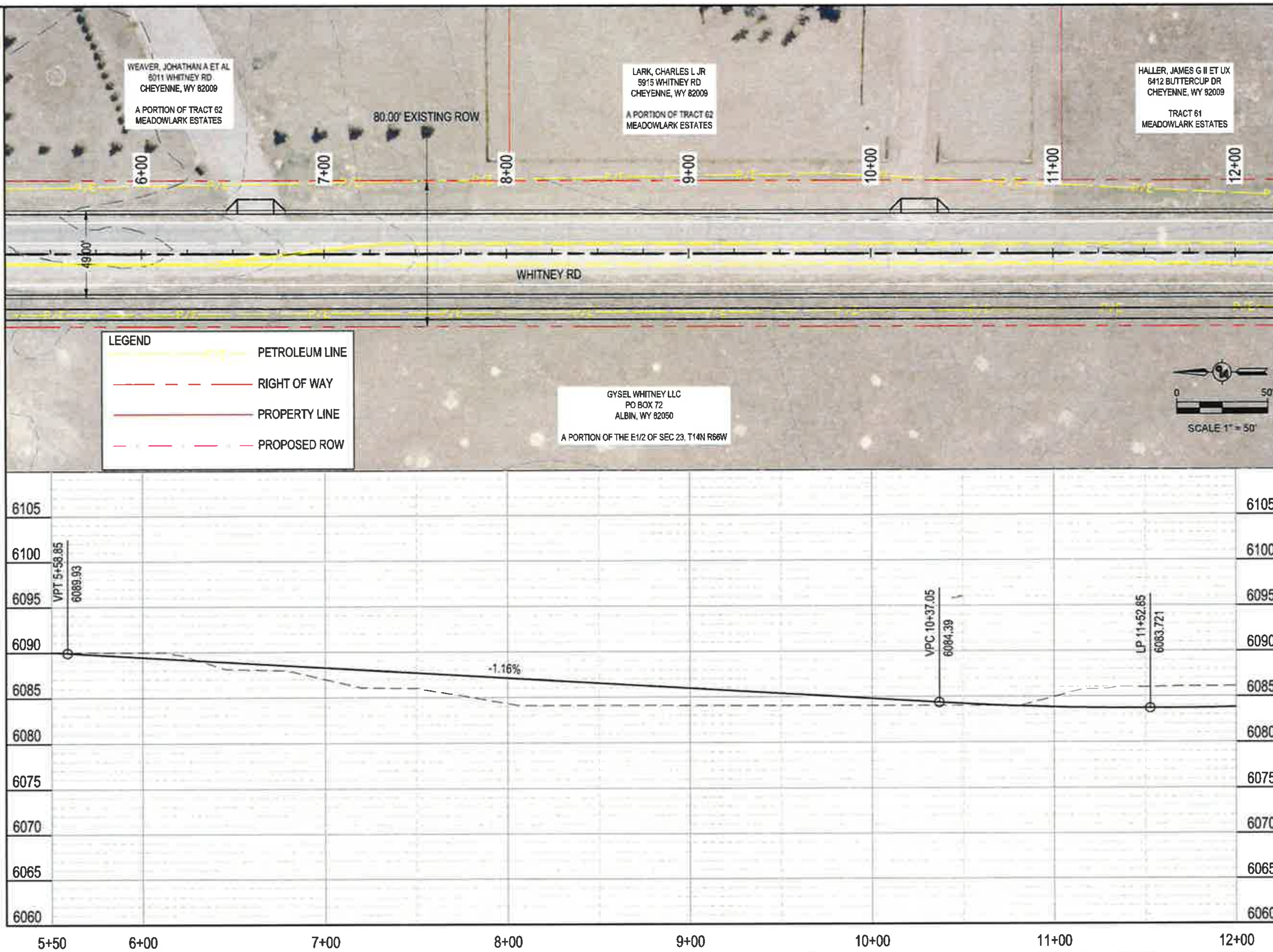

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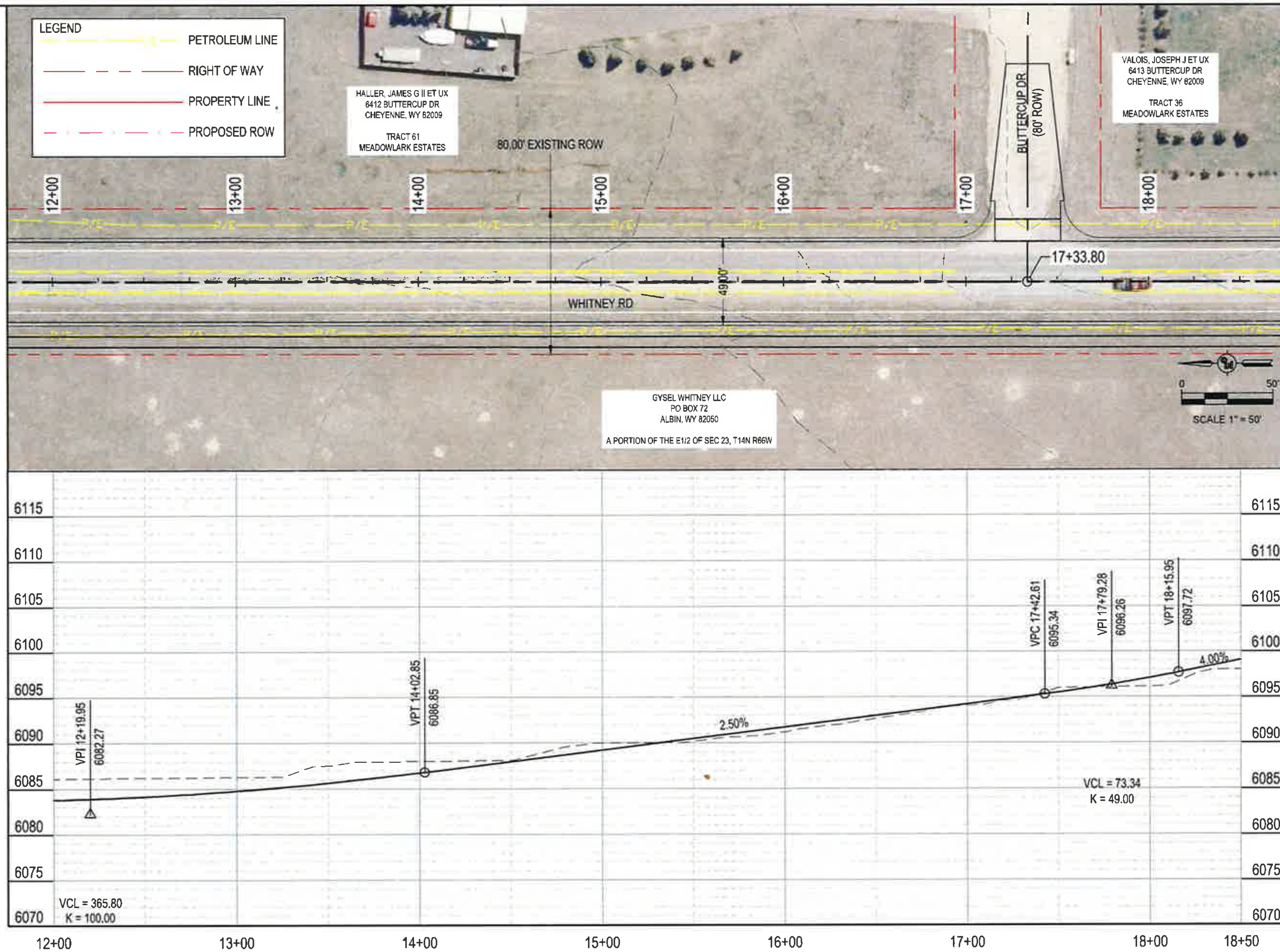

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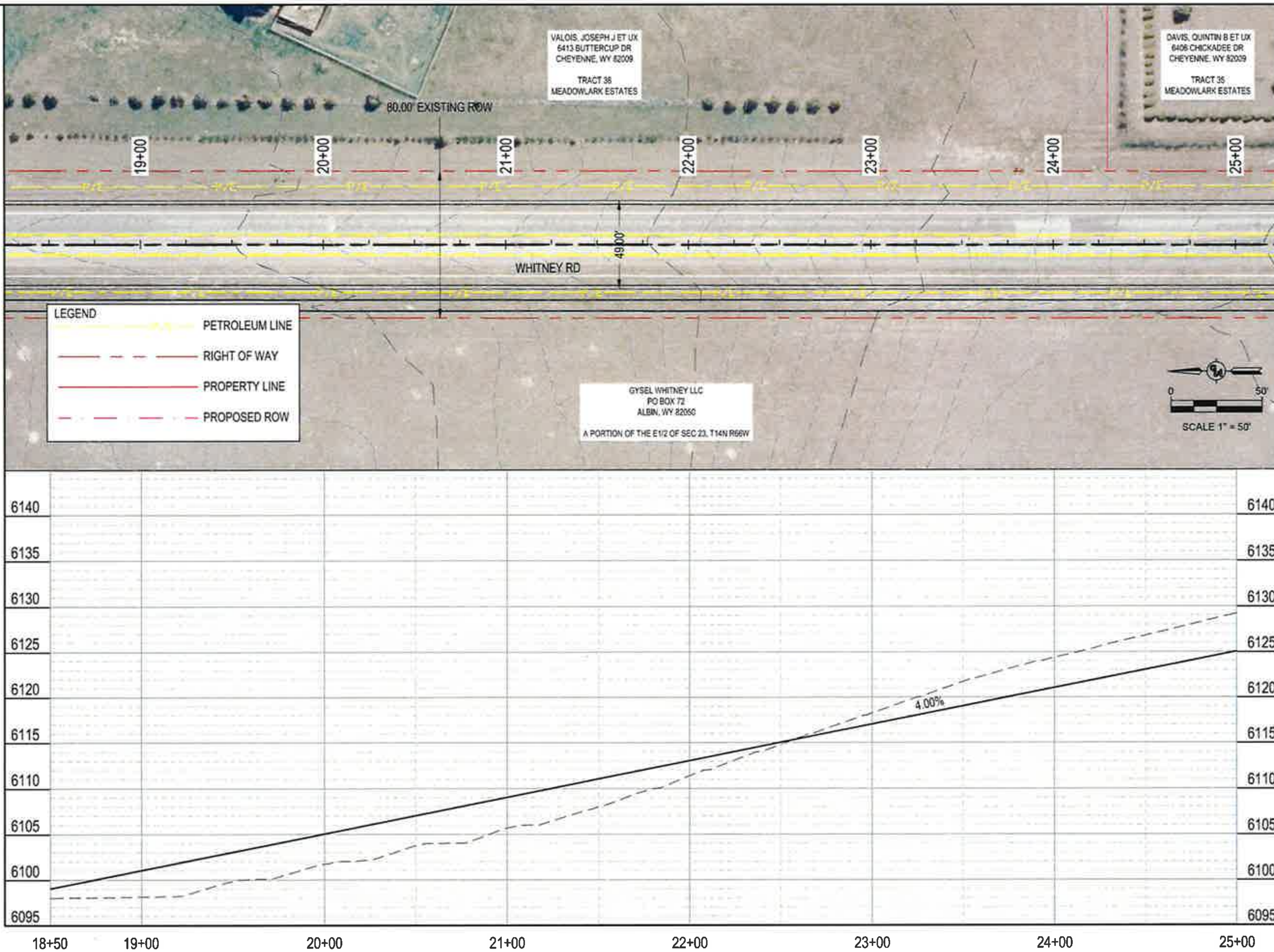

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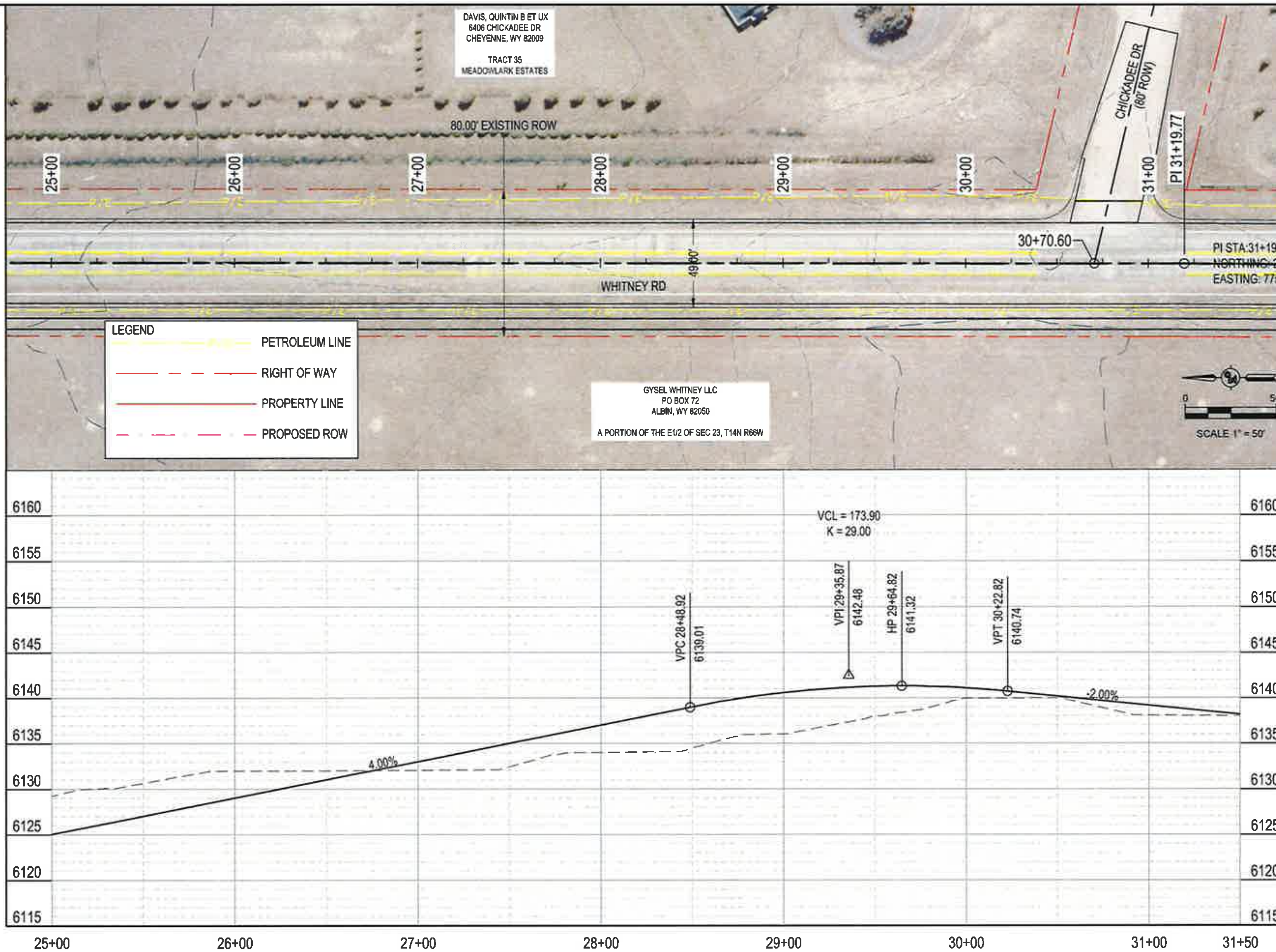

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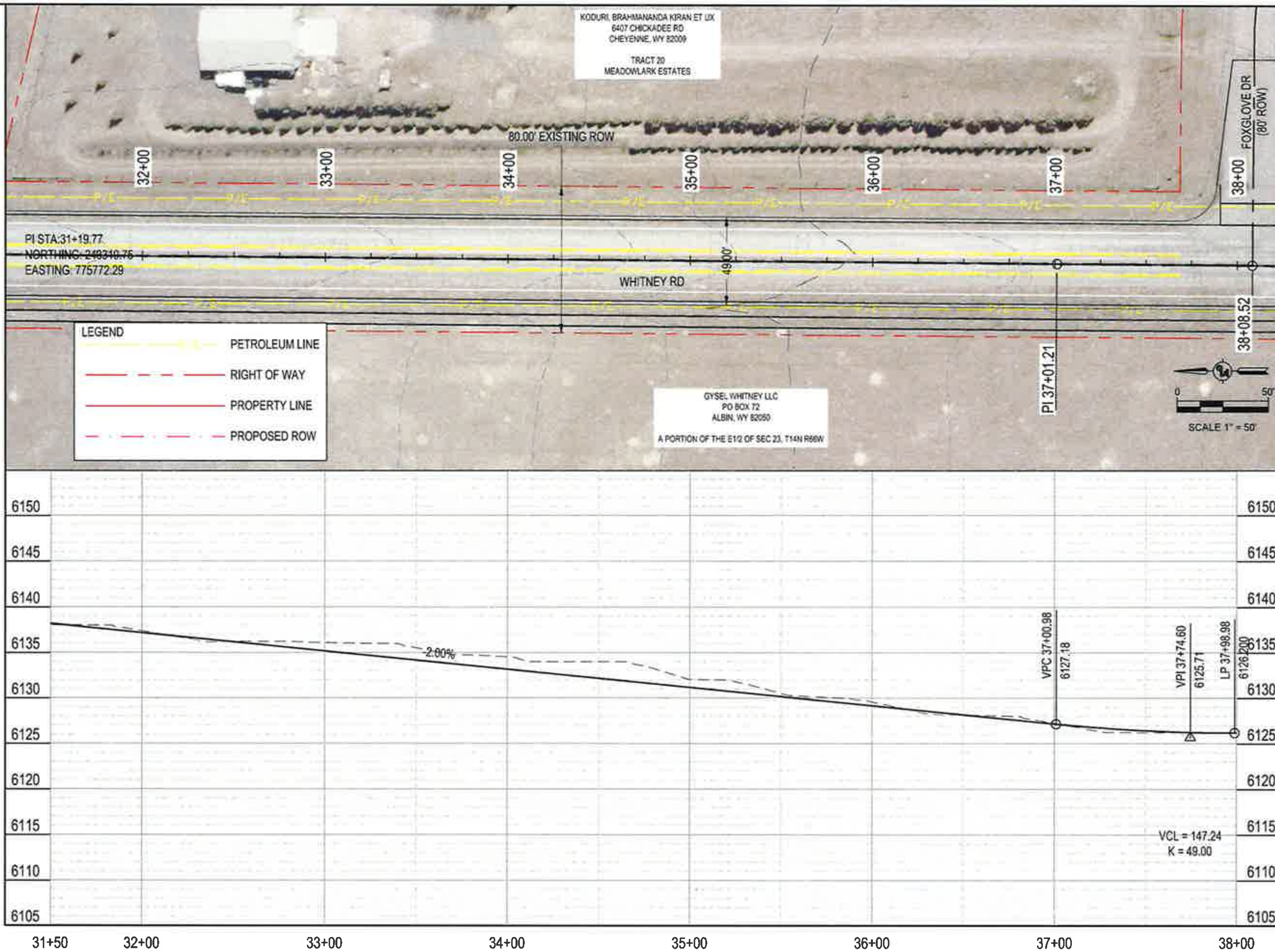

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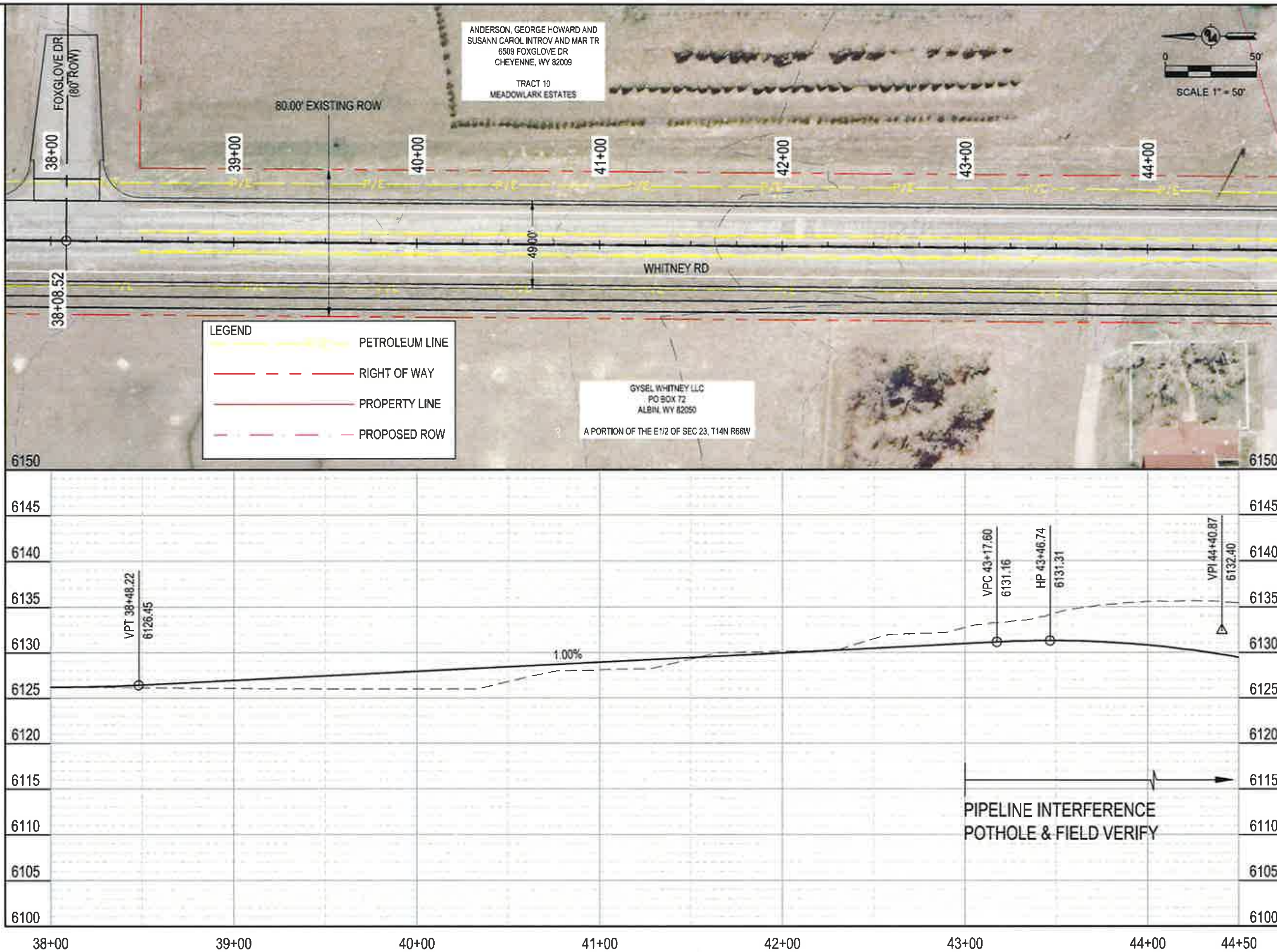

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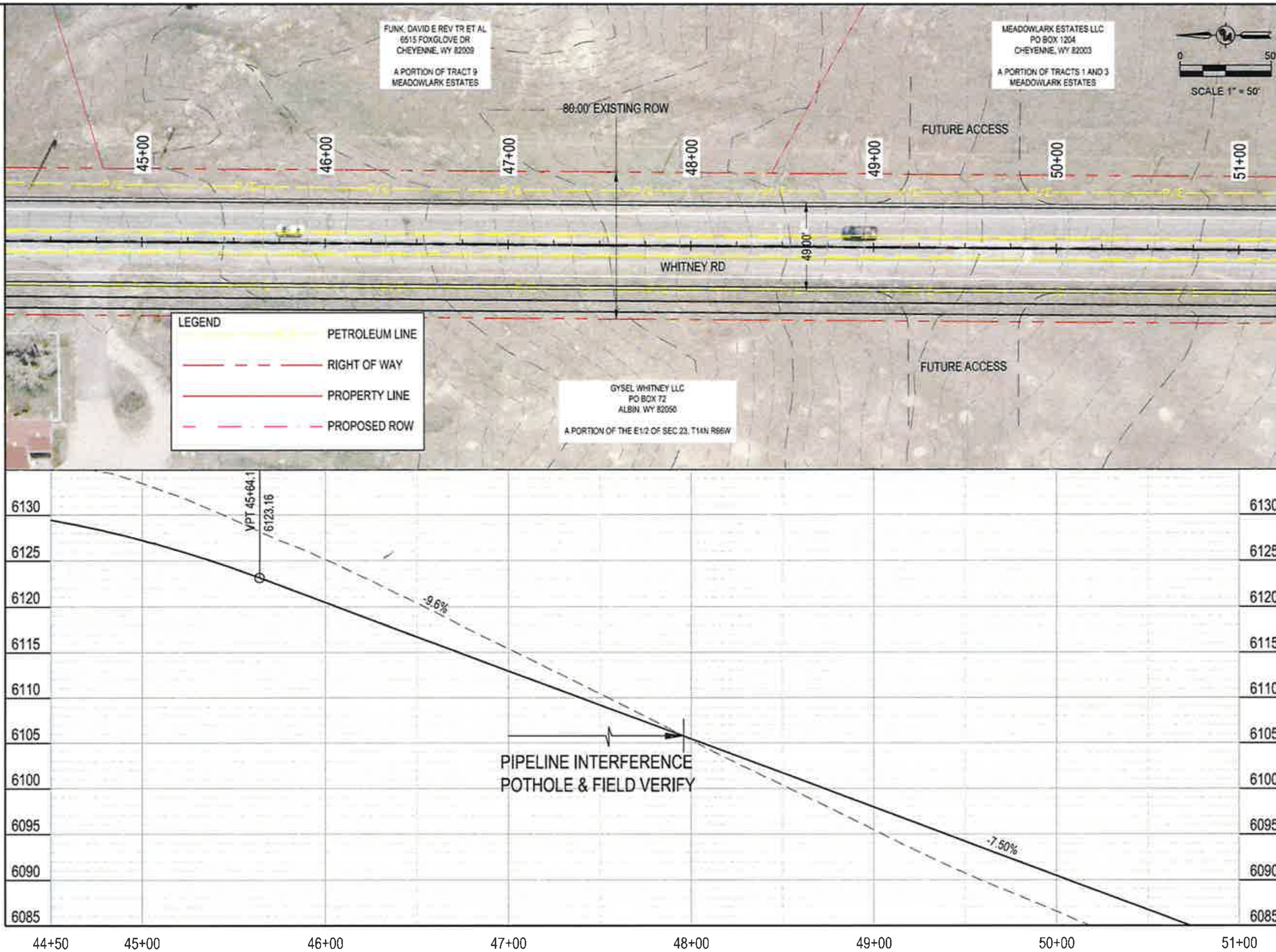

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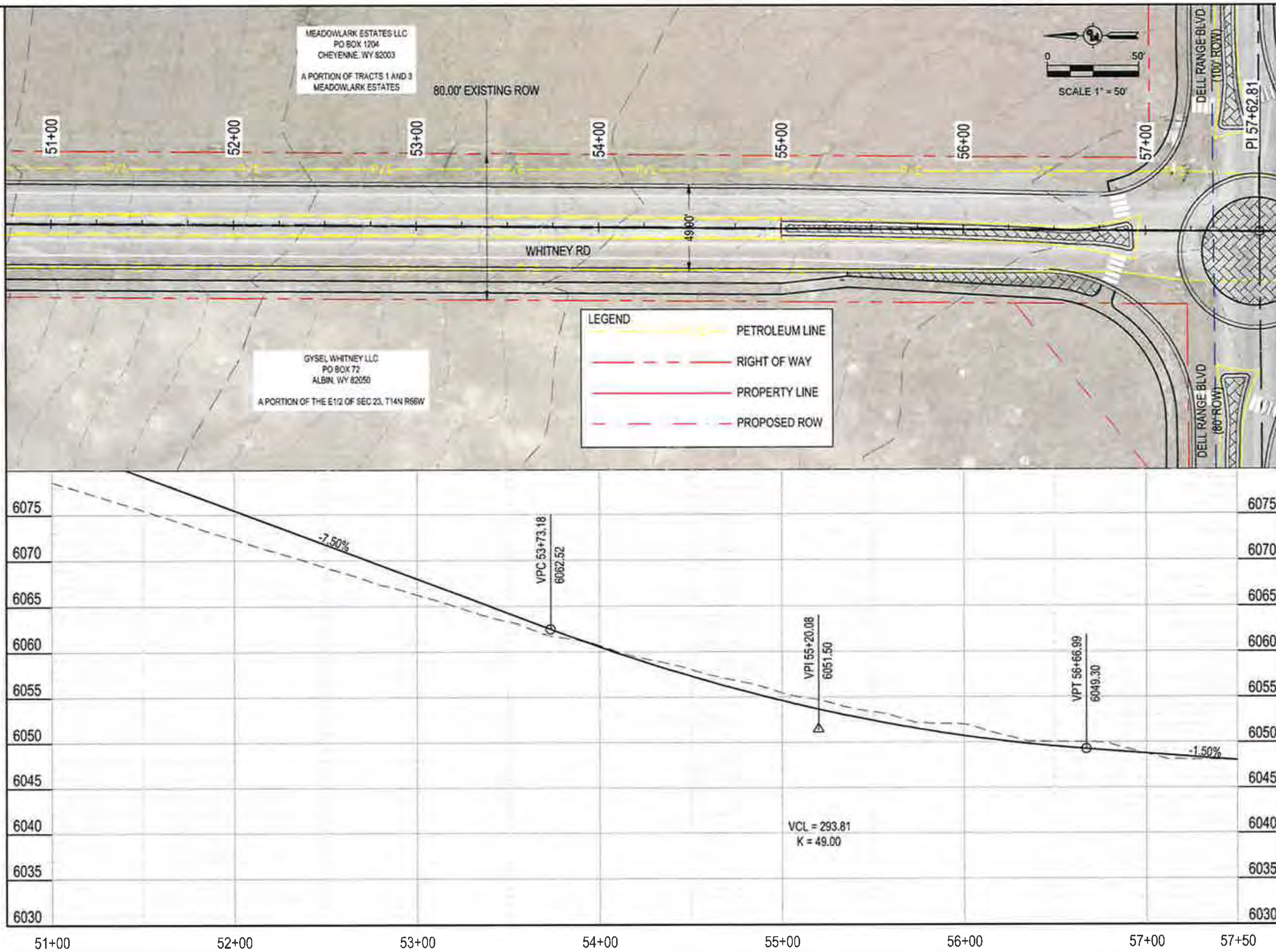

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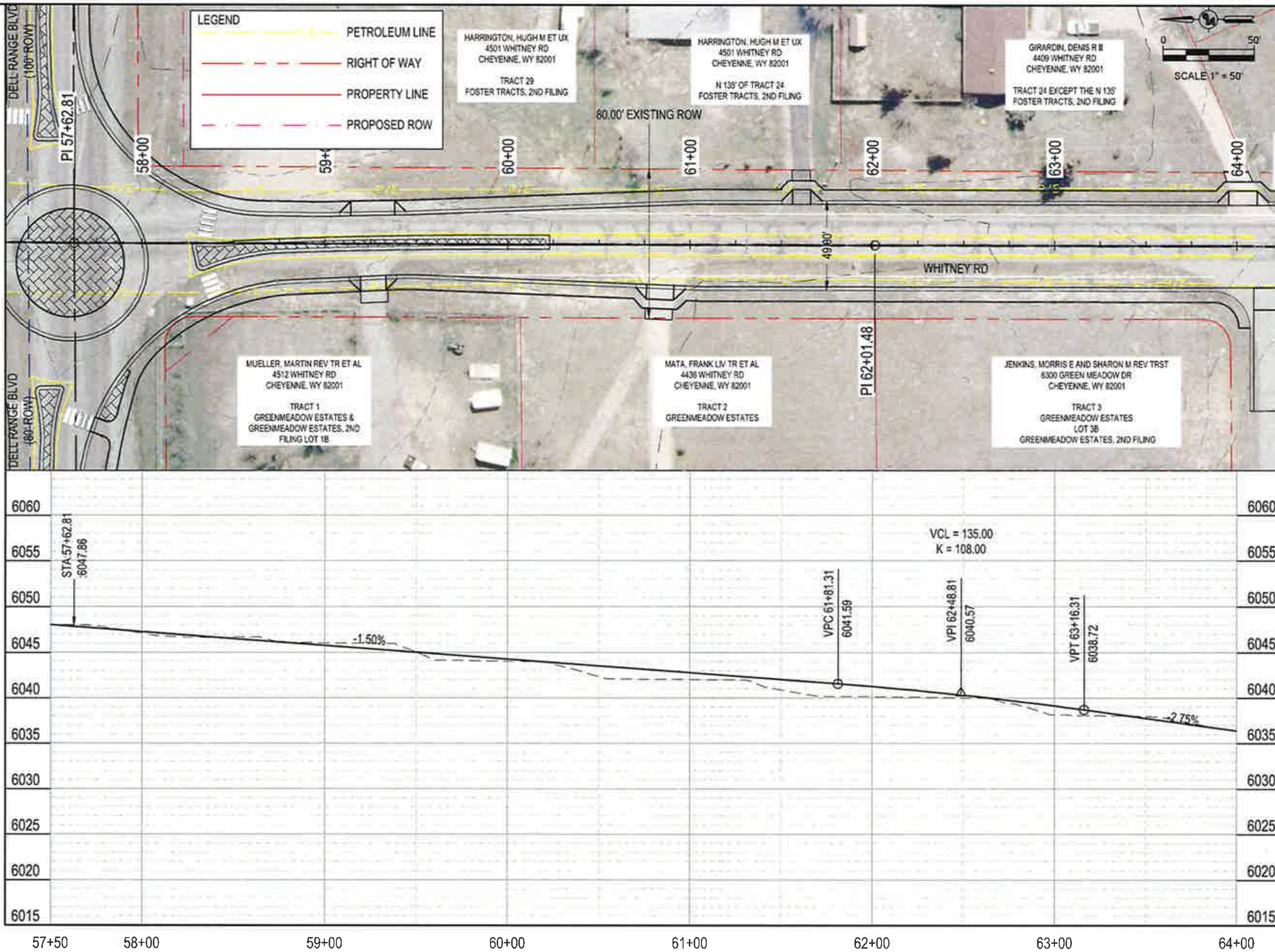

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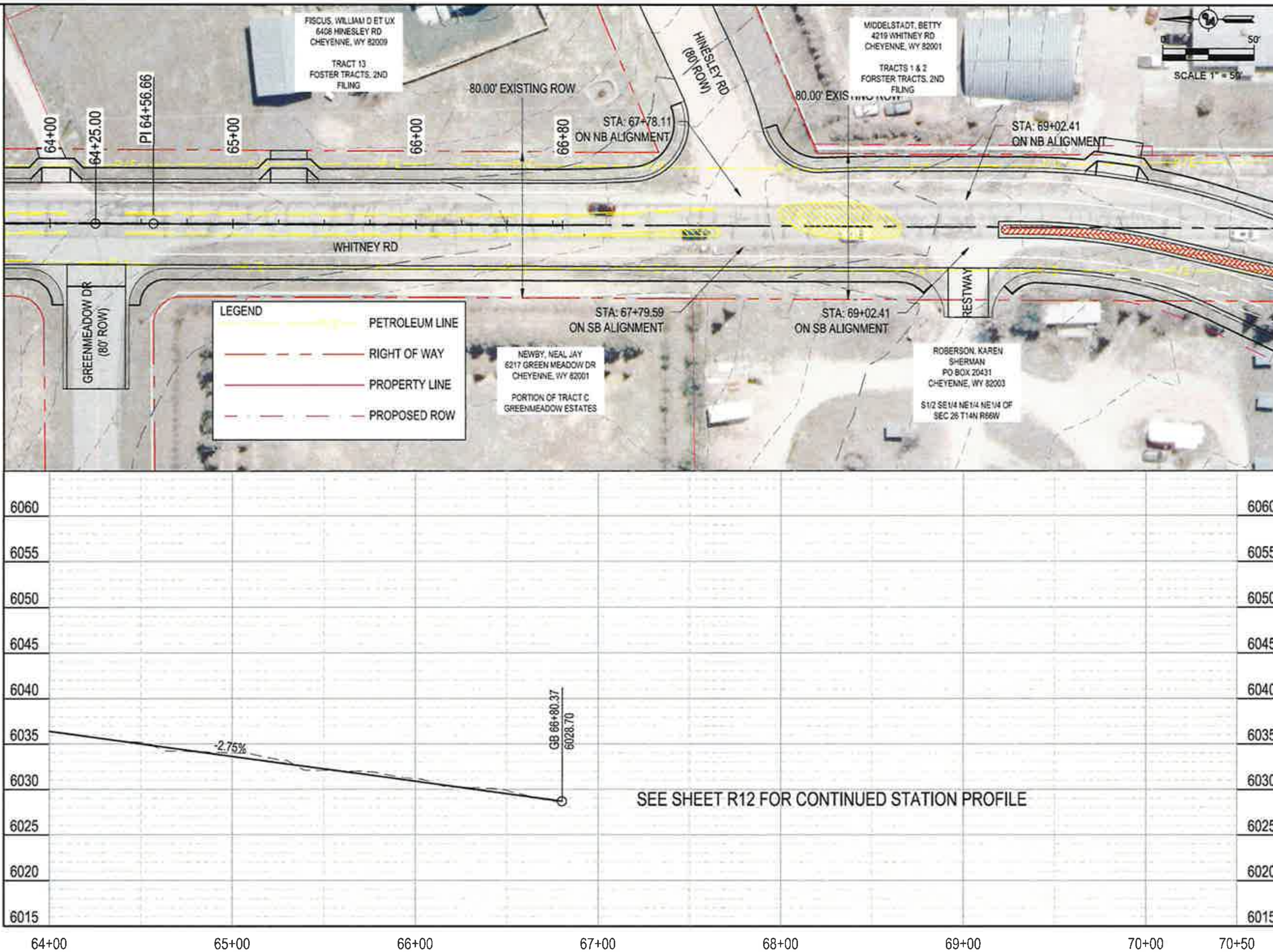

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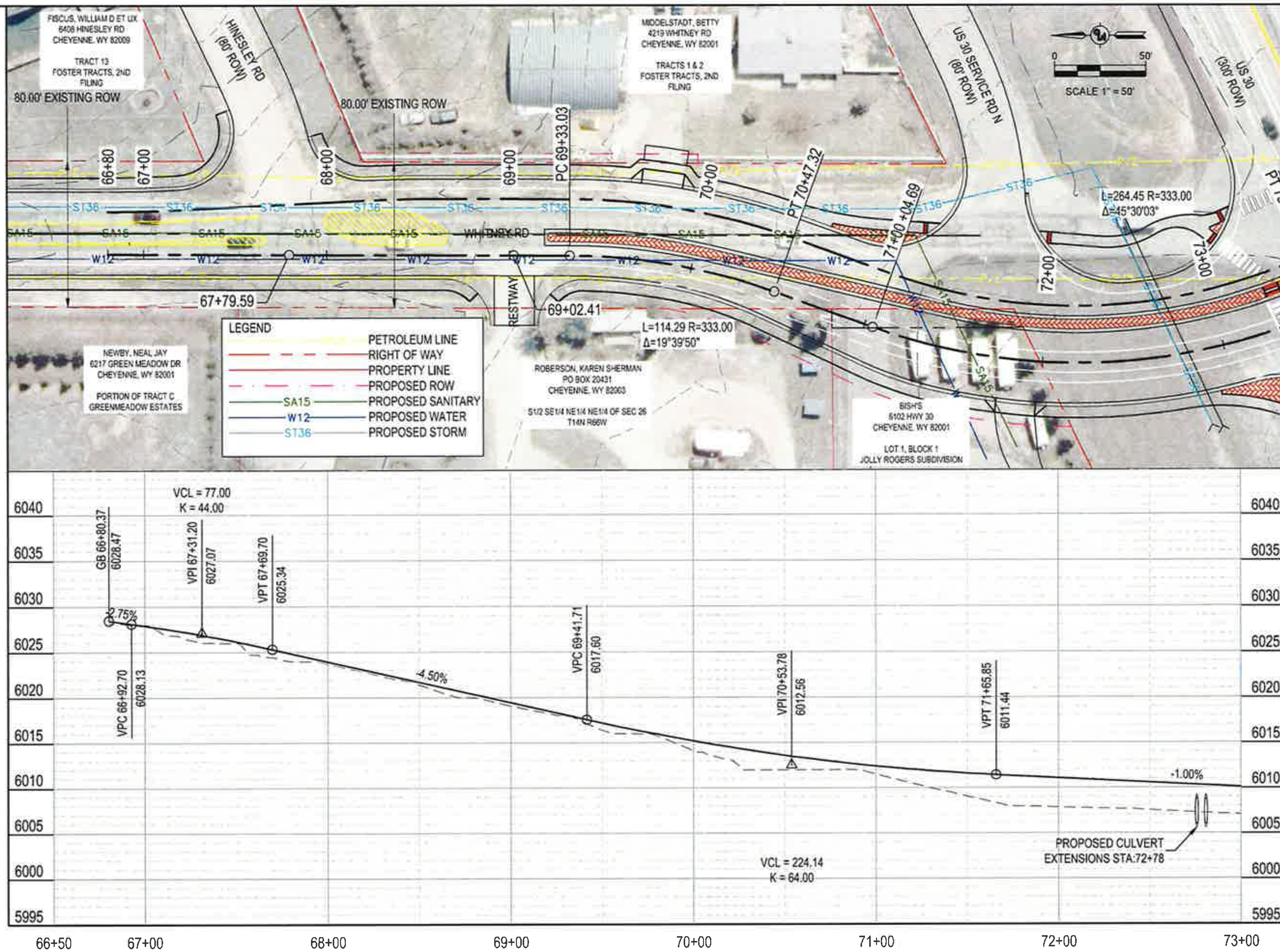

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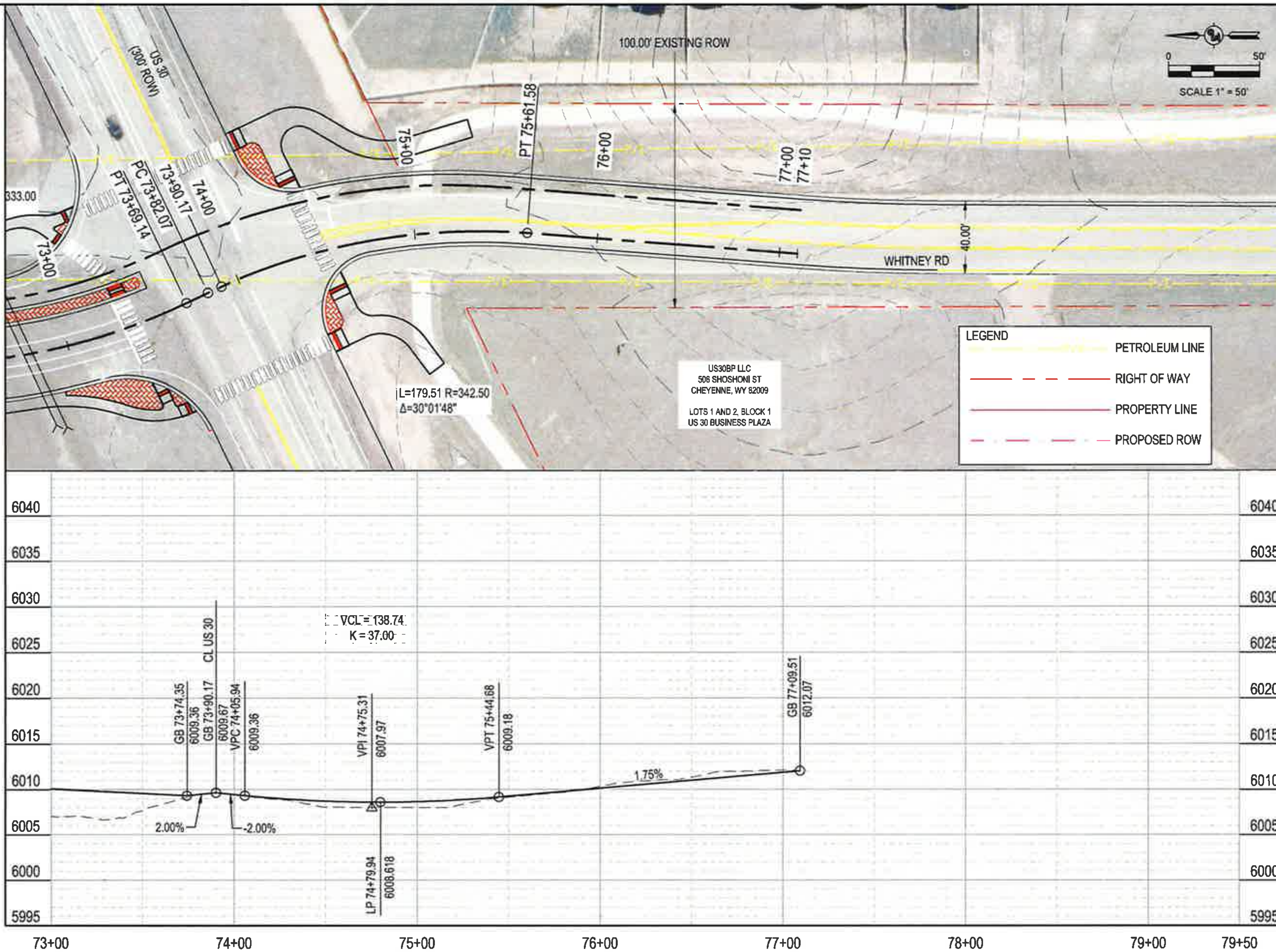

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PROJECT:
WHITNEY ROAD CORRIDOR STUDY

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WHITNEY ROAD SOUTHBOUND LANE
PLAN AND PROFILE

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JOB NO.: 3987

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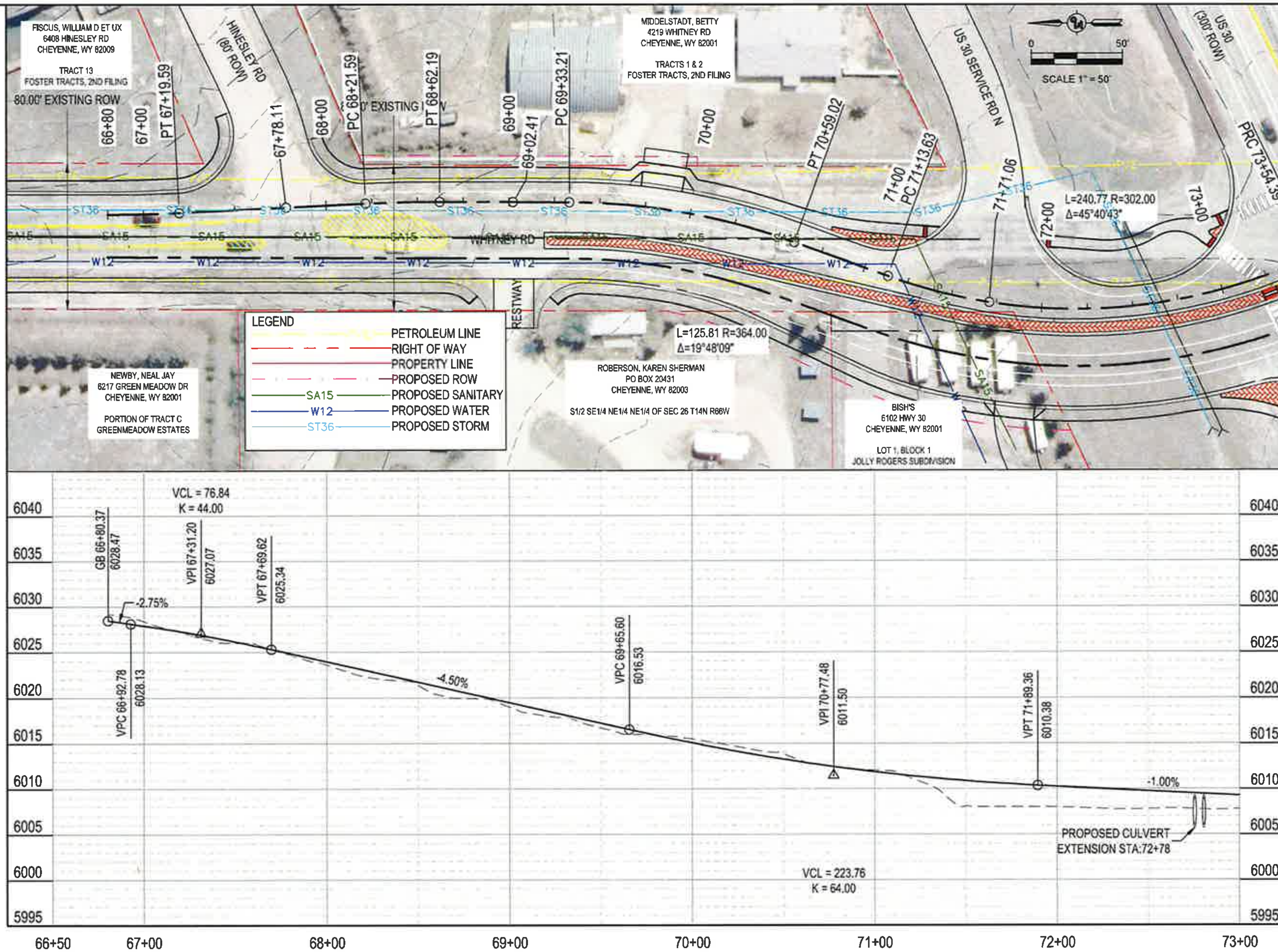

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PROJECT:
WHITNEY ROAD CORRIDOR STUDY

DRAWING TITLE:
WHITNEY ROAD NORTHBOUND LANE
PLAN AND PROFILE

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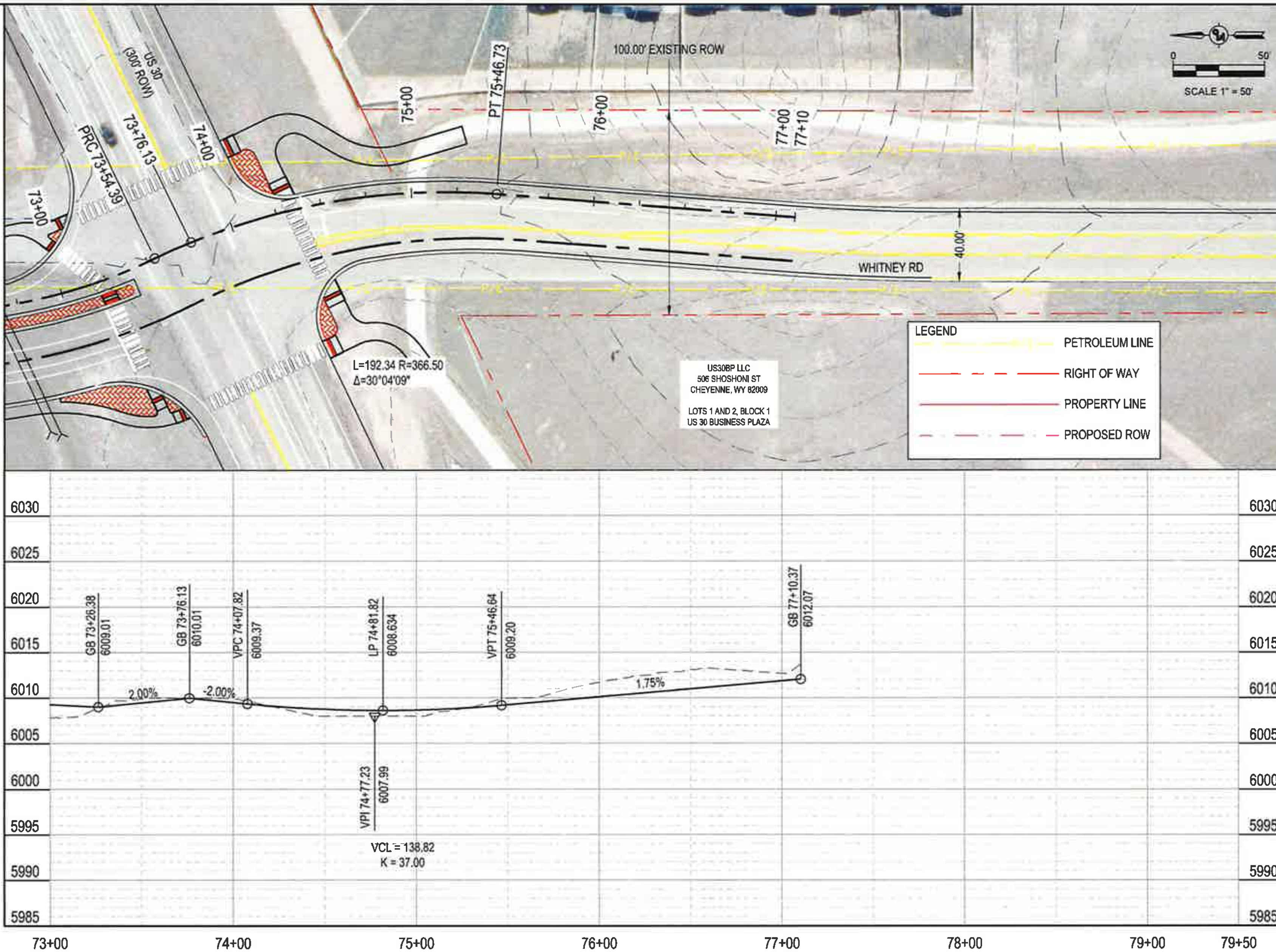
DWG NO. R14 OF



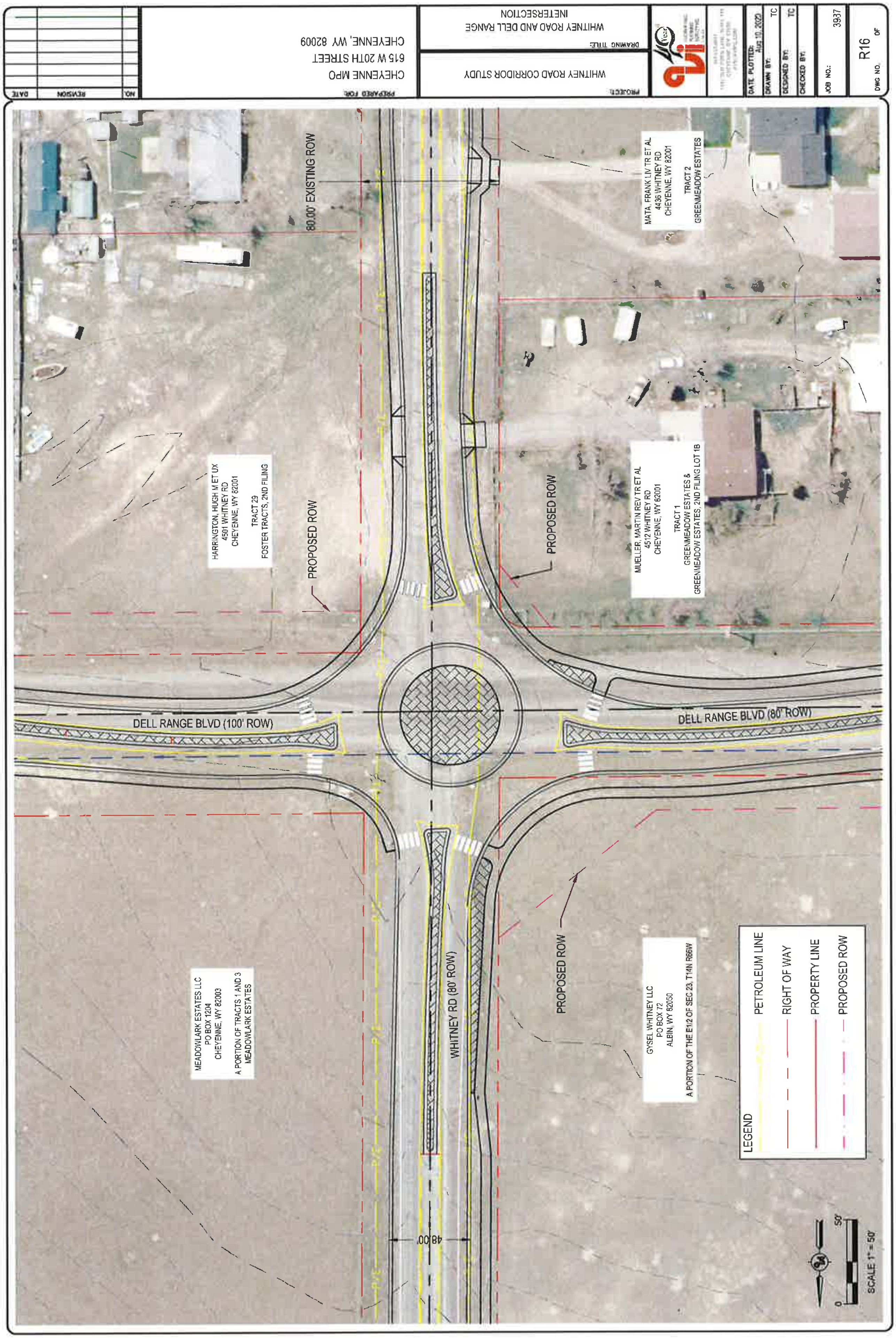
NO.	REVISION	DATE

PREPARED FOR:
CHEYENNE MPO
615 W 20TH STREET
CHEYENNE, WY 82009

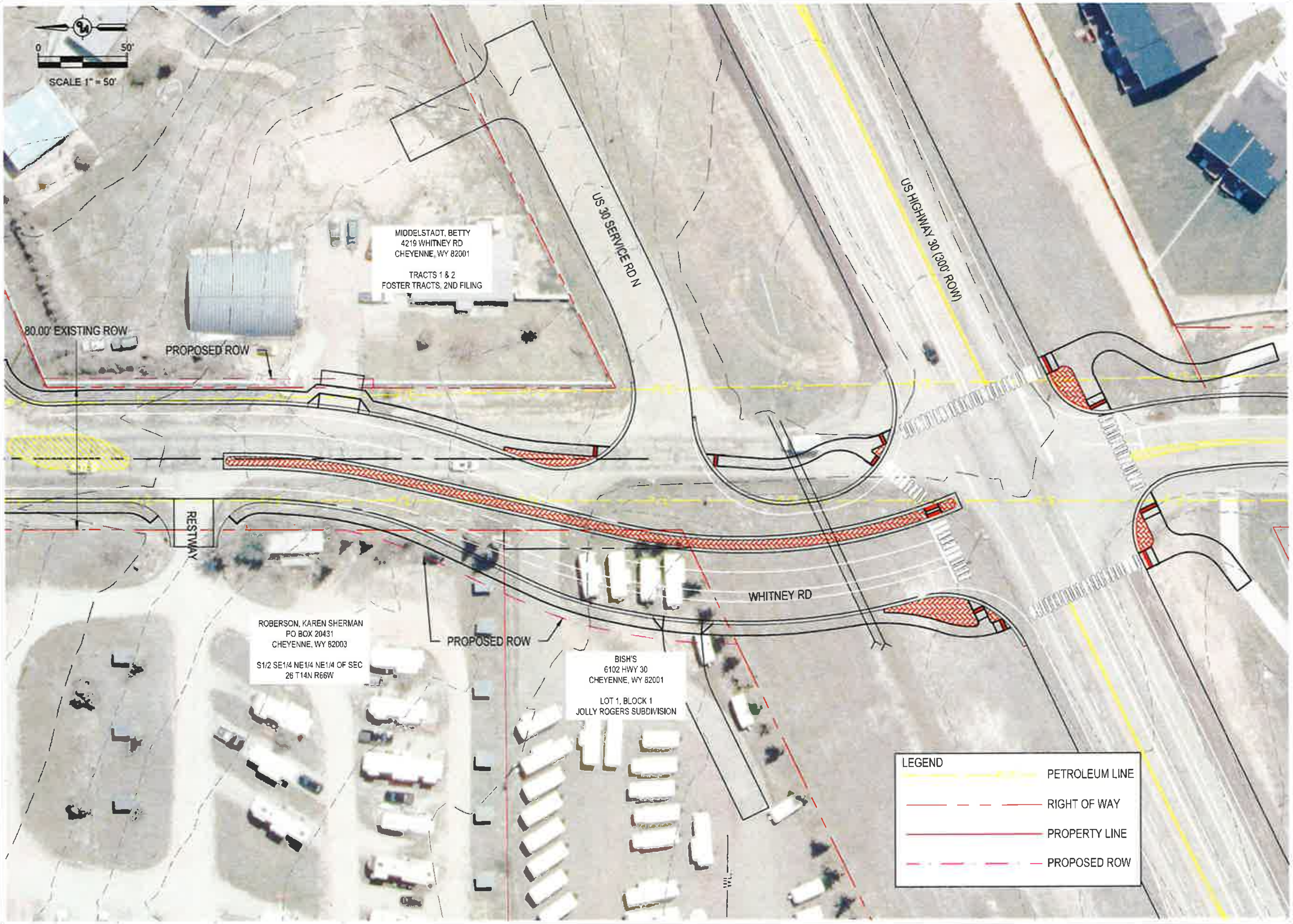
PROJECT: WHITNEY ROAD CORRIDOR STUDY

DRAWING TITLE: WHITNEY ROAD NORTHBOUND LANE PLAN AND PROFILE

DATE PLOTTED: Aug 10, 2020
DRAWN BY: TC
DESIGNED BY: TC
CHECKED BY:
JOB NO.: 3987
DWG NO. R15 OF



PROJECT:
WHITNEY ROAD CORRIDOR STUDY
DRAWING TITLE:
WHITNEY ROAD AND DELL RANGE
INTERSECTION
PREPARED FOR:
CHEYENNE MPO
615 W 20TH STREET
CHEYENNE, WY 82009
NO.
REVISION
DATE
DATE PLOTTED: Aug 10, 2022
DRAWN BY: TC
DESIGNED BY: TC
CHECKED BY:
JOB NO.: 3937
DWG NO. R16 OF
80.00' EXISTING ROW
MATA, FRANK LIV TR ET AL
4436 WHITNEY RD
CHEYENNE, WY 82001
TRACT 2
GREENMEADOW ESTATES
HARRINGTON, HUGH M ET UX
4501 WHITNEY RD
CHEYENNE, WY 82001
TRACT 29
FOSTER TRACTS, 2ND FILING
PROPOSED ROW
MUELLER, MARTIN REV TR ET AL
4512 WHITNEY RD
CHEYENNE, WY 82001
TRACT 1
GREENMEADOW ESTATES &
GREENMEADOW ESTATES, 2ND FILING LOT 1B
DELL RANGE BLVD (100' ROW)
DELL RANGE BLVD (80' ROW)
MEADOWLARK ESTATES LLC
PO BOX 1204
CHEYENNE, WY 82003
A PORTION OF TRACTS 1 AND 3
MEADOWLARK ESTATES
WHITNEY RD (80' ROW)
GYSEL WHITNEY LLC
PO BOX 72
ALBIN, WY 82050
A PORTION OF THE E1/2 OF SEC 23, T14N R66W
LEGEND
PETROLEUM LINE
RIGHT OF WAY
PROPERTY LINE
PROPOSED ROW
48.00'
0
50'
SCALE 1" = 50'



NO.	REVISION	DATE

PREPARED FOR:
CHEYENNE MPO
615 W 20TH STREET
CHEYENNE, WY 82009

PROJECT: WHITNEY ROAD CORRIDOR STUDY

DRAWING TITLE: WHITNEY ROAD AND US HIGHWAY 30 INTERSECTION

DATE PLOTTED: Aug 10, 2020
DRAWN BY: TC
DESIGNED BY: TC
CHECKED BY:
JOB NO.: 3987
DWG NO. R17 OF

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APPENDIX B

Public Meetings

ENGINEERING
PLANNING
SURVEYING
PC

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Whitney Road Corridor Study PUBLIC OPEN HOUSE

PLEASE attend a meeting for the **Whitney Road Corridor Study**. The objective of this Cheyenne Metropolitan Planning Organization (MPO) project is to create a plan for the future Whitney Road that improves roadway and intersection safety, addresses drainage and snow drifting, and handles growth for all modes of travel for the next 20-30 years. At this meeting stakeholder input is paramount ucial for the planning team to understand traveler's issues and concerns for this roadway. The project limits of Whitney Road are from U.S. 30 on the south to Beckle Road/ Storey Blvd. on the North.

A brief **Presentation** combined with an **Open House** will be held on **Wednesday, November 8, 2013 at 5:00 p.m. and 6:00 p.m. in the gym** at Dildine Elementary School**,** 4312 Van Buren Avenue**.**

For more information call please call the **MPO at 307.638.4385**.

LARAMIE COUNTY SCHOOL DISTRICT 1

Facility/Risk Management
3320 Maxwell Avenue
Cheyenne, WY 82001
Phone: 307-771-2633
Fax: 307-771-2382

EXHIBIT 81

APPLICATION FOR USE OF DISTRICT FACILITY

Date: 10.12.17 ☐ Long Term Lease X Short Term Lease

A request is made for the following school: Dildine Elementary School

Type of Space: Classroom ______ Cafeteria ______ Gym X and 2nd Gym ______

Kitchen ______ Auditorium ______ Parking Lot Only ______ Other ______

Event /Activity: Public meeting for Whitney Road (City of Cheyenne Metropolitan Planning Organization)

Organization: AVI, P.C. Contact Person: Tom Cobb

Telephone: (H) ______ (W) 307.637.6017 (C) 970.214.6542

Address: 1103 Old Town Lane City: Cheyenne State: WY Zip: 82009

Email: cobb@avipc.com

On Site Contact Person: Tom Cobb Telephone: (970) 214.6542

Start Date: 11.8.17 End Date: 11.8.17

Start Time: 4:45pm End Time: 7:15pm. Include set-up, rehearsal, clean-up, etc.

Attendance Expected: 50 Adult/Student Ratio: N/A to ______ (not to exceed 1 to 25)

Admission Charged: N/A Proceeds to be devoted to: N/A

Explain in detail (using diagrams, if necessary) how the facility is to be set up. State if the work is to be done by district employees. List equipment needed, i.e., tables, chairs, bleachers, risers, and any other pertinent information:

Tables, Chairs, and screen for power point presentation.

I attest that I have read, understand, and agree that Laramie County School District Number One policies and regulations of the Board of Trustees (see attached) Chapter IX, Section 5, USE OF DISTRICT PROPERTY are to be strictly complied with, and that the undersigned assumes all responsibility for any liability, property damage or personal injury of any kind or nature resulting in loss or damage to persons or property as a result of the use described above. The undersigned further agrees to pay in advance such charges as may be made for the use of the property and equipment and will defend and indemnify Laramie County School District Number One, its employees, agents, and trustees should any claim for damages of any kind arise.

Prior to use of the facility, I will acquaint myself with the building layout, location of emergency exits, number and location of all fire extinguishers and alarms. In the event of fire, power outage, earthquake, flood, severe weather, or other situations that require the building to be evacuated, all materials and equipment are to be left in place until such time the building is determined to be safe for reentry.

X *I affirm that I have read and agree to comply with the LCSD1 Facility Use Terms*

Signature: [signature] Thomas D. Cobb

Client#: 1246955 AVIPC

ACORD **CERTIFICATE OF LIABILITY INSURANCE** DATE (MM/DD/YYYY) 5/08/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
USI Insurance Svcs CL Cheyenne
1904 Warren Ave
Cheyenne, WY 82001
307 635-4231

CONTACT NAME: Alejandra G. Venegas, CISR
PHONE (A/C, No, Ext): 307 635-4231 FAX (A/C, No): 307 635-4237
E-MAIL ADDRESS: alejandra.venegas@usi.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Charter Oak Fire Insurance Comp	25615
INSURER B : Travelers Indemnity Company	25658
INSURER C : Standard Fire Insurance Company	19070
INSURER D : Underwriters at Lloyd's London	85202
INSURER E :	
INSURER F :	

INSURED
AVI PC dba AVI Engineering PC
1103 Old Town Lane, Suite 101
Cheyenne, WY 82009

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY; CLAIMS-MADE X OCCUR; GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC; OTHER:			680000J75144	05/08/2017	05/08/2018	EACH OCCURRENCE	$1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$1,000,000
							MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$2,000,000
							PRODUCTS - COMP/OP AGG	$2,000,000
								$
B	AUTOMOBILE LIABILITY; X ANY AUTO; ALL OWNED AUTOS; SCHEDULED AUTOS; X HIRED AUTOS; X NON-OWNED AUTOS			BA8F88433917	05/08/2017	05/08/2018	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
B	X UMBRELLA LIAB X OCCUR; EXCESS LIAB CLAIMS-MADE; DED X RETENTION $10000			CUP8F8848011	05/08/2017	05/08/2018	EACH OCCURRENCE	$5,000,000
							AGGREGATE	$5,000,000
								$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY; ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N; If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		XCUB4446T862	05/08/2017	05/08/2018	PER STATUTE / OTH-ER	
							E.L. EACH ACCIDENT	$1,000,000
							E.L. DISEASE - EA EMPLOYEE	$1,000,000
							E.L. DISEASE - POLICY LIMIT	$1,000,000
D	Prof. Liab.			FEIENG10764	05/08/2017	05/08/2018	$1MM / $2MM	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
RE: engineering services.

CERTIFICATE HOLDER
AVI PC dba AVI Engineering PC
1103 Old Town Lane, Suite 101
Cheyenne, WY 82009

CANCELLATION
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
[signature]

AHMZP

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Brian Crozier 6522 Keystone Dr	307-640-2845
Wayne Lax 7906 Aztec Drive	307-632-6705
Morris & Sharon Jenkins [illegible] Green Meadow	307-638-7818
Alan Jones 6406 Dorsey Rd	307 421 7677
Kody Zubrod 5905 Green Meadow Dr	307 [illegible]
Ken + Kathy Conover 5911 Blazing Star	[illegible]
DAVID DICKINSON 6511 JULIA Rd.	[illegible] -7077
Shannon & Yvonne Ratliff 6963 Whistler Dr. 82009	307-431-1488

ANDY DAVIS
6607 Buttercup Dr
Cheyenne WY
630-8317
adavis89@me.com

SEAN BIBBEY
8090 HEAVENLY DR.
CHEYENNE, WY 82009
640-3755
s_bibbey@hotmail.com

Eric Johnson
6518 Beckle RD
Cheyenne WY 82009
A19Ford74@yahoo.com

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Melissa & Ray Hollingshead 6808 Hitching Post Lane Cheyenne WY 82001	hollingsml68@gmail.com raymon.hollings@gmail.com

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Rick Eckhardt 7331 Say Kelly Rd	Scooter.Eckhardt@Gmail.com
[illegible]	[illegible]@[illegible].com
LARSON 5306 Bell Range Blvd Chey 82009	307-763-2526
Birkle 7303 Julia Rd 82009	286-0736

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
JIM WOLLACK 7297 TELLURIDE DR.	JKWOLLACK@MSN.COM 307-256-9401
Cynthia & Jerry Richmond 6909 Julia Rd	JLRCMR0929@gmail.com 307-635-0929
Teresa Walling 4717 Summit [illegible]	307-634-4094 [illegible]0925@gmail.com
[illegible]	[illegible]
Jennifer Litman 7535 Telluride Drive	allusagrl@gmail.com
James Mestack 6861 Dorsey Rd	287-1548
JP	
Denise Harrington 4501 Whitney Rd	637-3063

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Mike Lujan 6751 Say Kally Rd	lujanml1 aol com 630-3972
STAN MIDDELSTADT 4219 WHITNEY RD	307-421-5978 SMIDDELSTADT@gmail.com
Doug Johnson 6632 Beckle Rd	307 421-1400
Warren Adams 6742 Elizabeth Rd	6??-8008
DENNIS WILEY 6535 E 4 MILE Rd	421-4110
Aaron Grissom 7316 Beckle Rd	agrissom1982@gmail
TED ESPINOZA 4604 Horizon Loop	Sunrisemulo@AOL.com

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Laurie Alexander 7414 Tobia Rd - 307-631-1328	
Scott Henderson 9466 Sugarloaf lane Scott.Henderson@wyo.gov	
Jim + Barbara Boyd 4608 Van Buren Ave 816-716-8722	blboyd7@msn.com
Jack Flores Del Range + Van Buren	
Dave Rose 6530 US 30	RBIGALS01@aol.com
Chris + Chrissy Tetlow 6517 Whistler DR	425-766-3910 425-591-5098 Chrissytetlow@live.com
Leif Anderson 6973 Elizabeth Rd	307-631-4766 frypan9@gmail.com
NINA Pike + Steve Risstad 7087 Dorsey Rd	ninalewpike@gmail com

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
RICHARD E. SCRANTON	635-1925 RESCRANTON64@GMAIL.COM
Jim + Linda Larson 307-631-1717	12302 Chief Twomoon Rd. Chey
Frank & Anna Mata 307-635-1672	4436 Whitney
Katherine & Charlie Clark 307-631-5336	5915 Whitney rd
Dave + Priscilla [illegible] 307-701-7111	7816 Sorrento Ln
Peggy & Ed Upton 632-7149	[illegible]
Danny Beckle & Betty 7519 Beckle Rd	betty.middelstadt@gmail.com
JEFF CLARK 6514 BUTTERCUP DR	

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Ken & Linda Malm	kenemalm@gmail.com
Jennifer Larson	(307) 491-4003
Mike Lindman	307 632-1681
Jeff Frazier 6979 Dorsey Rd	
DAN SUTTON 6889 SOUTHSIDE	d1-sutton@msn.com
Denis & Joyce Girardin 4409 Whitney Rd	jgirardine... 307 630 0495
Gary Moore 10007 Smoking Oak Rd	garymoore42@gmail.com 307-630-7460
SHON DERMODY 5712 STOREY BLVD, CY 82009 SHONDER99@gmail.com	

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Dawn Fiscus 6408 Hinesley Road	(307) 631-2898 DawnFiscus@msn.com
Gage Ockfenderfer 6515 Buttercup Dr	719 357-3673 gdirte@yahoo.com
Bill Ramage 7114 Julia Rd	630-2752 rediecpuck@yahoo.com
PAUL BULRAN 7207 DORSEY RD. WYOBULL@GMAIL.COM	
Shawn Broad 11431 Chief Twomoon Rd.	(307) 214-6296 shawnbroad1@gmail.com
Paula Esslinger 6603 Fieldcrest Dr	(307) 634-3749
EDWARD MEEKS 4330 PATHFINDER	307-214-0940
ROGER JACOBSEN 9207 SNOW CREST DR	

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Andy Vahar 6526 Hwy 30	307 220 2740 Andy@Bigalsautoservice.com
Elizabeth & Michael Gregory 6919 Julia Road	307 286 6995
Pat Sawczenko	307-630-8868
Tyler Eatherly 6710 Buttercup Drive	907 355-8001
Eric Eatherly 6710 Buttercup Dr Cheyenne WY 82009	eric@eatherly.net 307-220-8141
Gilbert & Rebecca Ferrel 7323 Dorsey Rd Cheyenne WY 82009	ooolala26@yahoo.com
Monica Yarborough 9350 Crystal Meadow Dr Chey 82009	monica.yarborough@gmail.com
Greg & Lynn Singer 6717 Whitney Rd Chey 82009	lrSinger1@hotmail.com

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Shawn Roberts 6408 Elizabeth Rd.	421-5580 srobertswy@msn.com
Brahma Koduri 6407 Chickadee Dr	307 365 8789 drkoduri@gmail.com
MARC WOODS 7805 YARINA WAY	BOWHUNTER@MILLECT.COM
[illegible]	pekinwyo@netzero.net
KATHY STARR 5608 IMPERIAL CT 82009	STARRWY@AOL.COM
Andrea Troy Shepard	andrewshepard@hotmail.com
Doug Brendle 6636 Dorsey Rd	dougbrendle@gmail.com
ROB GEERINGER LCPW	307-633-4302

Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Lois Madland 6704 Foxglove Dr.	307-421-6728 madland6@yahoo.com
Jonathan Marotz 7099 SAYKALIY Rd.	307-214-1322 Marotz Jon @HotmAil.com
Daryl Johnson 3158 Bluff Ct Cheyenne, WY	djpoundkevence msn.com
LEE ROITH 11500 YELLOW BEAR RD CHEYENNE WY 82009	leero188@aol.com
Colleen & Judd Eifealdt 6770 Whistler Dr Cheyenne, WY	eifealdt@vcn.com jfsanta01@gmail.com
Clay & Ann Muirhead 6505 Chickadee Dr Cheyenne, WY	ann-muirhead@yahoo.com
Judy Parks 4214 Greenridge Ct cheyenne WY 82001	307 638-9377
Gail & John Young 3414 Campfire Trl. Cheyenne WY 82001	jsglyoung@msn.com

AVI Professional Corporation 1103 Old Town Lane, Suite 101, Cheyenne, WY 82009 P| 307 637-6017 2 3987 17

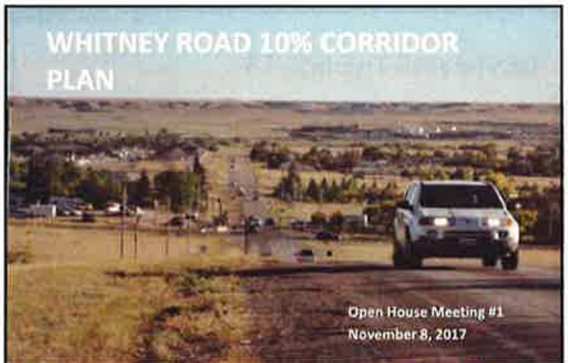
Whitney Road 10% Corridor Plan

Public Meeting

November 8, 2017

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Neil + Edith Carlyon 7600 Monarch Dr Cheyenne WY 82009	307-514-5275
Candace Croswell 7297 Monarch Dr 82009	Candace.Croswell@gmail.com
Joe Patterson 6526 Faith Dr	Joe@guardiancompanies.com (307) 220-1772
Sherry Fierro 7312 Berkeley Rd	307-630-4165 - Rich Rcmtruckingco@aol.com
JIMMY J. TEWILCO 6603 CHICKADEE DR	307 630-1726
Mike Larson 5516 Blazing Star Rd	307-632-4654
Dennis Brunner 11755 Chief Twomoon	307-631-8883
Randy Byers 418 East 22nd 82001	randy@tdei.us 307 630 8358

AVI Professional Corporation 1103 Old Town Lane, Suite 101, Cheyenne, WY 82009 P| 307 637 6017 2 3987 17



1

Whitney Road 10% Corridor Plan

AGENDA

- Introductions
- Project Overview
  - Limits
  - Purpose and Goals
- Overall Study Process
- What to expect (i.e. Schedule)?
- Identifying the Issues
- Possible Concept Ideas?
- Adjourn to Workshop Area

2

Whitney Road 10% Corridor Plan

PROJECT OVERVIEW

- History
  - Study not Construction
- Limits
  - Northern Limit – Storey Blvd / Beckle Road
  - Southern Limit – U.S. 30
- Objective
  - Create a comprehensive plan which strives to optimize safety, growth, and fiscal responsibility
- Goals
  - Understand the community and neighborhood vision for the roadway
  - Improve roadway and intersection safety and function
  - Address drainage and snow drifting

3

Whitney Road 10% Corridor Plan

OVERALL STUDY PROCESS

Planning/ Data Collection

- **Existing Conditions**
  - Topography
  - Utilities
  - Drainage
  - Environmental
  - Historical
- **Accurate Traffic Data Collection**
- **Accurate Traffic Projections**
- **Regulatory Design Policies**
  - UDC
  - Laramie County Land Use Regulations

Public Involvement

- **Steering Committee**
- **Jurisdictional Meetings**
- **MPO Committees**
- **Public Open House(s)**
- **Social Media**
  - Blog
  - Facebook
  - Email Notifications

Design

- **Alternative Development**
- **Alternative Analysis**

"3C" Planning Process

4

Whitney Road 10% Corridor Plan

WHAT TO EXPECT?

PROJECT MILESTONES	MILESTONE DATES
Notice to Proceed	**March 1, 2017**
Initial Kickoff Meeting MPO	**March 22, 2017**
Traffic Counts	**April 4, 2017**
Steering Committee Meetings	**May 9, 2017;** December 2017
Open House/ Public Meeting #1	**November 8, 2017**
Draft Plan	November – December 2017
Neighborhood Meeting #2	January 2018
Submit DRAFT Plan to MPO	January 2018
Presentation to the Governing Body	March 2018

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Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Utilities
  - Blackhills Energy
  - High West Energy
  - Suncor Energy
  - Plains All American Pipeline System, LLC
  - Qwest/ Century
  - BOPU Water

6

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Blackhills Energy
  - Underground natural gas feeding rural subdivisions

- High West Energy
  - Overhead Electric

7

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- BOPU
  - Underground water and sewer mains
  - Fire Hydrant

- Century Link
  - Underground communication lines

8

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Petroleum Pipelines
  - Suncor Energy
    - 12.75" Steel Crude Line
    - 2' to 5' deep (East Side)
  - Plains All American Pipeline System, LLC
    - 16" Steel Crude
    - 4'-3" to 14'-5" (West Side)

9

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Pavement Condition
- Narrow width
- Visibility of Approach to main roadway

10

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

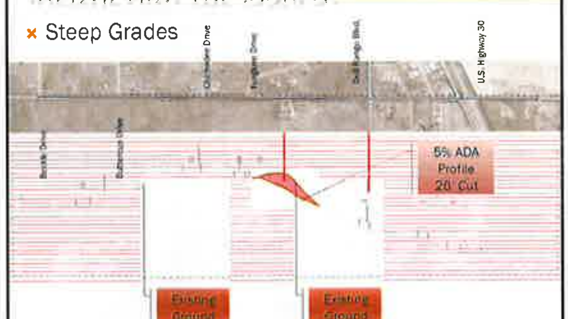
- Drainage

11

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Steep Grades



12

13

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Blowing and Drifting Snow
  - Snow removal costs
  - Accidents
  - Property damage
  - Pavement maintenance

14

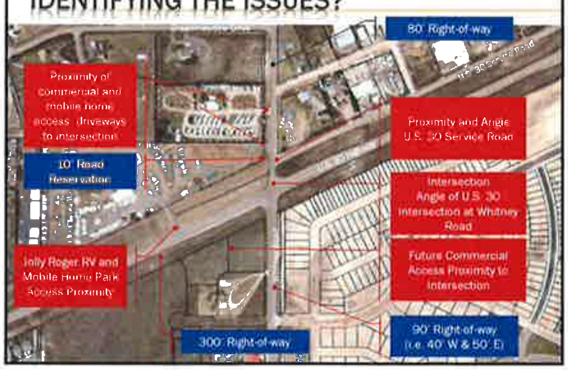
Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

15

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?



16

Whitney Road 10% Corridor Plan

IDENTIFYING THE ISSUES?

- Intersection Crash Data (January, 2014 to September, 2017)

[illegible]		[illegible]		[illegible]	
Type	Number	Type	Number	Type	Number
Angle	[illegible]	Angle	[illegible]	Angle	[illegible]
Rear End	[illegible]	Rear End	[illegible]	Rear End	[illegible]
Fixed Object	[illegible]	Fixed Object	[illegible]	Fixed Object	[illegible]
Total	[illegible]	Total	[illegible]	Total	[illegible]
Rate	[illegible]	Rate	[illegible]	Rate	[illegible]

[illegible]

Severity

Property Damage	[illegible]	Property Damage	[illegible]	Property Damage	[illegible]
Injury	[illegible]	Injury	[illegible]	Injury	[illegible]
Fatality	[illegible]	Fatality	[illegible]	Fatality	[illegible]
Total	11	Total	[illegible]	Total	[illegible]

Cause

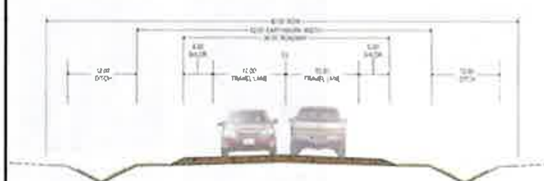
Failure to Yield ROW	[illegible]	Failure to Yield ROW	[illegible]	Failure to Yield ROW	[illegible]
Following too Closely	[illegible]	Following too Closely	[illegible]	Following too Closely	[illegible]
Speeding	[illegible]	Speeding	[illegible]	Speeding	[illegible]
Driving too Fast for Conditions	[illegible]	Driving too Fast for Conditions	[illegible]	Driving too Fast for Conditions	[illegible]
Total	[illegible]	Total	[illegible]	Total	[illegible]

17

Whitney Road 10% Corridor Plan

POSSIBLE CONCEPT IDEAS

- Conceptual Rural 2 – Lane Roadway Typical Section



18

Whitney Road 10% Corridor Plan

POSSIBLE CONCEPT IDEAS

- Conceptual Rural 3 – Lane Roadway Typical Section

Whitney Road 10% Corridor Plan

POSSIBLE CONCEPT IDEAS

- Conceptual Urban 3 – Lane Roadway Typical Section

19

Whitney Road 10% Corridor Plan

POSSIBLE CONCEPTS

- Standard 4 leg Intersection
  - Plain
    - Marked w/ Right-turn Lanes
    - Marked w/ Left-turn Lanes
    - Channelized Islands
- Roundabouts
  - 1 Lane
  - 2 Lane

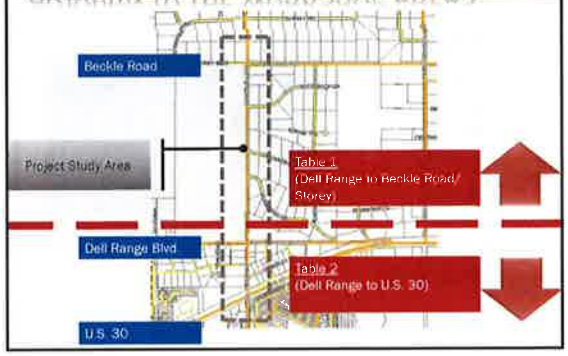
20

WORK SHOP STATION AREAS

- Two (2) identical Work Station Tables
  - Overall corridor aerial layout
  - Existing and conceptual street sections
  - Existing Traffic Conditions layout
- Comment card area
- Refreshment area

21

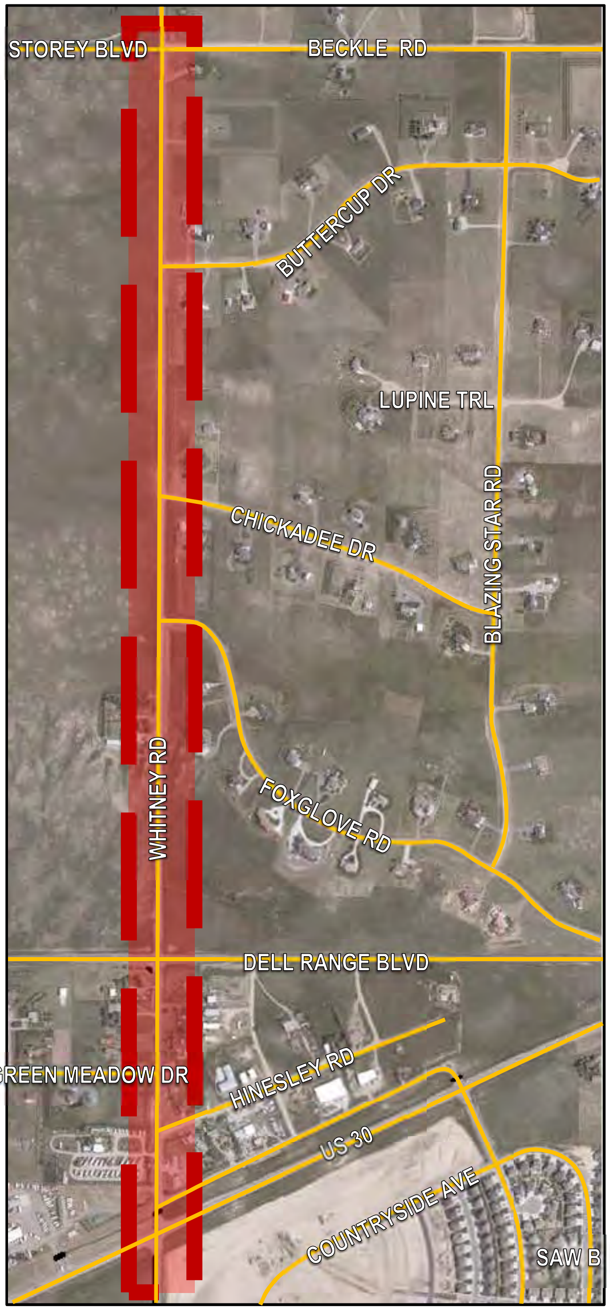
ADJOURN TO THE WORKSHOP AREAS



22

WHITNEY ROAD CORRIDOR PLAN

WHERE IS THE PROJECT?



OBJECTIVE

- Create a comprehensive and community accepted plan that optimizes safety, growth and fiscal responsibility.

GOALS

- Find the community and neighborhood vision for the roadway
- Improve roadway and intersection safety and function
- Address drainage and snow drifting

Find Us Online:

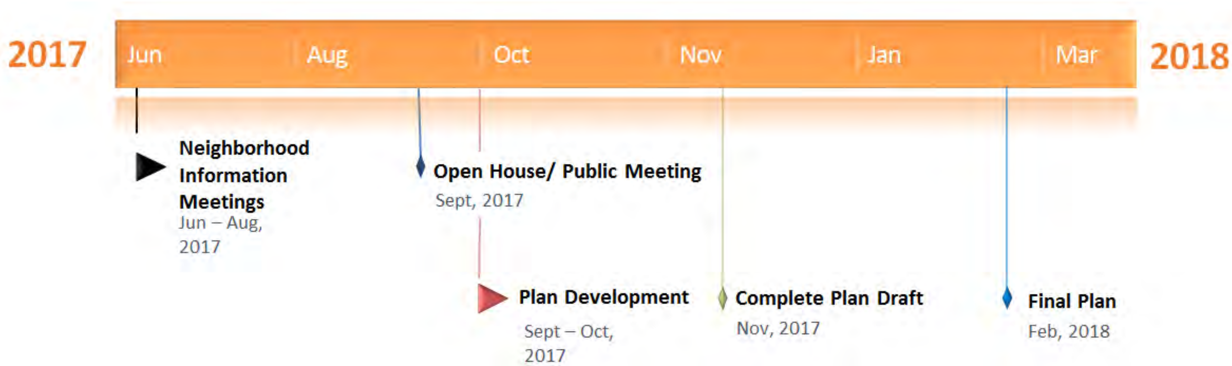
www.plancheyenne.org

For More Information Contact:

Nancy Olson – 307.638.4366 or

nolson@cheyennempo.org

WHAT TO EXPECT?



WHITNEY ROAD CORRIDOR

WE WANT TO HEAR FROM YOU!

Dear Neighborhood Resident:

The Cheyenne Metropolitan Planning Organization (MPO) has engaged AVI, P.C. to study the future transportation needs of the Whitney Road corridor from U.S. 30 to Beckle Road/ Storey Blvd.

You have received this notification/ survey form because you use the corridor and we need your help to plan the future roadway.

Please take a few minutes to answer the questions by one of the following ways:

1. Fill out the online form at **https://www.surveymonkey.com/r/WHITNEY1**
2. Complete the postcard form below, refold so that the return address is shown on the outside, seal it closed with tape, and mail or drop off at the address shown.
3. Call AVI, P.C. at 307.637.6017

Cheyenne MPO
2101 O'Neil, Room 205
Cheyenne, WY 82001

AVI, PC
1103 Old Town Lane, Suite 101
Cheyenne, WY 82009

1. If you are interested in attending future public or neighborhood meetings about this project, please give us the best way to contact you to keep you informed (Optional)?

Email:______________________________
or
Phone:______________________________

2. What meeting times would work best to accommodate your schedule?

Description	Mornings	Afternoons	Evenings
Weekdays	☐	☐	☐
Weekends	☐	☐	☐

3. What day of week is usually best for you to be able to attend a public or neighborhood meeting (Circle all that apply)? M Tu We Th Fr Sat

Additional Information Contact: Nancy Olson | Cheyenne MPO | P:307.638.4366
E:nolson@cheyennempo.org

WHITNEY ROAD
CORRIDOR STUDY

For More Information:

Cheyenne Metropolitan Planning Organization (MPO)
http://www.plancheyenne.org/mpo-project

Nancy Olson
| MPO | 307.638.4366 | nolson@cheyennempo.org

Tom Cobb | AVI, pc | 307.637.6017 | cobb@avipc.com

WE NEED YOUR HELP:

In determining roadway improvements along Whitney Road from U.S. 30 to Beckle Road/ Storey Blvd.

Let us know when you are available at the link below:

https://www.surveymonkey.com/r/WHITNEY1

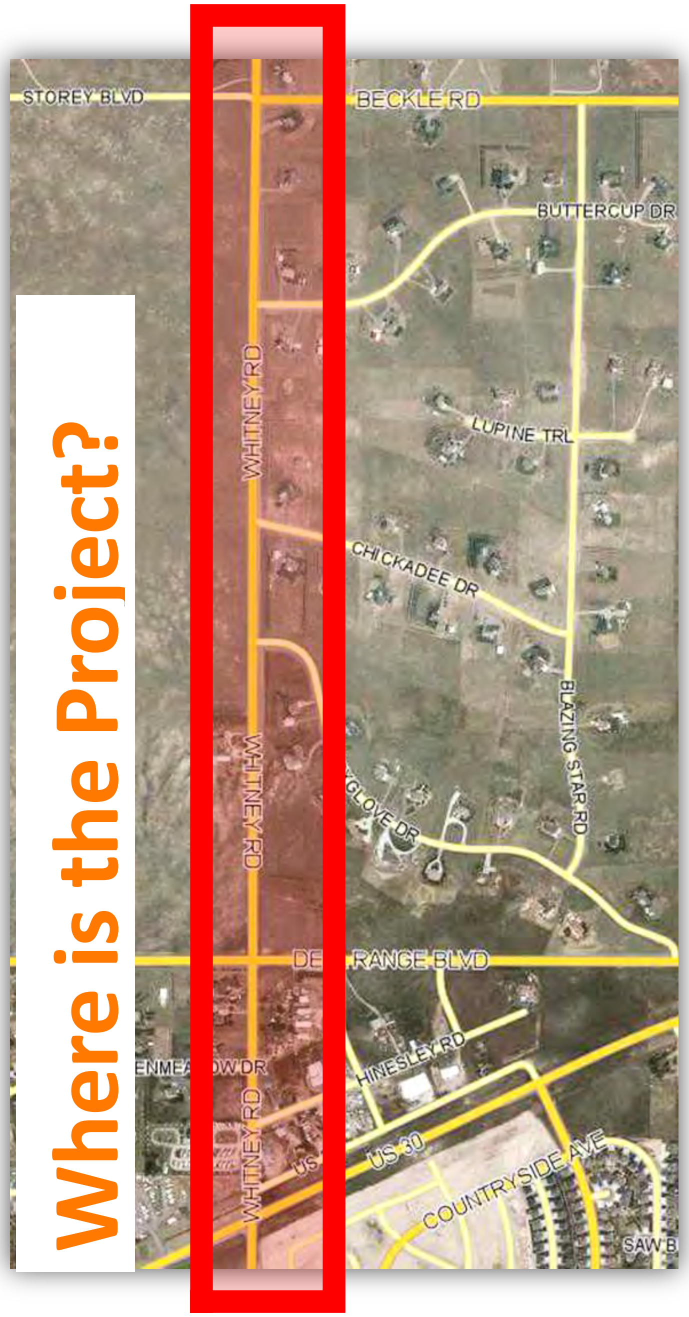
WHITNEY ROAD CORRIDOR STUDY

Do you want to be notified?

Please enter your information – Thank you

NAME	EMAIL	PHONE
Jim + Barb Boyd	blboyd7@msn.com	816-739-0489
Charles Roberson		307-638-3466
James Read	4715 Gysel Pl cheyenne wy 82009	307-632-2066

WHITNEY ROAD CORRIDOR PLAN



Objective

- Create a comprehensive plan that strives to optimize safety, growth and fiscal responsibility.

Goals

- Find the community and neighborhood vision for the roadway
- Improve roadway and intersection safety and function
- Address drainage and snow drifting

Find Us Online:

www.plancheyenne.org

For More Information Contact:

Nancy Olson – 307.638.4366 or
nolson@cheyennempo.org

What to Expect?

Fact Sheet

WHITNEY ROAD CORRIDOR PLAN

WHERE IS THE PROJECT?

OBJECTIVE

- Create a comprehensive plan that strives to optimizes safety, growth and fiscal responsibility.

GOALS

- Find the community and neighborhood vision for the roadway
- Improve roadway and intersection safety and function
- Address drainage and snow drifting

Find Us Online:

www.plancheyenne.org

For More Information Contact:

Nancy Olson – 307 638 4366 or

nolson@cheyennempo.org

WHAT TO EXPECT?

2.

1. If you are interested in attending future public or neighborhood meetings about this project, please give us the best way to contact you to keep you informed (Optional)?

Name

Address

Phone

Email

2. What meeting times would work best to accommodate your schedule?

	Mornings	Afternoons	Evenings
Weekdays			
Weekends			

Other (please specify):

3. What day of the week is usually best for you to be able to attend a public or neighborhood meeting (Mark all that apply)?

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

3.

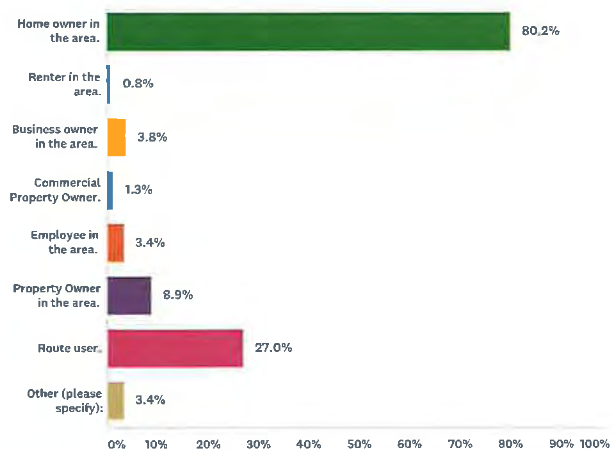
Thank you for providing input for this project!

For additional information and updates please check the Laramie County Planning and Development Office Website at http://www.laramiecounty.com/_departments/_planning/

Or Contact Tom Cobb at AVI, P.C email: Cobb@avipc com or 307 637 6017

Q1 Which of the following best describes you (Please mark all that apply)?

Answered: 237 Skipped: 0



ANSWER CHOICES	RESPONSES	
Home owner in the area. (1)	80.2%	190
Renter in the area. (2)	0.8%	2
Business owner in the area. (3)	3.8%	9
Commercial Property Owner. (4)	1.3%	3
Employee in the area. (5)	3.4%	8
Property Owner in the area. (6)	8.9%	21
Route user. (7)	27.0%	64
Other (please specify): (8)	3.4%	8
Total Respondents: 237		

BASIC STATISTICS

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	8.00	1.00	2.99	2.69

#	OTHER (PLEASE SPECIFY):	DATE
1	Real Estate Broker Real Estate Broker	11/21/2017 6:56 PM
2	Real Estate Buyer Cheyenne resident thinking of moving over there	11/16/2017 8:38 PM

3	Route User Live in Cheyenne, close top downtown. let's get on with this project and stop dragging it out!	11/15/2017 3:39 PM
4	Route User Friend of homeowners in the area	11/14/2017 11:00 AM
5	Route User Homeowner in middle of town	11/11/2017 8:30 AM
6	Real Estate Broker Realtor	11/9/2017 5:45 PM
7	TEST	11/6/2017 3:20 PM
8	MPO CAC Member MPO Citizens Advisory Committee Member	11/6/2017 8:25 AM

Q2 Please help us keep you informed by giving us the way to contact you (Optional).

Answered: 107 Skipped: 130

ANSWER CHOICES	RESPONSES	
City/State/ZIP:	63.55%	68
Phone:	70.09%	75
Email:	88.79%	95
Address:	92.52%	99
Name:	98.13%	105

#	NAME:	DATE
1	Marc Woods	12/7/2017 10:35 AM
2	Candace Croswell	11/30/2017 4:24 PM
3	Shaun Roberts	11/22/2017 2:20 PM
4	Sara Janes Ellis	11/21/2017 7:39 PM
5	Joe Prunty	11/21/2017 6:56 PM
6	Natasha Gallizzi	11/21/2017 4:47 PM
7	Richard D. Vosler (Dick)	11/20/2017 11:51 AM
8	Wayne Lax	11/20/2017 11:25 AM
9	Henry Uhden	11/20/2017 7:08 AM
10	Walter hall	11/19/2017 7:25 PM
11	Rebecca Oleary	11/18/2017 9:36 PM
12	Barbara Edmunds	11/16/2017 2:04 PM
13	Linda erikson	11/16/2017 8:47 AM
14	Bryce Bump	11/16/2017 7:06 AM
15	David Sutherland	11/15/2017 9:29 PM
16	Jim woods	11/15/2017 8:33 PM
17	Scott Allen	11/15/2017 8:16 PM
18	don kentner	11/15/2017 7:38 PM
19	Carl Voigtsberger	11/15/2017 5:06 PM
20	Mara Funk	11/15/2017 1:08 PM
21	Danna Loyd	11/15/2017 10:01 AM
22	Chad Doss	11/14/2017 9:07 PM
23	Mike Mills	11/14/2017 8:14 PM
24	Charles Retz	11/14/2017 6:34 PM
25	Sheri Emmert	11/14/2017 5:15 PM
26	Tom & Janice Rath	11/14/2017 1:59 PM
27	Jennifer Woods	11/14/2017 11:25 AM
28	Andy Sparks	11/14/2017 11:07 AM

29	Sharayah kimzey	11/14/2017 10:42 AM
30	Camille Howard	11/14/2017 10:32 AM
31	Dianna Madvig	11/14/2017 9:51 AM
32	Rachel Bailey	11/14/2017 9:05 AM
33	Cyndi Henderson	11/14/2017 9:01 AM
34	Mandy Brekhus	11/14/2017 8:46 AM
35	Kristen Spiker	11/14/2017 8:23 AM
36	Kevin & Susan Heyborne	11/14/2017 8:12 AM
37	Lois Madland	11/13/2017 3:44 PM
38	Jeff	11/13/2017 10:00 AM
39	Bruce	11/13/2017 5:38 AM
40	Jeremy Santee	11/13/2017 4:19 AM
41	Ana	11/13/2017 1:14 AM
42	Sandra Smith	11/12/2017 10:00 PM
43	Jake	11/12/2017 7:36 PM
44	Richard Hammond	11/12/2017 6:27 PM
45	Steven Woodson	11/12/2017 5:43 PM
46	Monica Yarborough	11/11/2017 10:09 PM
47	Liz	11/11/2017 7:36 PM
48	TW Hartman	11/11/2017 11:44 AM
49	George Diefenderfer	11/10/2017 5:29 PM
50	Sue Hollingshead	11/10/2017 3:08 PM
51	Hillary	11/10/2017 11:14 AM
52	Terri Brantz	11/10/2017 6:46 AM
53	Julie mutchler	11/10/2017 6:09 AM
54	Cynthia Dill	11/9/2017 8:57 PM
55	Christopher Harbeson	11/9/2017 6:53 PM
56	Lee Hooker	11/9/2017 6:27 PM
57	WENDY Volk	11/9/2017 5:45 PM
58	Brenda Birkle	11/9/2017 3:49 PM
59	Ray & Melissa Hollingshead	11/9/2017 3:46 PM
60	Leif Anderson	11/9/2017 3:43 PM
61	Jim Boyd Jr	11/9/2017 3:37 PM
62	Jacquin y & Ruth E Flores	11/9/2017 3:18 PM
63	Elizabeth & Michael Gnagy	11/9/2017 3:16 PM
64	Ryley hardy	11/9/2017 3:11 PM
65	Richard Eiscranton	11/9/2017 3:11 PM
66	Andy Vehar	11/9/2017 3:07 PM
67	David Rose	11/9/2017 3:02 PM
68	Paula Baldeshwiler	11/9/2017 3:02 PM
69	Barbara Boyd	11/9/2017 2:57 PM
70	Eric Eatherly	11/9/2017 2:55 PM

71	Shon Dermondy	11/9/2017 2:52 PM
72	Pat Sawezinko	11/9/2017 2:47 PM
73	Morris & Sharon Jenkins	11/9/2017 2:40 PM
74	Ed & Peggy Uplain	11/9/2017 2:36 PM
75	Frank & Anna Mata	11/9/2017 2:33 PM
76	Lee Rolth	11/9/2017 2:30 PM
77	Chris Tetlow	11/9/2017 2:27 PM
78	Gilbert & Rebecca Ferrel	11/9/2017 2:25 PM
79	Hugh & Denise Harington	11/9/2017 2:23 PM
80	Dave Allen	11/9/2017 2:22 PM
81	Shawn Broad	11/9/2017 2:20 PM
82	Neil & Edith Carlyon	11/9/2017 2:18 PM
83	Nina Pike & Steve Rissler	11/9/2017 2:15 PM
84	Jim Larson	11/9/2017 2:13 PM
85	Linda Larson	11/9/2017 2:08 PM
86	Dennis Brunner	11/9/2017 2:04 PM
87	Cynthia & Jerry Richmond	11/9/2017 1:59 PM
88	Dan Sutton	11/9/2017 1:47 PM
89	James Cicarelli	11/9/2017 1:16 PM
90	Alan Jones	11/9/2017 12:48 PM
91	Erica Pascoe	11/9/2017 11:31 AM
92	Steven Girt	11/9/2017 11:22 AM
93	Devonna Reiner	11/9/2017 10:36 AM
94	Kathy Starr	11/9/2017 9:44 AM
95	Dawn Fiscus	11/9/2017 9:18 AM
96	Slade Franklin	11/9/2017 8:34 AM
97	James Mestack	11/9/2017 8:06 AM
98	Rex Lockman	11/8/2017 6:32 PM
99	Kenneth J. Widney	11/8/2017 6:29 PM
100	Carol Anderson	11/7/2017 6:46 AM
101	Michael Pearlman	11/6/2017 8:25 AM
102	Erica Mathews	11/4/2017 9:43 PM
103	Glenn Murray	11/4/2017 9:10 PM
104	Teresa Walling	11/4/2017 5:26 PM
105	Randy Byers	11/4/2017 2:56 PM

#	ADDRESS:	DATE
1	Heartland Subdivision 7805 Yarina Way	12/7/2017 10:35 AM
2	Fox Run 7297 Monarch Drive	11/30/2017 4:24 PM
3	Bison Run Whitney Road 6408 Elizabeth Rd	11/22/2017 2:20 PM
4	Saddle Ridge 4004 Gunsmoke Road	11/21/2017 7:39 PM
5	Out of Study Area 6106 Yellowstone	11/21/2017 6:56 PM
6	Bison Run 6634 Saykally Rd	11/21/2017 4:47 PM

7	Fox Run 10145 Crystal Mtn. Rd	11/20/2017 11:51 AM
8	Heartland Subdivision 7906 Aztec Drive	11/20/2017 11:25 AM
9	Saddle Ridge 6906 Snowy River Road	11/20/2017 7:08 AM
10	Out of Study Area 812 east 5th street	11/19/2017 7:25 PM
11	Wyoming Ranchettes 12411 Empire dr	11/18/2017 9:36 PM
12	Sample Subdivision 7311 e Pershing	11/16/2017 2:04 PM
13	Fox Run 7705 Sorrento Lane	11/16/2017 7:06 AM
14	Saddle Ridge 6606 campfire ct	11/15/2017 9:29 PM
15	Woods Land Estates 6004 Storey Blvd	11/15/2017 8:33 PM
16	Fox Run 6801 Monarch Dr	11/15/2017 8:16 PM
17	Hill Heights 5710 dellrange	11/15/2017 7:38 PM
18	Wyoming Ranchettes 11303 yellowbear rd	11/15/2017 5:06 PM
19	Meadowlark Estates 6515 Foxglove	11/15/2017 1:08 PM
20	Out of Study Area 3529 McComb Ave	11/15/2017 10:01 AM
21	Fox Run 9907 Crystal Mountain Road	11/14/2017 9:07 PM
22	Fox Run 9424 Crystal Mountain Road	11/14/2017 8:14 PM
23	Heartland Subdivision 7317 Aztec Dr.	11/14/2017 6:34 PM
24	Fox Run 6740 Crested Butte Dr	11/14/2017 5:15 PM
25	Fox Run 6630 Telluride Dr	11/14/2017 1:59 PM
26	Fox Run 6641 Crested Butte	11/14/2017 11:25 AM
27	Fox Run 7045 Keystone dr	11/14/2017 11:07 AM
28	Fox Run Whitney Road 6427 monarch dr.	11/14/2017 10:42 AM
29	Fox Run 10822 Snow Valley Ct	11/14/2017 10:32 AM
30	Fox Run 6763 Keystone Dr	11/14/2017 9:51 AM
31	Fox Run 7330 Telluride Dr	11/14/2017 9:05 AM
32	Fox Run 9466 Sugarloaf Ln	11/14/2017 9:01 AM
33	Fox Run 7049 Monarch Drive	11/14/2017 8:46 AM
34	Fox Run 7282 Monarch Drive	11/14/2017 8:23 AM
35	Meadowlark Estates 6704 Foxglove Drive	11/13/2017 3:44 PM
36	Fox Run Crested Butte	11/13/2017 10:00 AM
37	Out of Study Area 3580, R.d. 215	11/13/2017 5:38 AM
38	Crown Subdivision 4924 Carmel Dr	11/13/2017 4:19 AM
39	Fox Run 7100 telluride dr	11/13/2017 1:14 AM
40	Christensen Tracts 4701 Craigy J	11/12/2017 10:00 PM
41	Saddle Ridge 6905 hitching post ln	11/12/2017 7:36 PM
42	Foster Tracts 6800 us highway 30	11/12/2017 6:27 PM
43	Bison Run 6633 Dorsey Road	11/12/2017 5:43 PM
44	Fox Run 9353 Crystal Mountain Rd	11/11/2017 10:09 PM
45	Saddle Ridge Brinkley	11/11/2017 7:36 PM
46	Wenandy Acres 3305 McKinley Ave	11/11/2017 11:44 AM
47	Meadowlark Estates 6515 Buttercup Dr.	11/10/2017 5:29 PM
48	Heritage Hills 9160 Heavenly Dr	11/10/2017 3:08 PM

49	Meadowlark Estates 7125 Buttercup Dr	11/10/2017 6:46 AM
50	Woods Land Estates 6819 Longabaugh Way	11/10/2017 6:09 AM
51	Wyoming Ranchettes 11059 White Eagle Road	11/9/2017 8:57 PM
52	Saddle Ridge 6833 laramie st	11/9/2017 6:53 PM
53	Fox Run 6784 Monarch Dr	11/9/2017 6:27 PM
54	Out of Study Area P.O. Box 2969	11/9/2017 5:45 PM
55	Bison Run 7303 Julia	11/9/2017 3:49 PM
56	Saddle Ridge 6808 Hitching Post Lane	11/9/2017 3:46 PM
57	Bison Run 6973 Elizabeth Rd	11/9/2017 3:43 PM
58	Hill Heights 4608 Van Buren Ave	11/9/2017 3:37 PM
59	Hill Heights 5204 Dell Range Blvd	11/9/2017 3:18 PM
60	Bison Run 6919 Julia Road,	11/9/2017 3:16 PM
61	Bison Run 7315 Julia Road	11/9/2017 3:11 PM
62	Foster Tracts 6526 Hwy 30	11/9/2017 3:07 PM
63	Foster Tracts 6530 US 30	11/9/2017 3:02 PM
64	Meadowlark Estates 6603 Foxglove Drive	11/9/2017 3:02 PM
65	Hill Heights 4608 Van Buren Ave	11/9/2017 2:57 PM
66	Meadowlark Estates 6710 Buttercup Dr	11/9/2017 2:55 PM
67	Woods Land Estates 5712 Story Blvd	11/9/2017 2:52 PM
68	Saddle Ridge 4100 Gunsmoke Rd	11/9/2017 2:47 PM
69	Greenmeadow Estates Whitney Road 6300 Green Meadow Dr (Comer of Whitney Road & Green Meadow)	11/9/2017 2:40 PM
70	Out of Study Area 801 Mcquery	11/9/2017 2:36 PM
71	Greenmeadow Estates Whitney Road 4436 Whitney Rd	11/9/2017 2:33 PM
72	Wyoming Ranchettes 11500 Yellow Bear rd	11/9/2017 2:30 PM
73	Heritage Hills 6517 Whistler Dr	11/9/2017 2:27 PM
74	Bison Run 7323 Dorsey Rd	11/9/2017 2:25 PM
75	Foster Tracts Whitney Road 4501 Whitney Rd	11/9/2017 2:23 PM
76	Fox Run 7816 Sorrento Ln	11/9/2017 2:22 PM
77	Wyoming Ranchettes 11431 Chief Twomoon Rd	11/9/2017 2 20 PM
78	Fox Run 7600 Monarch Dr	11/9/2017 2:18 PM
79	Bison Run 7087 Dorsey Rd	11/9/2017 2:15 PM
80	Wyoming Ranchettes 12302 Chier Two Moon	11/9/2017 2:13 PM
81	Wyoming Ranchettes 12302 Chief Two Moon Road	11/9/2017 2:08 PM
82	Wyoming Ranchettes 11755 Chief Two Moon	11/9/2017 2:04 PM
83	Bison Run 6909 Julia Rd	11/9/2017 1:59 PM
84	Heritage Hills 6889 Solitude Dr.	11/9/2017 1:47 PM
85	Prairie Sky Estates 7502 Rilley Rd.	11/9/2017 1:16 PM
86	Bison Run Whitney Road 6406 Dorsey	11/9/2017 12:48 PM
87	Prairie Sky Estates 7360 Rilley Road	11/9/2017 11:31 AM
88	Fox Run 6726 Telluride Dr	11/9/2017 11:22 AM
89	Saltenfield Subdivision 5608 Imperial Ct	11/9/2017 9:44 AM
90	Foster Tracts Whitney Road 6408 Hinesley Road	11/9/2017 9:18 AM

91	Bison Run Whitney Road 6404 Saykally Road	11/9/2017 8:34 AM
92	Bison Run 6861 Dorsey Rd.	11/9/2017 8:06 AM
93	Fox Run 7058 E. Riding Club	11/8/2017 6:32 PM
94	Bison Run 6631 Elizabeth Rd	11/8/2017 6:29 PM
95	Out of Study Area 1602 Animas Pl. Loveland, CO	11/7/2017 6:46 AM
96	Bison Run 7413 Toria Rd	11/4/2017 9:43 PM
97	Heritage Hills 6871 Solitude Loop	11/4/2017 9:10 PM
98	Prairie Dog Alley 4717 Summit Drive	11/4/2017 5:26 PM
99	Out of Study Area 1418 East 22nd Street	11/4/2017 2:56 PM

#	CITY/STATE/ZIP:	DATE
1	Cheyenne,WY. 82009	11/30/2017 4:24 PM
2	Cheyenne	11/22/2017 2:20 PM
3	Cheyenne WY 82001	11/21/2017 7:39 PM
4	Cheyenne Wy. 82009	11/21/2017 6:56 PM
5	Cheyenne, WY 82009	11/21/2017 4:47 PM
6	Cheyenne, WY, 82009	11/20/2017 11:25 AM
7	Cheyenne	11/20/2017 7:08 AM
8	Cheyenne wy82007	11/19/2017 7:25 PM
9	Cheyenne 82009	11/18/2017 9:36 PM
10	Cheyenne Wyoming 82001	11/16/2017 2:04 PM
11	Cheyenne, WY 82009	11/16/2017 7:06 AM
12	Cheyenne	11/15/2017 9:29 PM
13	82009	11/15/2017 8:33 PM
14	Cheyenen WY 82009	11/15/2017 8:16 PM
15	cheyenne	11/15/2017 7:38 PM
16	CHEYENNE	11/15/2017 5:06 PM
17	Cheyenne	11/15/2017 1:08 PM
18	Cheyenne WY 82002	11/15/2017 10:01 AM
19	Cheyenne Wy	11/14/2017 9:07 PM
20	Cheyenne/WY/82009	11/14/2017 8:14 PM
21	Cheyenne, WY 82009	11/14/2017 6:34 PM
22	Cheyenne, WY, 82009	11/14/2017 5:15 PM
23	Cheyenne, WY 82009	11/14/2017 1:59 PM
24	Cheyenne, Wy.	11/14/2017 11:25 AM
25	Cheyenne Wyoming 82009	11/14/2017 11:07 AM
26	Cheyenne wy 82009	11/14/2017 10:42 AM
27	Cheyenne WY 82009	11/14/2017 10:32 AM
28	Cheyenne	11/14/2017 9:51 AM
29	Cheyenne, WY 82009	11/14/2017 9:05 AM
30	Cheyenne Wy 82009	11/14/2017 9:01 AM
31	Cheyenne, WY 82009	11/14/2017 8:46 AM
32	Cheyenne, WY 82009	11/14/2017 8:23 AM

33	82009	11/13/2017 10:00 AM
34	Cheyenne. Wy. 82009	11/13/2017 5:38 AM
35	Cheyenne, WY 82009	11/13/2017 4:19 AM
36	CHeyenne WY, 82009	11/12/2017 10:00 PM
37	Cheyenne,WY 82003	11/12/2017 6:27 PM
38	Cheyenne, Wy 82009	11/12/2017 5:43 PM
39	Cheyenne WY 82009	11/11/2017 10:09 PM
40	3621 Purple Sage Rd	11/11/2017 7:36 PM
41	Cheyenne, WAY 82001	11/11/2017 11:44 AM
42	Cheyenne WY 82009	11/10/2017 5:29 PM
43	Cheyenne, WY 82009	11/10/2017 3:08 PM
44	Cheyenne, WY 82009	11/10/2017 6:46 AM
45	Cheyenne	11/10/2017 6:09 AM
46	Cheyenne, Wyoming 82009	11/9/2017 8:57 PM
47	Cheyenne	11/9/2017 6:53 PM
48	Cheyenne, WY82009	11/9/2017 6:27 PM
49	Cheyenne WY 82003-2969	11/9/2017 5:45 PM
50	Cheyenne, WY 82009	11/9/2017 3:16 PM
51	Cheyenne, Wy 82009	11/9/2017 3:02 PM
52	82009	11/9/2017 2:30 PM
53	Cheyenne, WY 82009	11/9/2017 2:25 PM
54	Cheyenne	11/9/2017 1:47 PM
55	Cheyenne, WY 82009	11/9/2017 1:16 PM
56	Cheyenne	11/9/2017 11:31 AM
57	Cheyenne	11/9/2017 11:22 AM
58	Cheyenne WY 82001	11/9/2017 9:44 AM
59	Cheyenne, WY 82001	11/9/2017 9:18 AM
60	Cheyenne/WY/82009	11/9/2017 8:34 AM
61	Cheyenne, WY 82009	11/9/2017 8:06 AM
62	Cheyenne WY 82009	11/8/2017 6:32 PM
63	Cheyenne	11/8/2017 6:29 PM
64	80538	11/7/2017 6:46 AM
65	Cheyenne, WY 82009	11/4/2017 9:43 PM
66	Cheyenne, WY 82009	11/4/2017 9:10 PM
67	Cheyenne, WY 82009	11/4/2017 5:26 PM
68	Cheyenne, Wyoming 82001	11/4/2017 2:56 PM

#	PHONE:	DATE
1	307-631-9300	12/7/2017 10:35 AM
2	4109165232	11/30/2017 4:24 PM
3	3074215580	11/22/2017 2:20 PM
4	307-773-8490	11/21/2017 6:56 PM
5	Cell - 421-6981 Land Line 635-7402	11/20/2017 11:51 AM

6	3076300781	11/20/2017 7:08 AM
7	3072568402	11/19/2017 7:25 PM
8	3072207775	11/16/2017 2:04 PM
9	402-990-0743	11/16/2017 7:06 AM
10	286-7048	11/15/2017 9:29 PM
11	307-630-7884	11/15/2017 8:33 PM
12	3074339288	11/15/2017 5:06 PM
13	635-0495	11/15/2017 1:08 PM
14	3074215508	11/14/2017 9:07 PM
15	918-645-8902	11/14/2017 8:14 PM
16	307-630-7938	11/14/2017 6:34 PM
17	626-222-7169	11/14/2017 5:15 PM
18	307 637 3766	11/14/2017 1:59 PM
19	307-634-5440	11/14/2017 11:07 AM
20	3072872188	11/14/2017 10:42 AM
21	3072599642	11/14/2017 9:51 AM
22	3072569155	11/14/2017 9:05 AM
23	307-630-8130	11/14/2017 8:23 AM
24	307-421-6728	11/13/2017 3:44 PM
25	6388123	11/13/2017 5:38 AM
26	307-221-0136	11/13/2017 4:19 AM
27	2566162	11/12/2017 6:27 PM
28	307-214-5283	11/11/2017 10:09 PM
29	979-213-9732	11/11/2017 11:44 AM
30	7143973873	11/10/2017 5:29 PM
31	307-778-2911	11/10/2017 6:46 AM
32	3072143098	11/10/2017 6:09 AM
33	3072146965	11/9/2017 8:57 PM
34	307-630-5263	11/9/2017 5:45 PM
35	307-286-0736	11/9/2017 3:49 PM
36	274-2988	11/9/2017 3:46 PM
37	631-4766	11/9/2017 3:43 PM
38	816-739-0489	11/9/2017 3:37 PM
39	307-633-4989	11/9/2017 3:18 PM
40	307-286-6995	11/9/2017 3:16 PM
41	635-1923	11/9/2017 3:11 PM
42	307-220-2740	11/9/2017 3:07 PM
43	307-630-8965	11/9/2017 3:02 PM
44	307-634-4749	11/9/2017 3:02 PM
45	816-716-8722	11/9/2017 2:57 PM
46	307-222-8191	11/9/2017 2:55 PM
47	307-631-7369	11/9/2017 2:52 PM

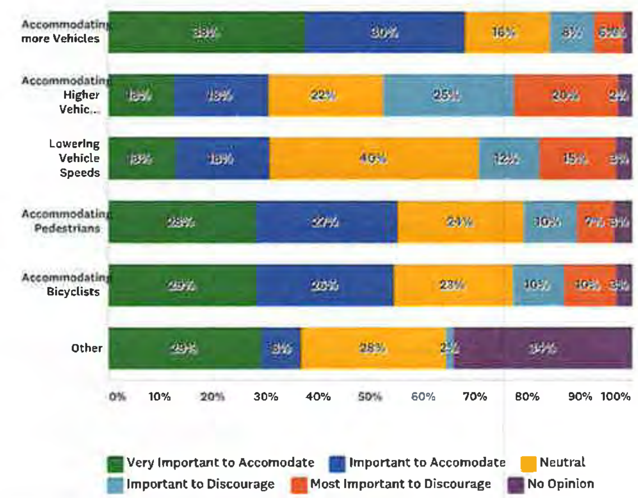
48	307-630-8868	11/9/2017 2:47 PM
49	307-638-7818	11/9/2017 2:40 PM
50	632-7149	11/9/2017 2:36 PM
51	307-635-1672	11/9/2017 2:33 PM
52	307-421-0355	11/9/2017 2:30 PM
53	425-766-3910	11/9/2017 2:27 PM
54	307-421-8511	11/9/2017 2:25 PM
55	637-3063	11/9/2017 2:23 PM
56	307-701-7111	11/9/2017 2:22 PM
57	307-214-6296	11/9/2017 2:20 PM
58	307-514-5275	11/9/2017 2:18 PM
59	307-630-4299	11/9/2017 2:15 PM
60	307-635-4215	11/9/2017 2:13 PM
61	307-635-4215	11/9/2017 2:08 PM
62	307-631-883	11/9/2017 2:04 PM
63	635-0929	11/9/2017 1:59 PM
64	3074214920	11/9/2017 1:47 PM
65	307-421-6055	11/9/2017 1:16 PM
66	307-421-7677	11/9/2017 12:48 PM
67	3077777163	11/9/2017 11:22 AM
68	307-421-9921	11/9/2017 9:44 AM
69	307-631-9044	11/9/2017 8:34 AM
70	307-287-1548	11/9/2017 8:06 AM
71	3076312248	11/8/2017 6:29 PM
72	9706630039	11/7/2017 6:46 AM
73	307-632-7987	11/4/2017 9:10 PM
74	307-634-4094	11/4/2017 5:26 PM
75	3076308358	11/4/2017 2:56 PM
#	EMAIL:	DATE
1	mwoods@remax.net	12/7/2017 10:35 AM
2	candace.croswell@gmail.com	11/30/2017 4:24 PM
3	srobertswy@msn.com	11/22/2017 2:20 PM
4	Wyjanes@gmail.com	11/21/2017 7:39 PM
5	Joe@Move2Wyo.com	11/21/2017 6:56 PM
6	Tashg13@msn.com	11/21/2017 4:47 PM
7	waynebassthunder5@hotmail.com	11/20/2017 11:25 AM
8	henry.uhden@gmail.com	11/20/2017 7:08 AM
9	Walterhall56@gmail.com	11/19/2017 7:25 PM
10	Rebecca.oleary5@gmail.com	11/18/2017 9:36 PM
11	Starranime2@netzero.com	11/16/2017 2:04 PM
12	Ljerikson@gmail.com	11/16/2017 8:47 AM
13	BBumper1@gmail.com	11/16/2017 7:06 AM

14	Dps8eet@live.com	11/15/2017 9:29 PM
15	Ourneckofthewoods@juno.com	11/15/2017 8:33 PM
16	HBS1993@live .com	11/15/2017 8:16 PM
17	d_ekentner@hotmail.com	11/15/2017 7:38 PM
18	Fishingtrue@gmail.com	11/15/2017 5:06 PM
19	Marafunk70@gmail.com	11/15/2017 1:08 PM
20	Hcr300@gmail.com	11/14/2017 9:07 PM
21	Mills2101@yahoo.com	11/14/2017 8:14 PM
22	Cl_walhabe@hotmail.com	11/14/2017 6:55 PM
23	Retzc@hotmail.com	11/14/2017 6:34 PM
24	Sheri336@hotmail.com	11/14/2017 5:15 PM
25	wytjrath@yahoo.com	11/14/2017 1:59 PM
26	Saspatks7@gmail.com	11/14/2017 11:07 AM
27	Sdkimzey@gmail.com	11/14/2017 10:42 AM
28	camille@yourspecialkid.com	11/14/2017 10:32 AM
29	Madvig@aol.com	11/14/2017 9:51 AM
30	radfam01@yahoo.com	11/14/2017 9:05 AM
31	cyndi.henderson@ymail.com	11/14/2017 9:01 AM
32	Mandybrekhus@gmail.com	11/14/2017 8:46 AM
33	Kcs5117@aol.com	11/14/2017 8:23 AM
34	kheyborn@wyoming.com	11/14/2017 8:12 AM
35	Jswood2403@yahoo.com	11/13/2017 6:20 PM
36	madlandb@yahoo.com	11/13/2017 3:44 PM
37	50brucebmg@gmail.com	11/13/2017 5:38 AM
38	jasantee@hotmail.com	11/13/2017 4:19 AM
39	Anachotas@hotmail.com	11/13/2017 1:14 AM
40	SSmith4701@gmail.com	11/12/2017 10:00 PM
41	FMS.cheyenne.com	11/12/2017 6:27 PM
42	Monica.yarborough@gmail.com	11/11/2017 10:09 PM
43	Winters liz@comcast.net	11/11/2017 7:36 PM
44	Twhartman@gmail.com	11/11/2017 11:44 AM
45	gdiefe@yahoo.com	11/10/2017 5:29 PM
46	sue.holling@gmail.com	11/10/2017 3:08 PM
47	Rendesign1@gmail.com	11/10/2017 11:14 AM
48	Terribrantz@gmail.con	11/10/2017 6:46 AM
49	Jmutchler90@gmail.com	11/10/2017 6:09 AM
50	dilljc@yahoo.com	11/9/2017 8:57 PM
51	Ryan.harbeson@gmail.com	11/9/2017 6:53 PM
52	Lhook7@yahoo.com	11/9/2017 6:27 PM
53	WendyVolk@CheyenneHomes.com	11/9/2017 5:45 PM
54	vbirkle@live.com	11/9/2017 3:49 PM
55	raymanhollings@gmail.com	11/9/2017 3:46 PM

56	frypan9@gmail.com	11/9/2017 3:43 PM
57	jlboyd8@gmail.com	11/9/2017 3:37 PM
58	Yelyrf@yahoo.com	11/9/2017 3:11 PM
59	reiscranton@gmial.com	11/9/2017 3:11 PM
60	andy@bigalsavtoservice.com	11/9/2017 3:07 PM
61	rbigals01@aol.com	11/9/2017 3:02 PM
62	vpfoxglove1@gmail.com	11/9/2017 3:02 PM
63	blboyd7@msn.com	11/9/2017 2:57 PM
64	eric@eartherly.net	11/9/2017 2:55 PM
65	shondergg@email.com	11/9/2017 2:52 PM
66	shadow1977@live.com	11/9/2017 2:47 PM
67	sjenkins@prodigy.net	11/9/2017 2:40 PM
68	anamata49@yahoo.com	11/9/2017 2:33 PM
69	leeroi88@gmail.com	11/9/2017 2:30 PM
70	christe@microsoft.com	11/9/2017 2:27 PM
71	sissylala28@yahoo.com	11/9/2017 2:25 PM
72	d21allen@gmail.com	11/9/2017 2:22 PM
73	shawnbroad1@gmail.com	11/9/2017 2:20 PM
74	ninalewpike@gmail.com	11/9/2017 2:15 PM
75	659turbo@msn.com	11/9/2017 2:13 PM
76	larsruss@aol.com	11/9/2017 2:08 PM
77	dennis.brunner@gmail.com	11/9/2017 2:04 PM
78	jlrcmr0929@gmail.com	11/9/2017 1:59 PM
79	d1_sutton@msn.com	11/9/2017 1:47 PM
80	cicarellij@msn.com	11/9/2017 1:16 PM
81	alan.jones@cowboyjonescc.com	11/9/2017 12:48 PM
82	e83ap@yahoo.com	11/9/2017 11:31 AM
83	spgirt@gmail.com	11/9/2017 11:22 AM
84	devonna.reiner@laramie1.org	11/9/2017 10:36 AM
85	Starrwy@aol.com	11/9/2017 9:44 AM
86	DawnFiscus@msn.com	11/9/2017 9:18 AM
87	sladefranklin@gmail.com	11/9/2017 8:34 AM
88	j_mestack@inbox.com	11/9/2017 8:06 AM
89	rrlock@live.com	11/8/2017 6:32 PM
90	e_widney@yahoo.com	11/8/2017 6:29 PM
91	andersoncarolw@gmail.com	11/7/2017 6:46 AM
92	emathews29@gmail.com	11/4/2017 9:43 PM
93	linglerlr@msn.com	11/4/2017 9:10 PM
94	twalling0925@gmail.com	11/4/2017 5:26 PM
95	randy@tdsi.us	11/4/2017 2:56 PM

Q3 Please rate the importance of the following transportation users and issues based on what you consider to be the most important design consideration for Whitney Road?

Answered: 215 Skipped: 22



	VERY IMPORTANT TO ACCOMODATE	IMPORTANT TO ACCOMODATE	NEUTRAL	IMPORTANT TO DISCOURAGE	MOST IMPORTANT TO DISCOURAGE	NO OPINION	TOTAL	WEIGHTED AVERAGE
Accommodating more Vehicles	38% 81	30% 65	16% 35	8% 18	6% 12	1% 3	214	3.8
Accommodating Higher Vehicle Speeds	13% 27	18% 39	22% 47	25% 54	20% 43	2% 5	215	2.7
Lowering Vehicle Speeds	13% 28	18% 38	40% 85	12% 25	15% 31	3% 6	213	2.9
Accommodating Pedestrians	28% 61	27% 58	24% 52	10% 22	7% 15	3% 7	215	3.5
Accommodating Bicyclists	29% 61	26% 56	23% 49	10% 21	10% 21	3% 6	214	3.4
Other	29% 19	8% 5	28% 18	2% 1	0% 0	34% 22	65	2.6

#	*IF OTHER (PLEASE SPECIFY)	DATE
1	Pulling traffic from Whiteney rd	12/7/2017 10:36 AM

2	It's the city's growth direction	11/21/2017 6:58 PM
3	Flattening out the grade of Whitney road all the way from the corridor to iron mountain road.	11/21/2017 4:51 PM
4	Pave Iron Mountain to help defer traffic and ease of better access to northern Whitney Road	11/19/2017 8:34 AM
5	This road way does provide access to a variety of users, from far north to get to the east portion of town, many runners and bicyclists use this corridor as well, even in dark and low light times. Improving this roadway would help to ensure the safety of drivers, and pedestrians.	11/16/2017 8:53 AM
6	I don't think It is as important to modify Whitney as it is to connect Whitney to College via Beckle to Storey	11/15/2017 8:49 PM
7	Might icorportate the 'Green Way' for pedestrians and bicyclists for access along the road.	11/15/2017 3:40 PM
8	Need wider road between HWY 30 & Dell Range	11/15/2017 1:11 PM
9	Equine trails	11/14/2017 6:35 PM
10	Provide other routes Pave Iron Mountain Rd.	11/14/2017 5:37 PM
11	Signal at Dell Range Blvd There needs to be a stoplight at the intersection of Whitney and Del Range	11/14/2017 11:01 AM
12	Shoulder	11/14/2017 8:13 AM
13	Continuation & Connection to " Greeway" from Saddle Ridge	11/13/2017 3:46 PM
14	Do Nothing Leave it alone!!!!!!!	11/13/2017 8:27 AM
15	Intersection illumination Lighting at Pershing and dell range crossings. Completely black at night there and unsafe	11/12/2017 7:38 PM
16	Provide other routes Residents and traffic have increased substantially in the last 5 years. Whitney Road needs to be widened and made safer; all the way up to Iron Mountain. Also, Whitney Road needs another outlet to the west, such as completely connecting with Storey Blvd for access to town.	11/10/2017 8:06 AM
17	Stop light or another alternative for crossing at Whitney and 30	11/9/2017 6:55 PM
18	Whitney and US 30 Intersection	11/9/2017 5:48 PM
19	stop light @ Whitney Rd & Dell Range	11/9/2017 2:58 PM
20	Street Lights on Del Range Whitney	11/9/2017 2:48 PM
21	Roadway is sufficient only needs accommodation for pedestrian use.	11/9/2017 1:53 PM
22	Make Whitney 4 lanes	11/9/2017 1:29 PM
23	Pedestrians with Dogs and Snow Drifts	11/9/2017 8:08 AM
24	Address the NO visibility for left turns coming off of Elizabeth rd. Sacally rd. and Four Mile rd. when turning onto Whitney.	11/8/2017 6:35 PM
25	Connect Storey to College is most important	11/8/2017 10:15 AM
26	Safety and fire protection	11/4/2017 9:13 PM
27	Help reduce drifting	11/3/2017 4:40 PM

Q4 If you could make one change to the existing Whitney Road Corridor, what change would you make?

Answered: 148 Skipped: 89

#	RESPONSES	DATE
1	Do nothing Nothing	12/14/2017 12:12 PM
2	Alternative Traffic Route Do nothing Connect Storey (1st) , Connect Four Miler Rd (2nd), pave Iron Mountain Rd. (3rd) - Leave Whitney alone and a make other connections first.	12/7/2017 10:36 AM
3	Alternative Traffic Route Paving Iron Mountain, Or connecting Storey or Four Mile	11/30/2017 4:26 PM
4	Widen - Shldr Add Shoulders.	11/29/2017 12:32 PM
5	Site Distance Blind corners at Whitney and Elizabeth, Saykally and Whistler	11/22/2017 2:21 PM
6	Increase Speed Limit Increase speed limit	11/22/2017 6:01 AM
7	Other - Miscellaneous Continue it to campstool	11/22/2017 1:22 AM
8	Alternative Traffic Route I'd like to have storey completed from college to Whitney	11/21/2017 9:44 PM
9	Intersection Lighting Slow Traffic Lighting and speed	11/21/2017 7:40 PM
10	Other - Miscellaneous None so far	11/21/2017 6:58 PM
11	RAB at U.S. 30 Traffic Signal Dell Range Traffic Signal U.S. 30 Stop light at Whitney/DelRange or stop light/roundabout at hwy30/Whitney	11/21/2017 4:51 PM
12	Widen - Shldr Widen road. Put in good shoulders	11/21/2017 4:28 PM
13	Widen - Shldr Widen - Travel lane(s) Improve/Widen Sector US30 to Dell Range	11/20/2017 11:52 AM
14	Other - Miscellaneous Remove the "calming islands" at Hwy. 30 and Whitney Rd.	11/20/2017 7:09 AM
15	Other - Miscellaneous Expand Hwy 30 to 4 Lanes past the Archer Turnoff.	11/19/2017 8:13 PM
16	Dedicated Multi-use Path Increase Speed Limit Separated bike path to accommodate bike safety while maintaing higher speed traffic.	11/19/2017 8:11 PM
17	Other - Miscellaneous Stick to the budget we voted for	11/19/2017 7:26 PM
18	Other - Miscellaneous Connect to Campstool	11/19/2017 1:53 PM
19	Alternative Traffic Route Pave Iron Mountain	11/19/2017 8:34 AM
20	Widen EB Dell Range Going west on Dell Range, at the intersection of Dell Range and Whitney, there should be a left turning lane.	11/19/2017 5:26 AM
21	Other - Miscellaneous Widen - Travel lane(s) Widen - Turn Lane Extend the turn lane going west from Whitney onto Hwy 30. That new greenway crossing thing is awful and prevents good flow of traffic. Also, widen Whitney between Hwy 30 and Dell Range. That is a must.	11/18/2017 10:12 AM
22	Alternative Traffic Route Pave iron mountain and bring 4 mile or story blvd through	11/17/2017 5:50 AM
23	Intersection Lighting Lightning	11/16/2017 10:31 PM
24	Other - Miscellaneous Beautification	11/16/2017 8:39 PM
25	Traffic Signal Dell Range Traffic Signal U.S. 30 Lights on both high way 30 and Pershing	11/16/2017 2:06 PM
26	Traffic Signal Dell Range Traffic Signal U.S. 30 Widen - Shldr Widen - Turn Lane Add lights and light it up well. Also add a stop light o believe may help too . It's a dangerous intersection I've seen cars not even stop just rum right through .. Widen it also and make it a bigger intersection	11/16/2017 12:36 PM
27	Widen - Shldr widen the roadway to add shoulders.	11/16/2017 8:53 AM
28	Traffic Signal U.S. 30 Widen - Turn Lane Stoplight at Lincoln way and wider turning lane on dell range	11/16/2017 8:49 AM
29	Widen - Shldr Widen corridor (shoulders) to accommodate above.	11/16/2017 7:10 AM

30	Traffic Signal Dell Range Traffic Signal U.S. 30 Stop light at Whitney and Dell Range and Hwy 40	11/15/2017 10:01 PM
31	Slow Traffic Traffic Signal U.S. 30 Put a light at Whitney and 30. Slow the traffic on 30 until past saddle ridge.	11/15/2017 9:31 PM
32	Alternative Traffic Route Connect Storey Blvd. to College to help relieve the traffic from del range	11/15/2017 8:50 PM
33	Alternative Traffic Route I would connect Storey Blvd to College Dr saving time for emergency responders and taking considerable travel load off of the section of Whitney Rd between Del Range and Hwy 30.	11/15/2017 8:49 PM
34	Alternative Traffic Route More west to east connections.	11/15/2017 8:18 PM
35	Do nothing Nothing	11/15/2017 7:47 PM
36	Do nothing leave it alone. stupid drivers are everywhere	11/15/2017 7:41 PM
37	Alternative Traffic Route Pave Iron Mountain Rd from Whitney Rd West	11/15/2017 6:54 PM
38	Other - Miscellaneous Join Torrington hwy	11/15/2017 5:07 PM
39	Add Sidewalk Dedicated Multi-use Path Widen - Turn Lane Sidewalks or bike path. Turn lanes north of 30.	11/15/2017 3:41 PM
40	Other - Miscellaneous Need to view the plan.	11/15/2017 3:40 PM
41	Alternative Traffic Route A connection or two between College Drive and Whitney.	11/15/2017 1:11 PM
42	Traffic Signal U.S. 30 Stoplight at Whitney and Hwy 30.	11/15/2017 1:10 PM
43	Add Sidewalk a sidewalk for people to walk on	11/15/2017 12:56 PM
44	Do nothing None	11/15/2017 10:02 AM
45	Alternative Traffic Route Extend over the railroad to Campstool Rd.	11/15/2017 8:20 AM
46	Alternative Traffic Route Increase Speed Limit Widen - Shdr Non-motor Widen the shoulder and paint white lines on edges! Increase speed limit! I have almost been hit on my bicycle numerous times. Pave Iron mountain road in crease the speed limit!! Oil field traffic is a hazard doing 25 mph!!	11/14/2017 9:14 PM
47	Alternative Traffic Route 1st thing would be to pave Iron Mountain Road to connect Whitney to a paved road that allows travel to the West at the North end that is paved.	11/14/2017 8:17 PM
48	Slow Traffic The intersection at Whitney and Del Range can be dangerous with high speeds.	11/14/2017 8:07 PM
49	Alternative Traffic Route Dedicated Multi-use Path Add trail for walkers and connect iron mountain with paved road	11/14/2017 7:22 PM
50	Dedicated Multi-use Path A shoulder for bicyclists and runners. Or a path along the road for them would be even better!	11/14/2017 6:57 PM
51	Dedicated Multi-use Path Widen - Shdr Non-motor Widen the road and adding a multi use path.	11/14/2017 6:35 PM
52	Alternative Traffic Route Storey to College	11/14/2017 5:16 PM
53	Widen - Shldr Widen - Travel lane(s) Widen - Turn Lane Make the road wider	11/14/2017 5:16 PM
54	Traffic Signal Dell Range Stop light at Whitney and Dell range.	11/14/2017 12:10 PM
55	Mitigate snow drifting Eliminate drifting snow	11/14/2017 11:08 AM
56	Traffic Signal Dell Range There needs to be a stoplight at the intersection of Whitney and Del Range	11/14/2017 11:01 AM
57	Widen - Turn Lane Merging turning lanes	11/14/2017 10:44 AM
58	RAB at Dell Range Stoplights or traffic circles	11/14/2017 10:33 AM
59	Alternative Traffic Route Make Whitney four lane from Iron Mountain Road to I-80.	11/14/2017 9:57 AM
60	Safety Widen - Turn Lane Whitney road currently has more traffic than it can safely manage. As more people move into out neighborhood we need to have better intersections, wider lanes with turn lanes in high turning areas. Thank you	11/14/2017 9:56 AM
61	Slow Traffic Slow traffic	11/14/2017 9:42 AM
62	Increase Speed Limit Make speed limit 50 mph	11/14/2017 9:37 AM

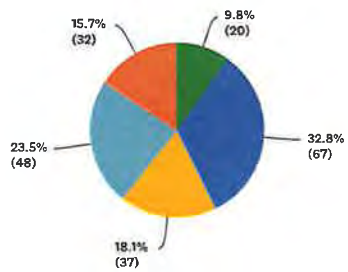
63	Alternative Traffic Route A road connecting to storey blvd.	11/14/2017 9:22 AM
64	Intersection Lighting Traffic Signal Dell Range Widen EB Dell Range Traffic light, flood lights at Whitney and Dellrange. Plus more than one lane eastbound on DELLRANGE PAST RIDGE	11/14/2017 9:05 AM
65	Other - Miscellaneous Traffic flow at both dell range and hwy 30 intersections	11/14/2017 8:47 AM
66	Widen - Shdr Non-motor Space for walkers, bicycles and runners.	11/14/2017 8:25 AM
67	Widen - Shdr Non-motor Wider shoulders or a bike/walking lane	11/14/2017 8:13 AM
68	Mitigate steep hill Steep hill in bad weather	11/14/2017 8:13 AM
69	Intersection Lighting Light at the intersection of Whitney and DelRange. It is hard to see on the dark.	11/13/2017 7:43 PM
70	Stop Sign Flash Flashing yellow lights to remind people to stop	11/13/2017 7:14 PM
71	Traffic Signal Dell Range Traffic Signal U.S. 30 Stop lights at Whitney / Del Range and Whitney / Hwy 30.	11/13/2017 6:28 PM
72	Traffic Signal U.S. 30 Traffic light at Whitney and Hwy 30. This area can be very busy and other drivers become impatient and take risks by crossing across HWY 30 possibly too soon. Pulling themselves and others at risk.	11/13/2017 6:24 PM
73	RAB at Dell Range Traffic Signal U.S. 30 Round about ar Whitney and Dell Range. Stop light at Whitney and highway 30. We live in Saddle Ridge and those intersections are very scary. As far as Whitney north of Dell Range, road needs to be wider as I am a user to get to I-25 north.	11/13/2017 6:15 PM
74	Slow Traffic Widen - Shdr Non-motor Widen the road to "safely" Accommodate homeowners to be able to walk/ride bikes along "Residential" planned plates. Speed limit adjusted for walking & bike paths.	11/13/2017 3:46 PM
75	Widen - Shdr Non-motor Widen it and greenway expansion	11/13/2017 10:02 AM
76	Remove asphalt I'd like to see the pavement removed and have gravel replace it.	11/13/2017 8:27 AM
77	Widen - Shldr Widen - Travel lane(s) Wider roadway with 8 foot shoulders	11/13/2017 8:22 AM
78	Traffic Signal Dell Range Traffic Signal U.S. 30 Stop lights at Dell Range and Hwy 30 intersections.	11/13/2017 5:17 AM
79	Widen - Travel lane(s) Add more lanes.	11/13/2017 4:20 AM
80	Do nothing Mitigate snow drifting I have no issues with the road. My only problem is when it snows. The road is extremely dangerous.	11/13/2017 1:18 AM
81	Traffic Signal Dell Range Light at Whitney and Del Range	11/12/2017 10:01 PM
82	Safety Safety	11/12/2017 7:51 PM
83	Intersection Lighting Street lights at intersections, way too much traffic to have it not lit at night	11/12/2017 7:38 PM
84	Intersection Lighting Lighting at the intersection of Whitney and Dell Range	11/12/2017 3:37 PM
85	Traffic Signal Dell Range Traffic Signal U.S. 30 Traffic lights ?? at Whitney and hwy 30	11/12/2017 11:25 AM
86	Safety Create a solution for the stop sign. To stop sigb at both dell range and highway 30 are dangerous and a better and safer solution needs created. Whether is a stop light or redirecting the flow of traffic something needs done to avoid accidents and loss of life.	11/12/2017 7:08 AM
87	Mitigate steep hill The hill	11/11/2017 10:10 PM
88	Other - Miscellaneous Traffic flow not stop and go.	11/11/2017 7:39 PM
89	RAB at Dell Range Traffic Signal U.S. 30 Widen - Shdr Non-motor Place a round-about at Whiney & Del Range, and place a stop light at Whitney and 30.	11/11/2017 7:38 PM
90	Alternative Traffic Route Widening whitney gor bicycle lanes, storey connection. 4 mile connection, and paving iron mountain.	11/11/2017 7:28 PM
91	Widen - Shldr Widen - Travel lane(s) Making it wider	11/11/2017 6:50 PM
92	Widen - Turn Lane widest road possible with a center turn lane for residential streets, right turn lane for dell range, bike lane and sidewalk	11/10/2017 5:33 PM
93	Mitigate snow drifting Mitigate steep hill Take out the steep decline to Dell Range. This section of the road gets very slick and sometimes it is hard to stop at the bottom. Also, the snow blows across the road causing white out conditions.	11/10/2017 3:11 PM

94	Other - Miscellaneous Rove the calming island on Whitney and hey 30.	11/10/2017 12:16 PM
95	Widen - Shdr Non-motor Widen - Travel lane(s) Additional lanes and sidewalks for safety of walkers, runners and bicyclists. Crossing highway 30 can be difficult and dangerous as well	11/10/2017 11:16 AM
96	Do nothing The narrow roadway with no shoulders	11/10/2017 9:28 AM
97	Alternative Traffic Route 1. Complete connection with Storey Blvd 1a. Widen the road for safety.	11/10/2017 8:06 AM
98	Widen - Shdr Non-motor Widen the road for walkers and bikers	11/10/2017 6:47 AM
99	RAB at Dell Range Traffic Signal Dell Range Traffic Signal U.S. 30 Something needs to be done at the intersecions of dell range and hwy 30. Roundabouts? Stop lights?	11/10/2017 6:11 AM
100	Widen - Turn Lane Widening by adding turn lanes and shoulders.	11/9/2017 9:03 PM
101	Do nothing Nothing	11/9/2017 7:53 PM
102	Traffic Signal U.S. 30 Stop light or another alternative for crossing at Whitney and 30	11/9/2017 6:55 PM
103	Safety A form of traffic control at Whitney and Dell Range. Road improvement on Whitney between Dell Range and hwy 30	11/9/2017 6:30 PM
104	Traffic Signal U.S. 30 Adding a light at the intersection of US 30 and Whitney	11/9/2017 5:48 PM
105	Mitigate steep hill Blind spots and steep grades	11/9/2017 3:50 PM
106	Widen - Shldr Widen - Travel lane(s) Width	11/9/2017 3:47 PM
107	Widen - Shldr Widen - Turn Lane Widening Whitney between 30 & Del Range	11/9/2017 3:46 PM
108	Widen - Shdr Non-motor Safe pedestrian paths	11/9/2017 3:44 PM
109	Traffic Signal Dell Range Traffic Signal U.S. 30 Red/Green lights	11/9/2017 3:42 PM
110	Mitigate snow drifting Safety Improve intersections Del Range Hwy 30. Put wind breaks either snow fence or tree planting son west side for drift control.	11/9/2017 3:20 PM
111	Traffic Signal Dell Range Lighting & traffic control (Stop Light) Whitney & Dell Range	11/9/2017 3:16 PM
112	Widen - Shldr Widen - Travel lane(s) make it wider	11/9/2017 3:11 PM
113	Alternative Traffic Route east/West connecting roads to North end of Whitney	11/9/2017 3:09 PM
114	Safety Widen Roadway Inter Section safety	11/9/2017 3:07 PM
115	Widen - Shldr Widen - Travel lane(s) Widen the road and when doing so make sure the road does not crown !!	11/9/2017 3:05 PM
116	Widen - Shdr Non-motor Widen - Turn Lane Bike shoulder three lanes between Del Range & Pershing	11/9/2017 3:03 PM
117	Do nothing stop it from being changed	11/9/2017 2:56 PM
118	Alternative Traffic Route Prioritize connecting Storey Blvd first. This will reduce Whitney traffic and Del Range congestion	11/9/2017 2:53 PM
119	Intersection Lighting Widen - Turn Lane Put overhead lighting on Whitney & Del Range, mark it better, turn lane on Del Range	11/9/2017 2:48 PM
120	Widen - Shdr Non-motor Widen and provide protection for PEDS/Bicycles	11/9/2017 2:30 PM
121	Traffic Signal Dell Range Traffic Signal U.S. 30 you need traffic lights @Whitney & Del Range & Whitney & Hwy 30	11/9/2017 2:28 PM
122	Widen - Turn Lane Make turn lane @Del Range & Whitney headed south	11/9/2017 2:25 PM
123	Traffic Signal Dell Range Traffic Signal U.S 30 Traffic Lights on Whitney & Del Range & Whitney & 30	11/9/2017 2:23 PM
124	Intersection Lighting Desperately need street lights @ Whitney/Del Range it's too dark, hard to see turn lane @ night	11/9/2017 2:19 PM
125	Traffic Signal Dell Range (No Round Abouts!!!) Stop light @ Whiteny & Del Range	11/9/2017 2:16 PM
126	Alternative Traffic Route Finish paving Iron Mountain Intersection at 4 mile & Whitney is a fatality waiting to happen	11/9/2017 2:09 PM
127	Traffic Signal Dell Range Traffic Signal U.S. 30 Stop Light@ DelRange & Whitney plus Hwy 30& Whitney speed bumps to slow down speeders	11/9/2017 2:01 PM

128	Widen - Shdr Non-motor Bicycle or walking path to encourage and accommodate physical fitness.	11/9/2017 1:53 PM
129	Traffic Signal U.S. 30 Stoplight at US30.	11/9/2017 12:54 PM
130	Slow Traffic Slow vehicles & make travel easier	11/9/2017 12:49 PM
131	Widen - Shdr Non-motor Widen the road (especially between Dell Range and US 30) and add a disconnected bike/pedestrian path.	11/9/2017 12:03 PM
132	Mitigate snow drifting Widen - Shdr Non-motor wider lanes and room for pedestrians/cyclists, better maintenance in snow/ice	11/9/2017 11:52 AM
133	Alternative Traffic Route Beckle\Storey to College	11/9/2017 11:35 AM
134	Traffic Signal Dell Range Traffic Signal U.S. 30 Add lights at the intersections and lower speed limits at both HWY 30/Whitney intersection and Del Range/Whitney. NO ROUNDABOUT! Sounds awful.	11/9/2017 11:24 AM
135	Traffic Signal Dell Range Wider, take out the dip. Traffic light at Dell Range and Whitney	11/9/2017 9:46 AM
136	Traffic Signal Dell Range Traffic Signal U.S. 30 Stop lights at Dell Range and Highway 30. These are big safety issues for the homeowners in this area.	11/9/2017 9:19 AM
137	Alternative Traffic Route Dedicated Multi-use Path Mitigate snow drifting Traffic Signal Dell Range Widen - Shdr Non-motor I have more than one suggested changed...sorry. Some may be unrealistic due to funding constraints. Utilize "Living Snow Fences" to help mitigate high risk areas for snow accumulation and wind. That may entail working with homeowners and providing an incentive program for planting. Conservation District may be a good resource. Look into wider wider shoulders or opportunities with a Greenway spur parallel to the road. The road has significant use by walkers, joggers and bikers. A greenway spur may also mitigate the right-of-way damage from illegal UTV/ATV activities. Christiansen overpass will likely mitigate some of the traffic concerns once its finished. A stop light at Whitney and Del Range would significantly reduce the problems with traffic. This may be my #1 suggested change. There are some blind spot points along the road that are high probability for accidents, especially at night. Future planning should include the leveling of some of these areas during the next major road project along the corridor.	11/9/2017 8:46 AM
138	Mitigate steep hill Cutting the 14/15% grade at peak of hill to Del Range down to 5% grade.	11/9/2017 8:08 AM
139	RAB at Dell Range Slow Traffic Traffic Signal Dell Range Traffic Signal U.S. 30 Slow the speed down to 40 mph and 30 at blind curves. Improve pavement quality. Add a traffic light or round about at the Highway 30 and Whitney intersection.	11/8/2017 6:35 PM
140	Alternative Traffic Route Connect storey from College to Whitney to reduce traffic on Del Range and traffic congestion at Del Range and College intersection.	11/8/2017 6:35 PM
141	Traffic Signal Dell Range Traffic Signal U.S. 30 Traffic light	11/8/2017 11:44 AM
142	Alternative Traffic Route Storey should be connected between Whitney and College.	11/8/2017 10:15 AM
143	Other - Miscellaneous Change approach into Whitney farmstead	11/7/2017 6:48 AM
144	Widen - Shldr Widen - Travel lane(s) Wider	11/5/2017 8:18 AM
145	Alternative Traffic Route Connection between Whitney and Storey to reduce traffic concentrating at the Del Range/Whitney intersection.	11/4/2017 9:44 PM
146	Alternative Traffic Route Pave Storey all the way from College to Christianson	11/4/2017 9:13 PM
147	Alternative Traffic Route Extend 4 Mile Road not Summit Drive	11/4/2017 5:27 PM
148	Widen - Shdr Non-motor Sidewalks and bike lanes or wide shoulder	11/3/2017 4:40 PM

Q5 Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Answered: 204 Skipped: 33



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	9.8% 20	32.8% 67	18.1% 37	23.5% 48	15.7% 32	204	2.98

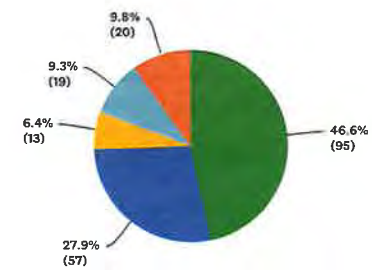
#	ADDITIONAL COMMENTS OR SUGGESTIONS?	DATE
1	Would like 8' shoulders	11/29/2017 12:33 PM
2	Not enough shoulder	11/21/2017 8:57 PM
3	I like the 6' shoulders. No accommodations for pedestrians is a major issue.	11/21/2017 7:45 PM
4	Lots of ditch	11/21/2017 6:59 PM
5	Too narrow, not much different than what we have now.	11/21/2017 4:52 PM
6	Widen each travel lane to 14 ft. Include center turn lanes.	11/20/2017 7:10 AM
7	Add a few feet to the shoulder.	11/19/2017 8:13 PM
8	Needs to be wider.	11/19/2017 1:53 PM
9	This would account for increased safety for pedestrian usage. However, the total length of the road way and number of turn offs, often results in motorists unsafely passing at high speeds. Shoulders may alleviate this problem	11/16/2017 8:55 AM
10	It is a waste of money trying to please people who think rural s/b the same as urban, it blows and it snows in WY and sometimes if you want to drive you have to know how to drive in those conditions	11/16/2017 8:52 AM
11	Need turning lane on dell range east to whitney south	11/15/2017 9:33 PM
12	Connect Storey Blvd. to college to help relieve traffic on del range	11/15/2017 9:02 PM
13	It really seems to make more sense to me to make the connection between Whitney and College thereby relieving some of the traffic, and not so much to modify an adequate existing roadway	11/15/2017 8:54 PM
14	14' travel lanes	11/15/2017 8:20 PM
15	Earthwork should come off the shoulder and reduce drop off.	11/15/2017 3:42 PM
16	4 lanes for future expansion. 2 lanes will quickly become congested.	11/15/2017 3:09 PM
17	Looks like what we have.	11/15/2017 1:11 PM

18	Bicycle lanes/shoulders PLEASE!!	11/14/2017 9:15 PM
19	This is the current design and is not a viable option.	11/14/2017 6:36 PM
20	Add more shoulder for vehicle pulloff I case of breakdown.	11/14/2017 5:38 PM
21	Needs pedestrian or bike allowance	11/14/2017 3:58 PM
22	A bike/pedestrian lane might be helpful because I know there are a lot of pedestrians and bikers (or skateboarders, scooters, etc.) We are living in a world where bike lanes are becoming more and more of a necessity	11/14/2017 11:04 AM
23	Need four lanes	11/14/2017 9:58 AM
24	Appears to be like existing road	11/14/2017 8:14 AM
25	Isn't this what we currently have!?	11/14/2017 7:23 AM
26	I feel as though this is the same amount of space for driving as is already available. This needs to be expanded.	11/13/2017 6:26 PM
27	Presently have & NOT SAFE!	11/13/2017 3:47 PM
28	8 foot shoulder to accommodate bicycle riders	11/13/2017 8:24 AM
29	Should add bike lanes.	11/13/2017 5:18 AM
30	With the addition of the new lots, we need more lanes	11/13/2017 4:21 AM
31	I wish the lanes were wider.	11/13/2017 1:21 AM
32	Prefer wider	11/12/2017 3:38 PM
33	Does not appear to allow any growth accommodation.	11/11/2017 7:40 PM
34	No need for 12 ditches.	11/10/2017 12:17 PM
35	Not sure I understand how this is different than now?	11/10/2017 11:17 AM
36	People like to walk, run, or bike on Whitney Road. It continues to be dangerous unless the road is widened.	11/10/2017 8:07 AM
37	Looks like what we have	11/10/2017 6:12 AM
38	like the phase ability of this design	11/9/2017 3:44 PM
39	I would like more room in the center. Rual roads are notoriously dangerous in the dark and prone to drifting. With new housing planned on Whitney, traffic is bound to increase. I expect to see a new school in coming years	11/9/2017 3:13 PM
40	Existing been that way since the sixtys	11/9/2017 3:04 PM
41	Where is option to have 2-traffic lanes, turn lane, bike /shoulder/with no sidewalks	11/9/2017 2:53 PM
42	Do Not want to loose the whole front of our property! What about the oil & gas lines in front of property?	11/9/2017 2:42 PM
43	Pipeline is running in front of our house - how is this going to handled.	11/9/2017 2:34 PM
44	This is what we have now	11/9/2017 2:31 PM
45	Shift roadway center line east and add sidewalk on west side.	11/9/2017 2:16 PM
46	Too many pedestrians & bikes on the road	11/9/2017 2:05 PM
47	No disconnected bike path. I ride almost daily on the shoulder from D.R to Iron Mountain	11/9/2017 12:04 PM
48	lanes need more separation - cars speed down that road	11/9/2017 11:53 AM
49	might be nice to have it a little wider	11/9/2017 11:33 AM
50	Too narrow. Grew up off Horse Creek. The widening of that road made sence with a center lane for passing/turning	11/9/2017 11:26 AM
51	There is a need for turning lanes onto roads off of Whitney	11/9/2017 10:38 AM
52	For safety reasons, for walkers, bikers and runners. I would like to see the shoulder length extended on Whitney at a minimum of 10'.	11/9/2017 8:49 AM
53	no room for bikes, pedestrians, dog walking or always having to slow down for vehicles turning down a road because most is no passing zone so we cannot go around.	11/9/2017 8:10 AM

54	Wider with turn lanes.	11/8/2017 6:35 PM
55	Design should ensure that shoulder is safe for cyclists use.	11/6/2017 8:26 AM
56	Add wider shoulders and bike lane	11/4/2017 9:13 PM

Q6 Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Answered: 204 Skipped: 33



	DEFINITELY LIKE (1)	LIKE (2)	NO OPINION (3)	DO NOT LIKE (4)	DEFINITELY DO NOT LIKE (5)	TOTAL	WEIGHTED AVERAGE
(no label)	46.6% 95	27.9% 57	6.4% 13	9.3% 19	9.8% 20	204	3.92

BASIC STATISTICS

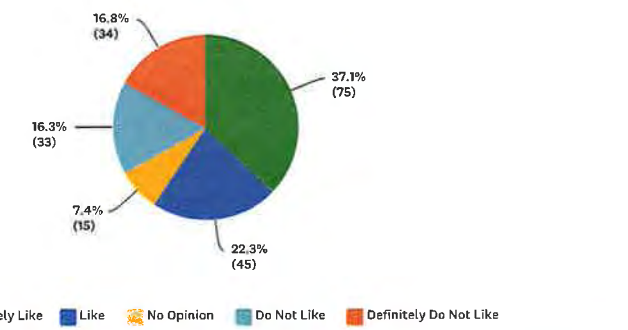
Minimum	Maximum	Median	Mean	Standard Deviation
1.00	5.00	2.00	2.08	1.33

#	ANY ADDITIONAL COMMENTS?	DATE
1	more lanes for auto movement	11/30/2017 11:58 AM
2	Again, 8' shoulder, could take center turn to 11'. 8' shoulder would help give more buffer to bikes.	11/29/2017 1:05 PM
3	Accommodating multiple modes of travel would be a wonderful improvement!!!!	11/21/2017 7:45 PM
4	Again lots of ditch and landscape buffer	11/21/2017 7:01 PM
5	A turn lane will be very beneficial in the section with the new neighborhood west of Whitney. I've seen a lot of people passing others on the left when they slow down to turn into their street. This is going to be more dangerous with the new addition on the west side. A bike lane is needed. Lots of families live out here and walking/biking on Whitney is dangerous.	11/21/2017 4:55 PM
6	Sidewalk OK. Remove the bike lanes.	11/20/2017 7:12 AM
7	Seems safer	11/16/2017 8:40 PM
8	Waste of money, that the county and state could better use else where	11/16/2017 8:53 AM
9	Connect Storey Blvd. to college to help relieve traffic from del range	11/15/2017 9:03 PM
10	This seems like it will make an incredible impact on the existing homeowners in the area not to mention the cost to acquire the land needed.	11/15/2017 8:56 PM
11	Rural auto traffic should be the priority	11/15/2017 8:22 PM
12	Like the bike lane, but street is too wide. Only need turn lane at major intersections.	11/15/2017 3:43 PM
13	Takes up a lot of area.	11/15/2017 3:41 PM

14	If looking for a place to install Bike route and running trail than ok. But I struggle with this funding. Just give a shoulder on the road for them to use.	11/14/2017 8:20 PM
15	Bike allocation should be separate from vehicle traffic	11/14/2017 3:59 PM
16	I like this design in reference to my comment on the traditional design	11/14/2017 11:06 AM
17	Need four lanes	11/14/2017 9:58 AM
18	The added surface area will be much safer for those of us that enjoy biking and walking.	11/14/2017 9:58 AM
19	Allows room for cars, pedestrians and bikes	11/14/2017 8:15 AM
20	This looks as though it will accommodate the increase in traffic (for the present situation and for the future considering the continued increase in building in the area) and make the space safer for those pedestrians and bicyclists, as well. This looks like it is the best option	11/13/2017 6:28 PM
21	Would somewhat accommodate both pedestrians/bikers and vehicles. do feel that bikes would ride on sidewalks-especially family bikers w/younger children	11/13/2017 3:48 PM
22	Travel lane could be a little bit wider.	11/13/2017 1:23 AM
23	I do like the idea of a turn lane to help the flow of traffic.	11/12/2017 7:13 AM
24	Better but I'd rather see wider sidewalks to accommodate bicycles.	11/11/2017 7:41 PM
25	YES! YES! YES! YES!	11/11/2017 6:53 PM
26	A turn lane would help with some of the slow moving farm equipment that goes down this road. I	11/10/2017 3:12 PM
27	Seems a little safer for non vehicle users	11/10/2017 11:17 AM
28	This option is better than Rural 2	11/10/2017 8:08 AM
29	Love this option	11/9/2017 3:13 PM
30	Allows for growth in area	11/9/2017 3:04 PM
31	No need for bicycle lanes because of taking more property away from residents still having property and bicycle lanes. do not have enough bicyclists to have bicycle lanes, in this area	11/9/2017 3:00 PM
32	Do Not want to loose the whole front of our property! What about the oil & gas lines in front of property?	11/9/2017 2:42 PM
33	Cutting into our property too-	11/9/2017 2:35 PM
34	Still Rural but provides protection for PEDS/Bicycles and more room for vehicles	11/9/2017 2:31 PM
35	Sidewalk would not be necessary on west (rural) side of road. Widen only where necessary for turn lanes.	11/9/2017 2:16 PM
36	Why Cant "runners" run on the side roads east of Whitney?	11/9/2017 2:10 PM
37	no need for sidewalks	11/9/2017 12:49 PM
38	Perfect!	11/9/2017 11:26 AM
39	I really don't think this is necessary for the bike lane and sidewalk. If someone wants to walk they can go across Highway 20 and walk on the Greenway. There is too much traffic to be safe for pedestrian traffic.	11/9/2017 9:22 AM
40	Whitney doesn't need a sidewalk on both sides. I don't see a turn lane as a significant need, however maybe in the future it will be. I still think the Christiansen overpass may help help reduce the traffic. Some of the morning and afternoon traffic will divert to Christiansen via Four Mile Road or Beckle.	11/9/2017 8:55 AM
41	slant to side would be a hazard and snow drifts a problem.	11/9/2017 8:14 AM
42	Sidewalks probably not needed at this time but while under construction grade for future sidewalks.	11/8/2017 6:36 PM
43	Having a center turn lane would add an additional element of safety, as would having a buffered sidewalk.	11/6/2017 8:27 AM

Q7 Please rate the Conceptual Urban 3 lane Roadway Typical Section for Whitney Road shown above.

Answered: 202 Skipped: 35



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	37.1% 75	22.3% 45	7.4% 15	16.3% 33	16.8% 34	202	3.47

#	ANY ADDITIONAL COMMENTS?	DATE
1	Far too many & expensive. Connecting car & truck traffic in this area is far more important	12/7/2017 10:38 AM
2	trees to block vision?	11/30/2017 11:59 AM
3	Again, accommodating multiple modes of transportation would be fantastic. The 6' sidewalks and trees/buffers would be a very calming and safe feeling addition.	11/21/2017 7:45 PM
4	Lots of unused space	11/21/2017 7:02 PM
5	Too much. It is still a county area, don't need gutters and trees. The second concept covered walking and biking safely already.	11/21/2017 4:57 PM
6		11/21/2017 6:49 AM
7	Careful of Tree locations - Can cause drifting.	11/20/2017 11:53 AM
8	the pedestrian buffer is necessary. Remove the bike lanes from the vehicle travel lanes, and make the pedestrian sidewalk dual function to provide for bikes if that is so important. Dual use reduces cost.	11/20/2017 7:14 AM
9	Do not need curb and gutter.	11/19/2017 8:12 PM
10	Those trees would cause drifting and waste water. also regarding money see previous answer	11/16/2017 8:54 AM
11	But not necessary in rural environment.	11/16/2017 7:12 AM
12	Connect Storey Blvd. to college to help relieve traffic from del range	11/15/2017 9:03 PM
13	Doesn't fit area.	11/15/2017 3:44 PM
14	Takes up too much area.	11/15/2017 3:42 PM
15	LOVE LOVE LOVE	11/15/2017 12:58 PM
16	Same as previous	11/14/2017 8:21 PM
17	Trees will cause drifting on the roadway	11/14/2017 5:31 PM

18	Use right turn lanes instead	11/14/2017 4:00 PM
19	I don't think that a turn lane is necessary	11/14/2017 11:06 AM
20	Water issue will having landscaping. yes it looks nice but is it necessary in term of water used?	11/14/2017 10:46 AM
21	Need four lanes	11/14/2017 9:59 AM
22	To much for the type of road and traffic	11/14/2017 9:39 AM
23	Not conducive to a rural area.	11/14/2017 8:15 AM
24	Meets everyone's needs. as the Whitney Development takes place, and with the thought of another school built in this area - we must be proactive! School could be a North High School 7 that would mean more cars/more joggers - Track Season.	11/13/2017 3:50 PM
25	No bike lane too much traffic	11/12/2017 10:03 PM
26	Why spend all that extra money for trees and buffer?	11/12/2017 7:53 PM
27	Too much. Not needed. Extra costs. If subdivisions want sidewalks or bike paths the homeowner's association can purchase.	11/12/2017 7:13 AM
28	Again would rather see wider sidewalks to accommodate pedestrians and bicycles.	11/11/2017 7:42 PM
29	Love the trees...maybe we do a living snowfence to help with the road in the winter	11/11/2017 6:54 PM
30	I'm not sure the sidewalk would be used a lot. We do have some runners in our neighborhood but not a lot.	11/10/2017 3:13 PM
31	Takes too much land and maintenance.	11/10/2017 12:18 PM
32	Trees are great, not a priority, compared to safety	11/10/2017 11:18 AM
33	Too much	11/10/2017 8:08 AM
34	I am concerned that trees too close to the road will block the view for people entering and exiting	11/10/2017 6:48 AM
35	Education could be an important piece, ie dangers of passing on a hill, jogging etc	11/9/2017 3:51 PM
36	Concerned about snow drifts across road	11/9/2017 3:47 PM
37	it is important to focus on the future growth	11/9/2017 3:47 PM
38	The trees are nice, but not necessary.	11/9/2017 3:14 PM
39	Don't think it needs to be this elabolate	11/9/2017 3:10 PM
40	Trees will obstruct view	11/9/2017 3:08 PM
41	over the top for a rural area	11/9/2017 3:04 PM
42	trees are great but VERY distract full and city does not keep them trimmed. they get in the way of line of sight for pedestrians and bicyclists.	11/9/2017 3:01 PM
43	Spending funds for pedestrian traffic seems like a waste of funds!!!!!!!	11/9/2017 2:55 PM
44	no need for sidewalk	11/9/2017 2:42 PM
45	Not appropriate for this area	11/9/2017 2:32 PM
46	Discourage use of Whitney so as to keep the rural appeal for those users that reside north of Del Range.	11/9/2017 2:27 PM
47	Trees are good for wind break & earth	11/9/2017 2:26 PM
48	No trees they will cause drifts	11/9/2017 2:14 PM
49	Trees are bad idea (drifting snow)	11/9/2017 2:10 PM
50	Curb and gutter is not needed on Whitney and disconnected access on one side is a less expensive option.	11/9/2017 12:06 PM
51	I live in the county and do not want to have sidewalks. If people on this corridor want this maybe they should move back to town to have these amenities.	11/9/2017 9:24 AM
52	Again...not sure a sidewalk is needed on both sides. Increase the sidewalk to a minimum of 10' return the shoulder to 6'. I'm not sure a turn lane is needed. However, maybe in the future it will be needed.	11/9/2017 8:55 AM
53	curbs and good drainage are the best solution overall for a heavily traveled road.	11/9/2017 8:16 AM

54	Wider bike lane/shoulder is the most favorable design to me, if this is feasible. My only concern would be encouraging high speeds in the area.	11/6/2017 8:28 AM

Q8 Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Answered: 79 Skipped: 158

#	RESPONSES	DATE
1	Connecting Storey to Summit would pull so much traffic from Del Range. It would be environmentally friendly as it would reduce miles for 100's if not 1,000s everyday. It would make Del Range safer by reducing many, many Vehicles. Please leave Whitney Rd. alone and make some connections in east Cheyenne	12/7/2017 10:40 AM
2	Need a light at Dell Range and the study should evaluate paving and connecting alternate routes for Whitney	11/30/2017 4:28 PM
3	what about the bottle neck this will cause in all areas - whitney, 30, Dell Range	11/30/2017 12:00 PM
4	I'd like storey to go from college drive to Whitney	11/21/2017 9:45 PM
5	Please review safety of Saykally and other intersections. The hills restrict vision of oncoming traffic when we pull out onto Whitney and people drive very fast. It is a disaster waiting to happen. I'm nervous for my kids to become teens driving on this unsafe intersection! It may be good to reduce speeds on Whitney to 40. Reduce speed on hwy 30 in this are too? If Storey blvd will connect to Whitney, make sure Whitney can safely handle that much more traffic being diverted north through our neighborhood . People other than this neighborhood will use it and our traffic could be increased significantly. Thank you for the public survey and meeting at Dildine.	11/21/2017 5:03 PM
6	Roundabout on Whitney & Dell Range. Stoplight on Whitney & US 30	11/20/2017 11:53 AM
7	Do not put bike lanes next to vehicle traffic. Bicyclists want to be treated like a car except when it comes to basic traffic laws.	11/20/2017 7:15 AM
8	Widen the road and build a greenway from Saddle Ridge to Iron Mountain Rd.	11/19/2017 8:13 PM
9	Stick to the budget we voted in November	11/19/2017 7:27 PM
10	None	11/19/2017 1:54 PM
11	Winter driving on this road is treacherous. There needs to be a flashing red light at the crossroads of Whitney and Dell Range	11/16/2017 10:36 PM
12	Definitely include trees in the plans.	11/16/2017 8:41 PM
13	Just lights to help slow the racer track people down	11/16/2017 2:07 PM
14	None at this time... Thank you...	11/16/2017 7:12 AM
15	Need a turn lane on pershing east to taft south to accommodate traffic using pershing to get to saddle ridge and other. Especially when SR 2 is done. May need a light at Whitney and pershing at that time too.	11/15/2017 9:40 PM
16	Connect Storey Blvd. to college dr. to help relieve traffic from del range. I'm sure it would help service so many rural neighborhoods especially since then it would tie in all the way to Reese Rd	11/15/2017 9:05 PM
17	I also think it would make sense to look at paving the last two miles of Iron Mountain Rd	11/15/2017 9:05 PM
18	really doesn't matter, they will do what they want	11/15/2017 7:43 PM
19	Protect bike lanes with offset. No roundabouts, they aren't designed well.	11/15/2017 3:48 PM
20	Expanding may be something to incorporate in future updates to the road.	11/15/2017 3:43 PM
21	Please pave Iron Mountain.	11/15/2017 1:12 PM
22	Fix and beautify existing before starting a new project...really?	11/15/2017 10:05 AM
23	Bicycle lanes!! PLEASE!!	11/14/2017 9:17 PM
24	Paving Iron Mountain Road is the best first move to make. Then looking at adding shoulders to Whitney Road to allow for slightly higher speed limit.	11/14/2017 8:22 PM

25	Why all the straigh lines. Straight lines are out. Curved sidewalks, bike lanes and roads to accomodate aesthetically pleasing trees, landscape and other hardscapes is in. Why is Cheyenne so far behind on improving our ports of entry and islands, etc.	11/14/2017 7:24 PM
26	Plan for multi-use alongside the road such as horses along with bicyclists and pedestrians.	11/14/2017 6:37 PM
27	Pave Iron Mountain	11/14/2017 5:31 PM
28	Paving Iron Mountain needs to be done also to assist in traffic flow.	11/14/2017 2:03 PM
29	We need better access into town. Please PAVE IRON MOUNTAIN ROAD. - PLEASE PAVE 4 MILE RD THROUGH TO COLLEGE. Thank you in advance	11/14/2017 11:12 AM
30	If I could emphasize anything, it would be the necessity of a stoplight at Whitney and Del Range. It can be. and has been before, extremely dangerous as it is.	11/14/2017 11:07 AM
31	Getting across del range on whitney is very hard durning peak hours and can feel quite dangerous. I feel we need to add merging turning lanes onto del range and slow traffic through the intersection.	11/14/2017 10:48 AM
32	I know it takes time to make improvements. Please slow the speed of traffic on Del Range and Lincolnway, especially Lincolnway. It is very dangerous.	11/14/2017 10:38 AM
33	Need four lanes, if not possible the three lane option is good. Thank you for the opportunity to comment.	11/14/2017 10:00 AM
34	The road has turned into a speedway slow traffic down	11/14/2017 9:46 AM
35	Also address flooding north of 4 mile radius.	11/14/2017 9:40 AM
36	The intersection at Whitney and Dell Range needs addressed for safety issues.	11/14/2017 8:27 AM
37	Must provide other paved routes other than Whitney, e.g. Storey Blvd., Four Mile Rd, East Riding Club and/or Iron Mountain Rd.	11/14/2017 8:18 AM
38	I feel as though the expansion of the road in addition to a light at HWY 30 and Whitney make this intersection and road safer for our growing community.	11/13/2017 6:29 PM
39	From the Whitney Road Bike/Walk Paths I would like to see the Greenway continued to run/winding between the Meadolark properties back yards and Del Range, connecting up to near the Radio towers (crossing Del Range) to connect with Saddle Ridge Platte and their Greenbelt which parallels Hwy30. Cheyenne has encouraged health, exercise, and well-being for Central and Western sides of Cheyenne - we need to extend to the East and this is a great opportunity to do so!!	11/13/2017 3:53 PM
40	Go away.	11/13/2017 8:29 AM
41	Lower speed limit and install traffic lights	11/12/2017 10:04 PM
42	Cost	11/12/2017 7:54 PM
43	Lighting needs upgraded ASAP	11/12/2017 2:40 PM
44	I would support roundabouts that are correctly designed. A pathway that could eventually connect to the existing freeway would be amazing and so much safe for both pedestrians/bikers and for drivers. I've had many close encounters. Taking the grade of the hill down a notch would be fantastic. Future proofing is so important	11/11/2017 10:14 PM
45	Would rather see roads for cars/trucks and Greenway type constructs for pedestrians and bicycles.	11/11/2017 7:44 PM
46	I think any of the idess are great! The more buffer between car and pedestrian the better but if cost is too substantial anything would be an safer.	11/11/2017 7:33 PM
47	Build it big for all future possible growth. Do it right the first time!!!!	11/10/2017 5:34 PM
48	I think this road is too hilly and curvy. I'm not sure why it couldn't be straighter and leveled out a bit. Also, 40-45 MPH is just too slow but it is better than when it started out at 30 MPH. The traffic has definitely increased over the last 10 or 11 years. The dip at Child's Draw needs work. It floods.	11/10/2017 3:17 PM
49	Widen as best you can. Sidewalks for pedestrians are so very important. Thank you for looking at this roadway	11/10/2017 11:18 AM
50	Thank you for asking for opinions!	11/10/2017 6:48 AM
51	The intersection at Whitney-Dell Range, and Whitney-HWY30 are terrible in the morning 7-7:30 and 5-5:30, I actually changed my work schedule to avoid the risk of an accident. The sooner something is done the safer it will be for everyone!	11/9/2017 9:14 PM

52	Leave it alone	11/9/2017 7:55 PM
53	Stop light or another alternative for crossing at Whitney and 30	11/9/2017 6:56 PM
54	Add a light at intersection of Whitney and Dell Range, another light at US 30 and Whitney, and another at at east Pershing and Whitney.	11/9/2017 6:22 PM
55	Lighting at Dell Range & Whitney is essential improved signage - street & stop Reduction in grade of the hill would improve winter safety immensely	11/9/2017 3:48 PM
56	yes to traffic circle at Whitney and Dell Range	11/9/2017 3:45 PM
57	Immediately need a light at the intersection of Del Range and Whitney Rd as it is so dark it is extremely difficult to see where the turn is from Del Range to Whitney and thus very dangerous. It is important to know how many streets would filter onto Del Range and onto Whitney due to the development of the Whitney/Gysel land. I realize you will be addressing this problem but it certainly is a grave concern to those of us in Meadowlark Estates.	11/9/2017 3:15 PM
58	Round about at Whitney and Del Range or at least a stop ligth	11/9/2017 3:12 PM
59	Red-light at US30 and Whitney Rd	11/9/2017 3:09 PM
60	Remove "New" calming islands south of HWY30. this turn lane was requested by residents and county planning when Saddle Ridge was developed. Bike path was planned to go across Whitney further south of HWY 30	11/9/2017 3:06 PM
61	Keep Whitney Rural	11/9/2017 2:56 PM
62	RT. Hand turn land on Del Range for cars turning onto Whitney (Driving eastbound) . Put speed limits signs on US30. People pull out from Whitney and do 30 mph on Pershing	11/9/2017 2:49 PM
63	Simplify plans to save money. Put the onus of sidewalks and turning lanes on the developer not unlike Powder House and the Point. Consider placement of sidewalks on developers land. Use as little tax payer money as possible. Developer should not profit from taxpayers footing the bill for code compliance.	11/9/2017 2:38 PM
64	Would like to see a turn lane for south bound Whitney traffic to go west on Dell Range without waiting for people going further south on Whitney	11/9/2017 2:32 PM
65	see traffic lights suggestion previously	11/9/2017 2:29 PM
66	please extend a road from Whitney N to Storey, 4-mile, or Riding Club	11/9/2017 2:26 PM
67	Widen Whitney between Del Rang & Highway 30	11/9/2017 2:17 PM
68	Any addition of Storey thru to Whitney may alleviate too much traffic that has become an issue on Iron Mountain since Whitney intersects Iron Mountain there now.	11/9/2017 2:12 PM
69	No Round Abouts	11/9/2017 2:01 PM
70	Separated bike/pedestrian path way needed. Do not lower the existing speed.	11/9/2017 12:07 PM
71	For everyone east of Whitney using Beckle then would Beckle get paved or maintained more often?	11/9/2017 11:37 AM
72	I would strongly oppose a roundabout at high speed intersections. Not a good option.	11/9/2017 11:27 AM
73	At Whitney and US30 when southbound on Whitney need to have a wider area to turn right onto 30 with big RVs going to Jolly Rogers:	11/9/2017 9:48 AM
74	Since there is no funding for this I think the intersections at Highway 30 and Dell Range really need to have stop lights put in. This is a huge safety issue that needs to be addressed even if the road is not done. I also think that the city needs to work with the Whitney developer to figure out a way to get traffic onto Dell Range without using Whitney. It is at its capacity. I think that Whitney is only one small piece of the traffic issue in this area. More turning lanes at the intersections are needed to alleviate traffic back up. I think a stop light also needs to be put in at Highway 30 and Saddle Ridge Trail. When we moved into this area over 20 years ago you didn't have the Meadow Lark Estates and Saddle Ridge Development. Traffic patterns have increased by over 100 percent. Unfortunately you are not being progressive you are currently behind the 8 ball. Good Luck.	11/9/2017 9:32 AM
75	right/left turn and straight lanes at major intersections at del range and Hwy 30. street lights are a must with possible signal light. make sure all services, like electric, cable, phone all stay underground. wind buffers like trees would be helpful and important during big snow storms to give drivers a site reference to road. it's important to make road inviting to homeowners as this road will continue to be main vein for future housing.	11/9/2017 8:29 AM
76	Connect Whitney and Strorey	11/4/2017 9:46 PM

77	With current subdivisions off Whitney and proposed subdivision the main concern would be fire department response time would greatly improve with the connection and paving of the Storey road from College to Chistianson	11/4/2017 9:18 PM
78	Leave Summit as it is and extend a different road. If the extension is inevitable, intersection lights at College and Ridge Road are imperative.	11/4/2017 5:33 PM
79	Whitney Road planning must include non-vehicular transportation modes and must anticipate a future school(s) in this area. Whitney/Del Range intersection requires careful evaluation and redesign. Please look for below grade crossing opportunities for pedestrians and bicyclists. Is there an opportunity to extend s future spur of the Greenway north along Whitney?	11/4/2017 3:03 PM

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☐ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Alan Jones
Address:
Phone:
Email: alan.jones@cowboyjonescc.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

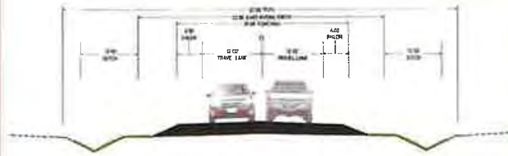
Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	4	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	1	0
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) ________

If you could make one change to the Whitney Road Corridor what change would you make?

slow vehicles & make travel easier

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

no sidewalks

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017.**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

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- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Cynthia & Jerry Richmond
Address: 6909 Julia Rd
Phone: 635-0929
Email: JLRCMR0929@gmail.com

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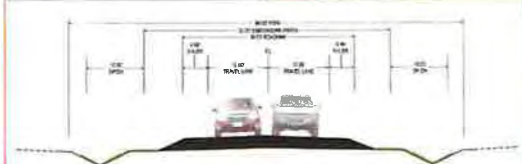
Other	5	4	3	2	1	0

If Other (please specify) ________

If you could make one change to the Whitney Road Corridor what change would you make?

Stop Light @ Del Range & Whitney Also Hwy 30 & Whitney
Speed Bumps to slow down speeders

(Please Turn Over)



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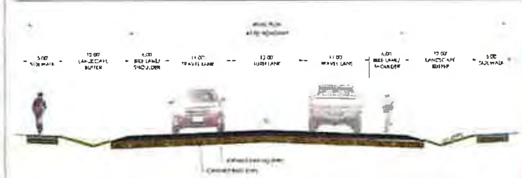
Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?



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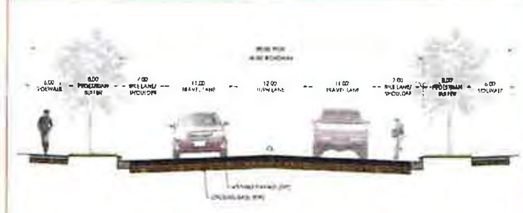
Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



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Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

No Round Abouts

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017.**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

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- Business owner in the area
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- Employee in the area
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- Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name:

Address:

Phone:

Email:

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Other	5	4	3	2	1	0

If Other (please specify)

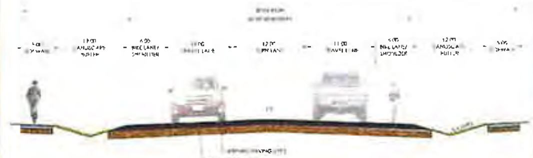
If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



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(Please Turn Over)

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Any additional comments?

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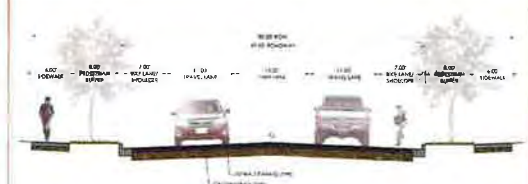
Any additional comments?



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Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

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- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Linda Larson
Address: 12302 Chief Twomoon Rd
Phone: 307 635 4215
Email: larsniss@aol.com

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Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

Finish paving Iron Mountain Intersection at 4 miles Whitney is a fatality waiting to happen

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments? Why can't "runners" run on the side roads EAST of Whitney?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments? trees are bad idea (drifting snow)

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Any addition of Stores thru to Whitney may alleviate too much traffic. That has become a issue on Iron Mountain since Whitney intersects them not there road

Thank you for providing input for this important project
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**

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Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
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- [ ] Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Jim Larson
Address: 12302 Chief Twomoon
Phone: 307 635 4215
Email: 659turbo@msn.com

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If Other (please specify)						

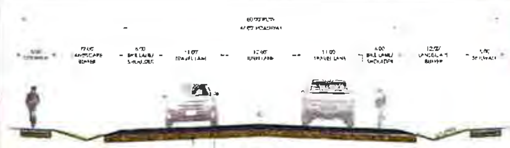
If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments? NO TREES THEY WILL CAUSE DRIFTS

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Nina Pike & Steve Rissler
Address: 7081 Dorsey Rd
Phone: 307-630-4299
Email: nina.kenspike@gmail.com

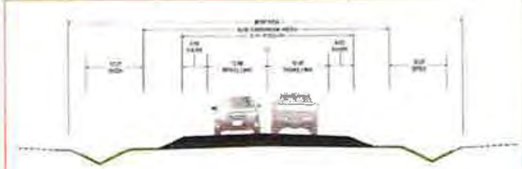
Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	4	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	1	0
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

(NO ROUND ABOUTS!!!) Stop light @ Whitney/Del Range.

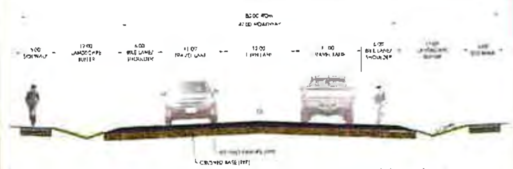
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☒ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☒

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☒

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

*widen whitney between Del Range & Hwy 30

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**.

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

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- ☐ Business owner in the area
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- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name:
Address:
Phone:
Email:

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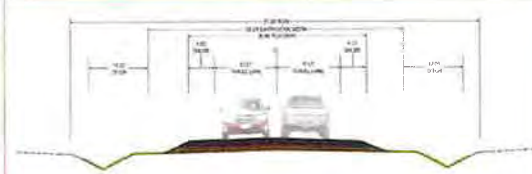
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

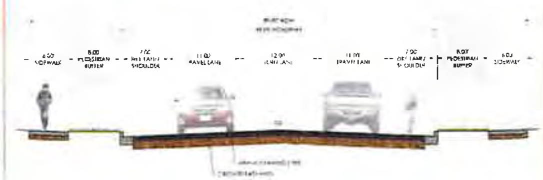
Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☑

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Employee in the area
- ☒ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Neil & Edith Carlyon
Address: 7600 Monarch Dr.
Phone: 307-514-5275
Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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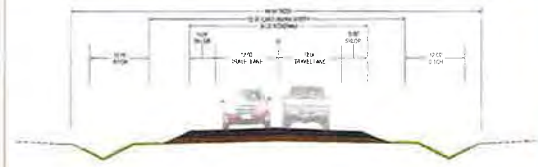
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

Desperately Need Street Lights @ Whitney / Del Range. It's too dark, hard to see turn lane @ night !!

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

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☐ Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

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☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

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Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Shawn Broad
Address: 11431 Chief Twomoon Rd
Phone: (307) 214-6296
Email: shawnbroad1@gmail.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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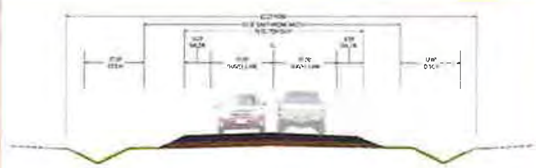
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

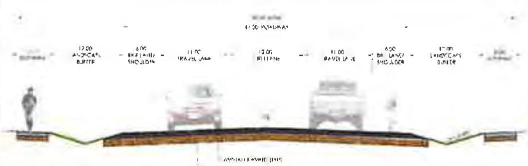
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☒ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

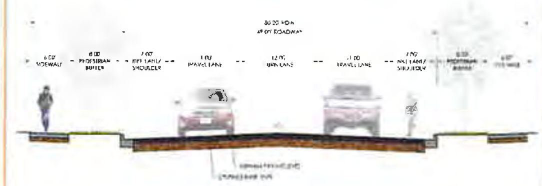
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

☒ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

☒ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

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Online: https://www.surveymonkey.com/r/WhitneyRd1.
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☒ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Dave Allen
Address: 7816 Sorrento Ln
Phone: 307-701-7111
Email: d2lallen@gmail.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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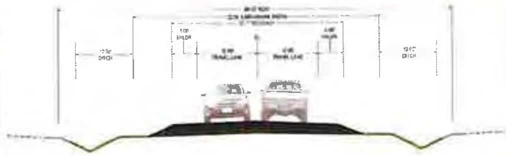
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

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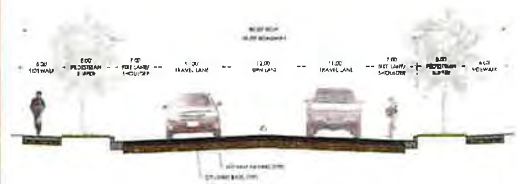
Any additional comments?



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Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

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Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Hugh & Denise Harrington
Address: 4521 Whitney Rd
Phone: (03)-3663
Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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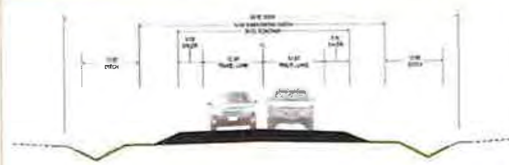
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?

Traffic Light Is on Whitney + Del Range + Whitney 30

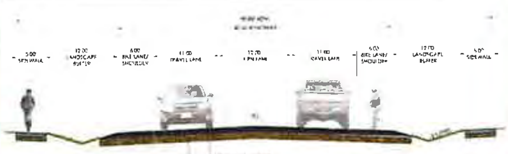
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

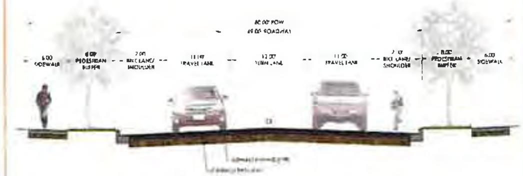
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Thank you for providing input for this important project.
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Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
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Whitney Road Corridor Study Comment Sheet

√

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- [ ] Commercial Property owner
- [ ] Employee in the area
- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Gilbert + Rebecca Ferrel
Address: 7323 Dorsey Rd Cheyenne, Wy 82009
Phone: 307-421-8511
Email: sissylala28@yahoo.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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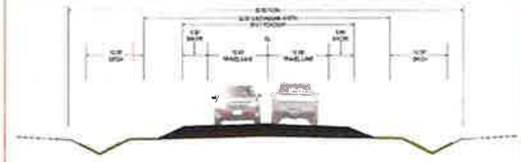
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) make turn lane @ Dell Range + Whitney headed South

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

- [ ] Definitely Like
- [ ] Like
- [ ] No Opinion
- [x] Do Not Like
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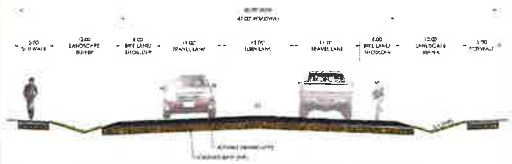
Any additional comments?



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- [ ] Definitely Like
- [x] Like
- [ ] No Opinion
- [ ] Do Not Like
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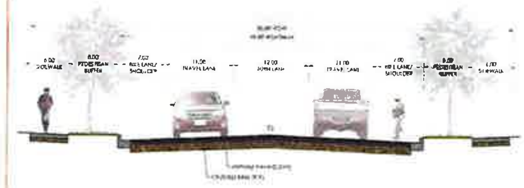
Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

- [x] Definitely Like
- [ ] Like
- [ ] No Opinion
- [ ] Do Not Like
- [ ] Definitely Do Not Like

Any additional comments?
Trees are good for wind break + earth.

Do you have any additional ideas, information, or other comments that you would like to provide at this time?
Pls extend a road from Whitney (N) to Storey. 4-mile, & Riding Club.

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017.**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

/

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- [ ] Business owner in the area
- [ ] Commercial Property owner
- [x] Employee in the area
- [ ] Property Owner in the area
- [x] Route user
- [ ] Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Chris Terlow
Address: 6517 Whistler Dr
Phone: 425-766-3910
Email: CHRISTE@MICROSOFT.COM

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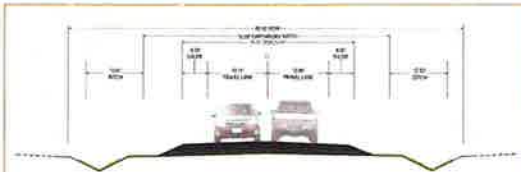
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?
You need traffic lights @ Whitney + Dell Range + Whitney & Hwy 30

(Please Turn Over)



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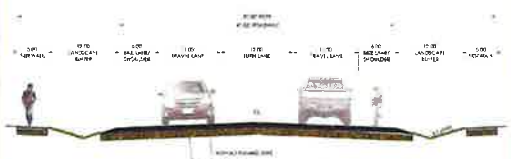
- [ ] Definitely Like
- [ ] Like
- [ ] No Opinion
- [ ] Do Not Like
- [x] Definitely Do Not Like

Any additional comments?



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- [x] Definitely Like
- [ ] Like
- [ ] No Opinion
- [ ] Do Not Like
- [ ] Definitely Do Not Like

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

- [x] Definitely Like
- [ ] Like
- [ ] No Opinion
- [ ] Do Not Like
- [ ] Definitely Do Not Like

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?
See traffic lights suggestion previously

Thank you for providing input for this important project.
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Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: LEE ROITH
Address: 1150 YELLOW BEAR RD 82009
Phone: 307 421 - 0355
Email: leeroi88@aol.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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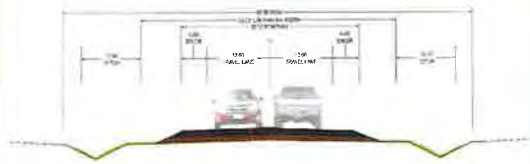
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) ______

If you could make one change to the Whitney Road Corridor what change would you make?

WIDEN AND PROVIDE SOME PROTECTION FOR PEDS/BICYCLES

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☑ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

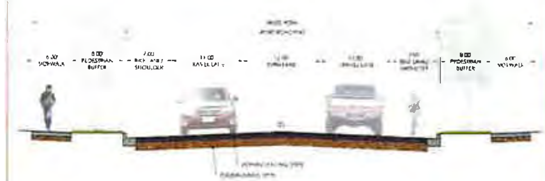
THIS IS WHAT WE HAVE NOW

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☑ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

STILL RURAL BUT PROVIDES PROTECTION FOR PEDS/BICYCLES AND MORE ROOM FOR VEHICLES



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

NOT APPROPRIATE FOR THIS AREA

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

WOULD LIKE TO SEE A TURN LANE FOR SOUTH BOUND WHITNEY TRAFFIC TO GO WEST ON DELL RANGE WITHOUT WAITING FOR PEOPLE GOING FURTHER SOUTH ON WHITNEY

Thank you for providing input for this important project
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Frank & Anna Mata
Address: 4436 Whitney Rd
Phone: 307 635-7672
Email: annamata49@yahoo.com

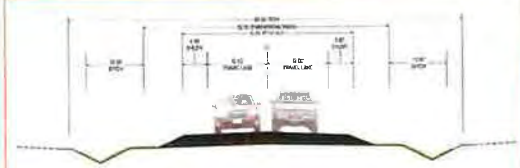
Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	4	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	1	0
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) ______

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)

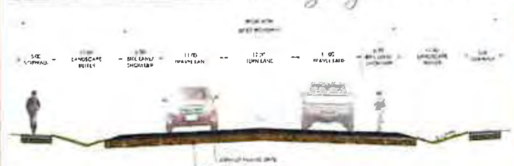


Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Pipeline is running in front of our house - how is this going to handle



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Cutting into our property - too

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: [illegible]
Address: 801 McGuire Rn
Phone: 632-7147
Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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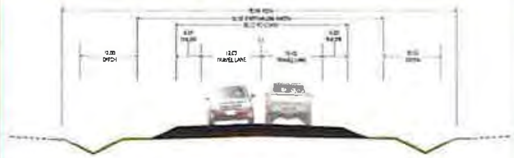
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

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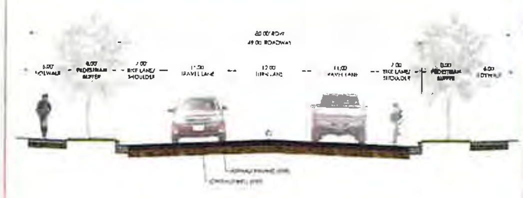
Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☒ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Morris + Sharon Jenkins
Address: 6300 Green Meadow Dr (Corner of Whitney Road & Green Meadow)
Phone: 307-634-7878
Email: [illegible]@prodigy.net

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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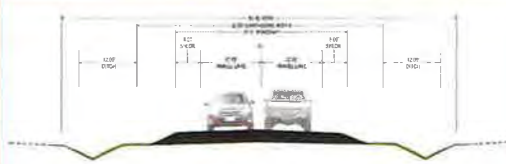
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like

Any additional comments?

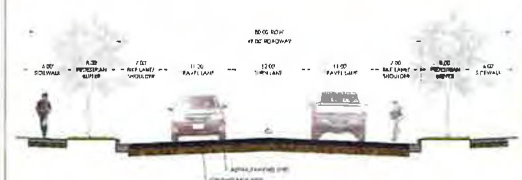
Do Not want to lose the Whole front of our property! What about the Oil + Gas lines in front of property?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like

Any additional comments?

Refer above



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like

Any additional comments?

No need for sidewalk

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Pat Sawczenko
Address: 4100 Gunsmoke Rd
Phone: 307-630-8868
Email: Shadow1977@live.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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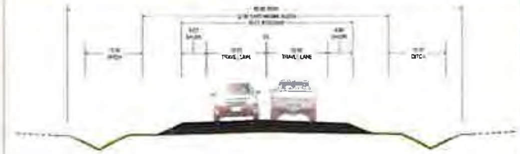
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify): Street lights on Del Range Whitney

If you could make one change to the Whitney Road Corridor what change would you make?

Put overhead lighting on Whitney & Dell Range, mark it better, turn lane on Dell Range

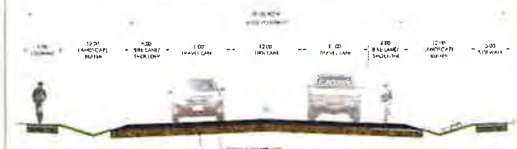
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☒ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Rt hand turn lane on Del Range for cars turning onto Whitney (driving eastbound)

Put speed limits signs on US30. People pull out from Whitney and do 30mph on Pershing

Thank you for providing input for this important project

If you prefer to mail, email or complete your comments online please do so by **November 22, 2017**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☒ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Shon Dermody
Address: 5712 Storey Blvd
Phone: 307-631-1569
Email: Shonder99@gmail.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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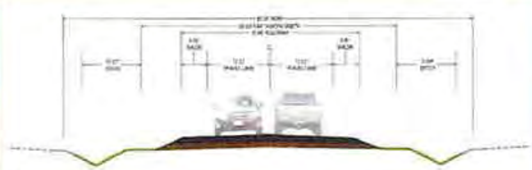
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?

Prioritize connecting Storey Blvd first. This will reduce Whitney traffic and Del Range congestion

(Please Turn Over)

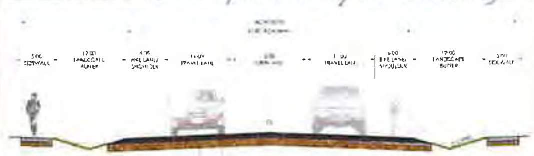


Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Where is option to have 2 travel lanes, turn lane, bike/shoulder w/ no sidewalks



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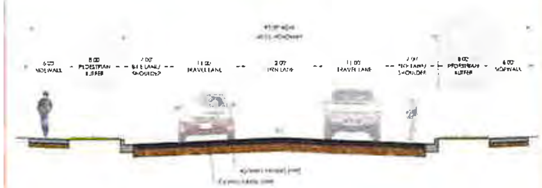
☒ Definitely Like ☐ Like ☐ No Opinion ☒ Do Not Like ☐ Definitely Do Not Like

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like

Any additional comments?

Spending funds for pedestrian traffic seems like a waste of funds

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Thank you for providing input for this important project

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Eric [illegible]

Address: [illegible]

Phone: [illegible]

Email: [illegible]

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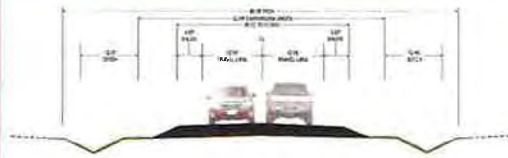
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?

Stop it from being changed.

(Please Turn Over)



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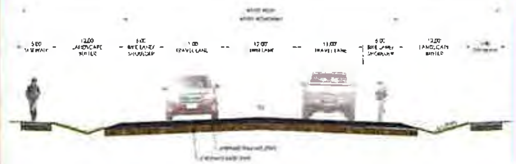
Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?



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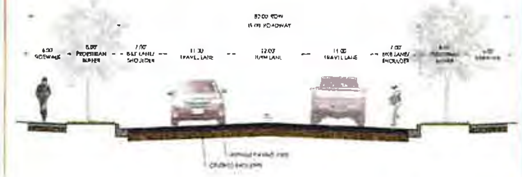
Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Keep Whitney Rural

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Barbara Boyd

Address: 4608 Van Buren Ave

Phone: 816-716-8702

Email: b1boyd7@msn.com (Best)

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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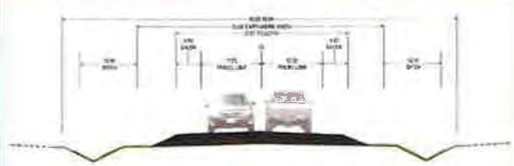
Other	5	4	3	2	1	0

If Other (please specify) Stop light @ Whitney Rd + Dell Range

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)



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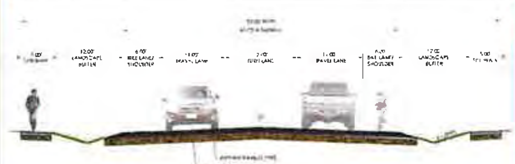
Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

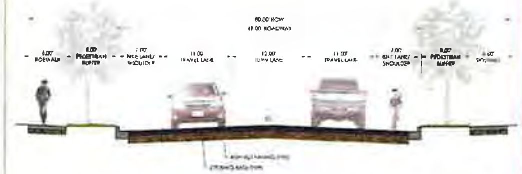


Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

No need for bicycle lanes because of taking more property away from residents still having property and bicycle lanes. ~~[illegible]~~ Do not have enough bicyclists to have bicycle lanes in this area



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Trees are great but VERY distractful + City does not keep them trimmed. They get in the way of line of sight for pedestrians + bicyclists.

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- [x] Business owner in the area
- [x] Commercial Property owner
- [ ] Employee in the area
- [x] Property Owner in the area
- [x] Route user
- [ ] Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: David Rose
Address: 6530 US 30
Phone: 307 630 8965
Email: RBIGALS 01 @ aol.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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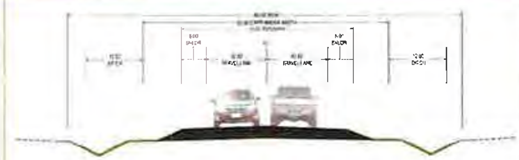
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

Bike shoulder threelanes Between Dalrange + pershing

(Please Turn Over)

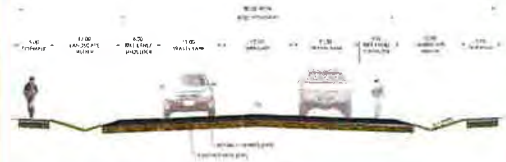


Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

existing been that way since the sixtys



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Alows for growth in area

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

over the Top for a rural area

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Remove "New" calming islands south of Hwy 30. This turn lane was requested by residents and county planning when Saddle ridge was developed. Bike path was planned to go across Whitney further south of Hwy 30

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**.

Online: https://www.surveymonkey.com/r/WhitneyRd1.
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- [ ] Home owner in the area
- [ ] Renter in the area
- [ ] Business owner in the area
- [x] Commercial Property owner
- [ ] Employee in the area
- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Andy Weber
Address: 6526 Hwy 30
Phone: 307 220 2740
Email: Andy @ BigglsantoService . Com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	4	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	1	0
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

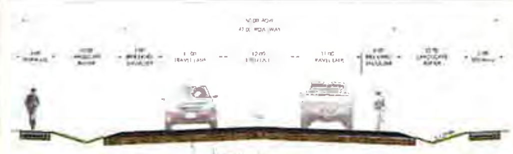
Widen Road way
Intersection Safety

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Tree's Will obstruct views

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Employee in the area
- ☒ Property Owner in the area
- ☒ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name:

Address:

Phone:

Email:

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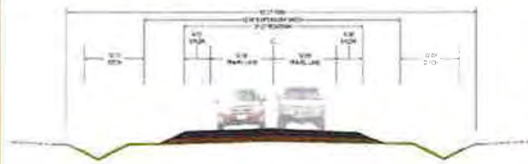
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

East / west connecting roads to North end of Whitney

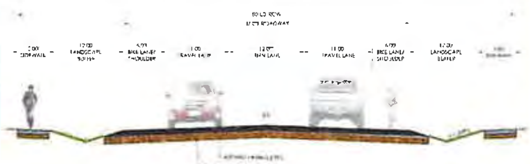
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

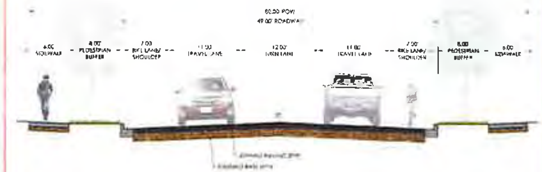
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

redlight at US 30 and Whitney Rd

Thank you for providing input for this important project.

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Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

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- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Richard E. Schmitson

Address: 7315 Tulie Road

Phone: 635-1923

Email: [illegible]@GMAIL.COM

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

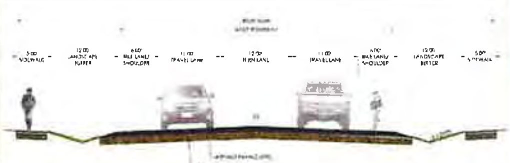
Make it wider

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☑	☐	☐	☐	☐

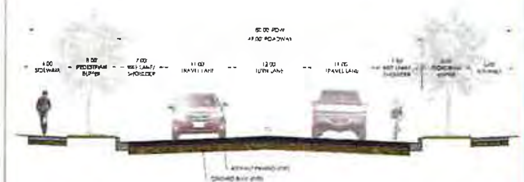
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☑

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☑

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Round About at Whitney and Del Range or at least a Stop Light

Thank you for providing input for this important project.

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Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☑ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Elizabeth + Michael Gnay

Address: 6919 Julia Road, Cheyenne, WY 82009

Phone: 307 286-6995

Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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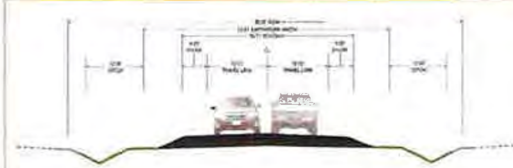
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

Lighting & traffic control (Stop light) whitney & Dell Range

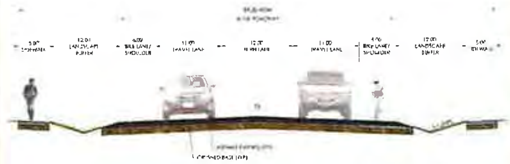
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☑ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

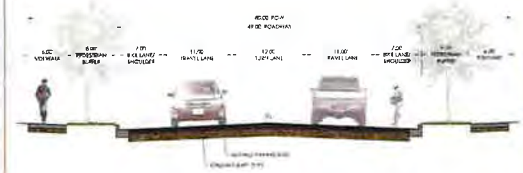
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☑ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☐ Definitely Like ☑ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

NO

Thank you for providing input for this important project.
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Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Joaquin Y + Ruth E Flores

Address: 5304 Bill Range Blvd

Phone: 307-633-4984

Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

☐ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

☐ Definitely Like ☑ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Jim Boyd JR
Address: 4608 Van Buren Ave
Phone: 816-739-0489
Email: j1boyd6@gmail.com (Best)

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
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Lowering Vehicle Speeds	5 4	4	3	2	1	0
Accommodating Pedestrians	5 4	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) ______

If you could make one change to the Whitney Road Corridor what change would you make?

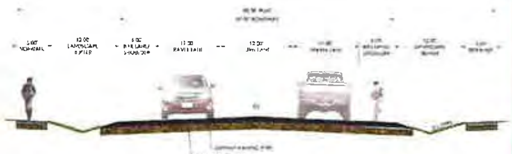
[illegible] lights

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

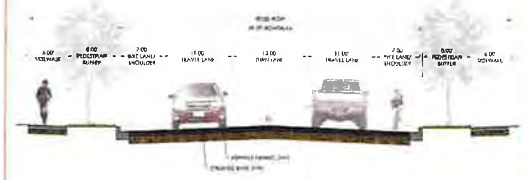
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

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Whitney Road Corridor Study Comment Sheet

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- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Leif Anderson
Address: 6973 Elizabeth Rd
Phone: 631-4766
Email: frypan9@gmail.com

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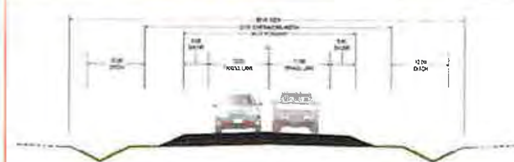
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0

If Other (please specify) ______

If you could make one change to the Whitney Road Corridor what change would you make?

Safe pedestrian paths

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

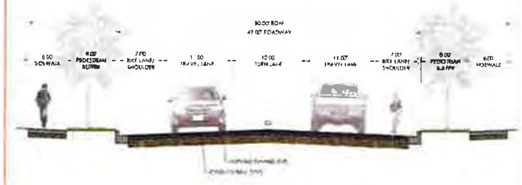
Any additional comments?

Like the plausibility of the design

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Yes to Traffic circle at Whitney + Dell Range!

Thank you for providing input for this important project.
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Whitney Road Corridor Study Comment Sheet

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- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other______________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Ryan & Melissa Hollingshead
Address: 6565 Hitching Post Lane
Phone: 2-14-2788
Email: raymanhollings@gmail.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

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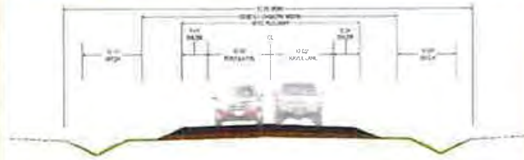
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

widening Whitney between [illegible] and Dell Range

(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

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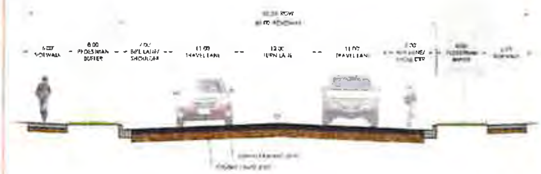
Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

its important to focus on the future growth

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Whitney Road Corridor Study Comment Sheet

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- ☐ Route user
- ☐ Other______________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name:
Address:
Phone:
Email:

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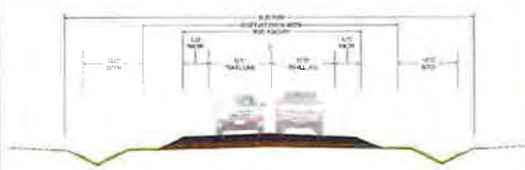
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

Width

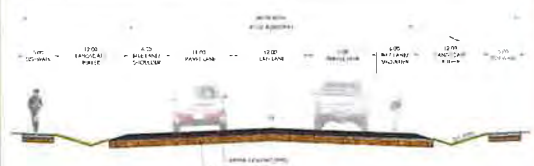
(Please Turn Over)



Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

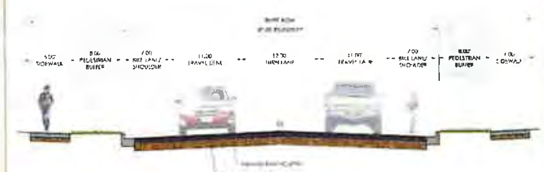
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Concerned about snow drifts across road

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Lighting at Bell Rd & Whitney is essential
Improved Signage - Street & stop
Reduction in grade of the hill would improve winter Safety immensely.

Thank you for providing input for this important project
If you prefer to mail email or complete your comments online please do so by **November 22, 2017**.

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Brenda Birkle
Address: 7302 Julia
Phone: 307-686-0736
Email: vbirkle@live.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	**4**	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	**2**	1	0
Lowering Vehicle Speeds	5	4	**3**	2	1	0
Accommodating Pedestrians	5	4	**3**	2	1	0
Accommodating Bicyclists	5	4	**3**	2	1	0
Other	5	4	3	2	1	0

If Other (please specify)

If you could make one change to the Whitney Road Corridor what change would you make?

Blind spots and steep grades

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

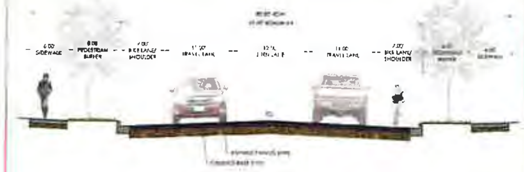
Definitely Like ☐ | Like ☒ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☒ | Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☒

Any additional comments?

Education could be an important piece - dangers of passing on a hill, jogging etc.

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Thank you for providing input for this important project
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Lois Madland
Address: 6704 Foxglove Drive
Phone: 307-421-6728
Email: madlandb@yahoo.com

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

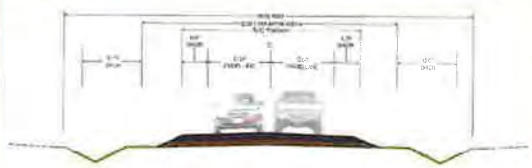
Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	**4**	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	**1**	0
Lowering Vehicle Speeds	5	4	3	2	**1**	0
Accommodating Pedestrians	**5**	4	3	2	1	0
Accommodating Bicyclists	**5**	4	3	2	1	0
Other	**5**	4	3	2	1	0

If Other (please specify) Continuation & Connection to Greenway from Saddle Ridge

If you could make one change to the Whitney Road Corridor what change would you make?

Widen the road to "safely" accomodate homeowners to be able to walk/ride bikes along "Residential" planned plattes. Speed limit adjusted for walking & bike paths.

(Please Turn Over)

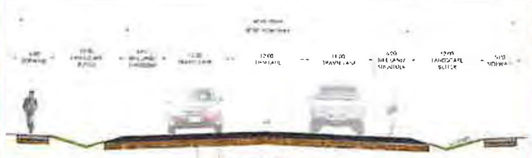


Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☒

Any additional comments?

Presently have & NOT SAFE!

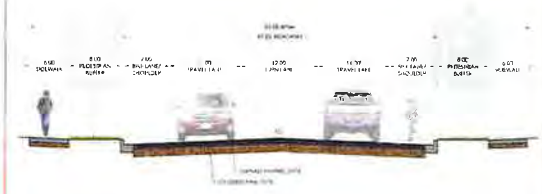


Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above

Definitely Like ☐ | Like ☒ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

Would (Somewhat) accommodate both pedestrians/bikers & vehicles. Do feel that bikers would ride on sidewalks - especially family bikers w/younger children.



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above

Definitely Like ☒ | Like ☐ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

Meets everyone's needs. As the Whitney Development takes place, and with the thought of another school built in this area - we must be Thinking! School could be a North High School & that would mean More cars/More joggers - Track Season

Do you have any additional ideas, information, or other comments that you would like to provide at this time? From the Whitney Road Bike/Walk Paths

I would like to see the Greenway continued to run/winding between the Meadowlark properties and Del Range, connecting up to near the Radio towers (Del Range) to connect with Saddle Ridge Platte and their Greenbelt which parallels Hwy 30.

"Cheyenne has encouraged health, exercise & wellbeing for the Central and Western sides of Cheyenne - we need to extend to the East and this is a great opportunity to do so!!

Thank you for providing input for this important project
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**

Online: https://www.surveymonkey.com/r/WhitneyRd1.
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009.
Email: AVI@avipc.com

Whitney Road Corridor Study Comment Sheet

NOV 2 0 2017

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☒ Property Owner in the area
- ☒ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Richard D. Vosler - Dick
Address: 10145 Crystal Mtn. Rd
Phone: Cell: 421-6951 Land line 635-7402
Email:

Please rate the importance of the following transportation users and issues (circle the most appropriate for each) based on what you consider to be the most important design consideration for Whitney Road?

Description	Very Important to Accommodate	Important to Accommodate	Neutral	Important to Discourage	Most Important to Discourage	No Opinion
Accommodating more Vehicles	5	4	3	2	1	0
Accommodating Higher Vehicle Speeds	5	4	3	2	1	0
Lowering Vehicle Speeds	5	4	3	2	1	0
Accommodating Pedestrians	5	4	3	2	1	0
Accommodating Bicyclists	5	4	3	2	1	0
Other	5	4	3	2	1	0
If Other (please specify)						

If you could make one change to the Whitney Road Corridor what change would you make?

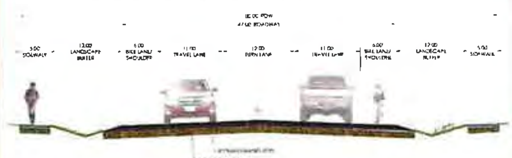
Improve/widen Section US30 to Bell Range

(Please Turn Over)

Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

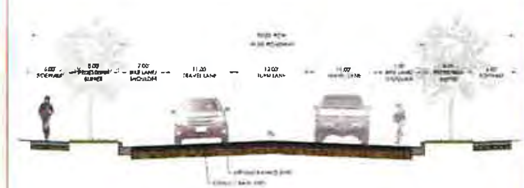
Any additional comments?



Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above.

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road shown above.

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Careful of tree locations -- can cause visibility

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Roundabout on Whitney & Bell Range
Stoplights on " US30

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **November 22, 2017**.

Online: https://www.surveymonkey.com/r/WhitneyRd1
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009
Email: AVI@avipc.com

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018

Dildine Elementary School, 4312 Van Buren Avenue

PLEASE plan on attending the **2nd Whitney Road Corridor Study** Open House. The objective of this Cheyenne Metropolitan Planning Organization (MPO) project is to create a plan for Whitney Road that improves roadway and intersection safety, addresses drainage, snow drifting, and growth projections. Stakeholders will be asked to provide input on the recommend draft plan. The project limits are from U.S. 30 to Storey Blvd./Beckle Rd.

The Open House will be held on **Thursday, June 28th** from **5:00 p.m. - 6:30 p.m.** A **presentation** will take place at **5:30 p.m.** in the gym.

For more information, please call the **MPO at 638.4385**.

LARAMIE COUNTY
SCHOOL DISTRICT 1

EXHIBIT 81
APPLICATION FOR USE OF DISTRICT FACILITY

Please read all 3 pages of this form

Please follow these steps:

1. Fill out the request form completely and **print legibly**.
2. Submit request form by to the building Principal or Athletic Director when possible, or fax to 307-771-2382, by email to [illegible], in person or by U.S. mail to Facilities Management, Attn: Facility Use, 3320 Maxwell Avenue, Cheyenne, WY 82001.
3. A Certificate of Insurance in the amount of $1,000,000 may be requested naming Laramie County School District One, 2810 House Ave., Cheyenne, WY as an additional insured. Proof of medical coverage or *An Assumption of Risk, Waiver and Release of Liability* signed by each participant or participant's guardian for any and all damages which may be sustained by the participant as a result of his/her participation in the event may be requested.

Submit your **Proof of Liability Insurance** as described in the Building Use Terms to the Facility Management office via fax, 307-771-2382, in person or U.S. mail.

Please note: we are not able to process your request without Proof of Liability Insurance

Please note:

- School events take priority. Your permit or a date on your permit may be cancelled due to school activities. You may re-schedule based on availability.
- Once your permit is ready our office will contact you.
- Your rental fee must be paid in advance, other applicable fees will be billed.
- It takes a minimum of 7 – 10 business days to process the permit.
- Possible additional fees:
  1. A monitor or custodian may be required based the date of the permit.
  2. Use of a kitchen requires district staff to monitor/operate equipment.
  3. Technical equipment used in the auditorium or gym(s) requires a district technician to operate the equipment.
- **Until the permit process has been completed, your space is not reserved. We recommend not advertising your event until the permit has been finalized.**

EXHIBIT 81
LARAMIE COUNTY SCHOOL DISTRICT 1
APPLICATION FOR USE OF DISTRICT FACILITY

Date: May 30, 2018 — ☐ Long Term Lease — X Short Term Lease

A request is made for the following school: Dildine Elementary School

Type of Space: Classroom ______ Cafeteria ______ Gym X ______ and 2nd Gym ______

Kitchen ______ Auditorium ______ Parking Lot Only ______ Other ______

Event /Activity: Public Meeting for Whitney Road (City of Cheyenne, Metropolitan Planning Organization)

Organization: AVI, pc — Contact Person: Tom Cobb

Telephone: (H) ______ (W) 307-637-6017 (C) 970-214-6542

Address: 1103 Old Town Lane, Suite 101 City: Cheyenne State: WY Zip: 82009

Email: cobb@avipc.com

Event Supervisor: Tom Cobb — Telephone: 970-214-6542

Start Date: June 28, 2018 — End Date: June 28, 2018

Start Time: 4:30 pm — End Time: 7:00 pm — **Include set-up, rehearsal, clean-up, etc.**

Attendance Expected: 50 — Adult/Student Ratio: NA to ______ (not to exceed 1 to 25)

Admission Charged: NA — Proceeds to be devoted to: NA

Explain in detail (using diagrams, if necessary) how the facility is to be set up. State if the work is to be done by district employees. List equipment needed, i.e., tables, chairs, bleachers, risers, and any other pertinent information:

Tables, Chairs, and screen for Power point presentation

I attest that I have read, understand, and agree that Laramie County School District Number One policies and regulations of the Board of Trustees (see attached) Chapter IX, Section 5, USE OF DISTRICT PROPERTY are to be strictly complied with, and that the undersigned assumes all responsibility for any liability, property damage or personal injury of any kind or nature resulting in loss or damage to persons or property as a result of the use described above. The undersigned further agrees to pay in advance such charges as may be made for the use of the property and equipment and will defend and indemnify Laramie County School District Number One, its employees, agents, and trustees should any claim for damages of any kind arise.

Prior to use of the facility, I will acquaint myself with the building layout, location of emergency exits, number and location of all fire extinguishers and alarms. In the event of fire, power outage, earthquake, flood, severe weather, or other situations that require the building to be evacuated, all materials and equipment are to be left in place until such time the building is determined to be safe for reentry.

☐ ***I affirm that I have read and agree to comply with the LCSD1 Facility Use Terms and agree the On-site Event Supervisor is responsible for event conduct, facility damage and reporting of damage, and facility cleanup.***

Signature: ______________________

EXHIBIT 81
LARAMIE COUNTY SCHOOL DISTRICT 1
APPLICATION FOR USE OF DISTRICT FACILITY

Board of Trustees policies and regulations have been brought to the attention of the applicant. The above activity can be scheduled. The following fees will apply:

FOR USE BY BUILDING PERSONNEL AND BUSINESS OFFICE ONLY

	Number of Hours	Cost per Hour	Total Cost
Rental Fee			
Custodial Fee			
Required Supervisor Fee			
Technician's Fee			
Equipment Rental Fee			
Police/Security Fee			
TOTAL COST			

District Representative assigned to the event: ______________________
(Principal, Athletic Director, Custodian, Staff Member, etc. **Representative must be on site at all times**)

Request Approved ______________________ Principal or Designee
(Signature)

Request Approved ______________________ Asst. Supt. of Support Operations or Designee
(Signature)

Please note that all outside groups will manage themselves. This includes crisis situations and/or inclement weather. Groups are responsible for notification of parents or participants and any evacuation plans. Groups may choose to cancel an event even if LCSD1 is still open in the case of a crisis situation and/or inclement weather. LCSD1 is not responsible for managing outside groups in a crisis situation.

Form FM113
Adopted 8/13/90
Revised 10/12/95, 1/8/96, 7/1/96, 7/10/00, 6/2/11, 7/9/14, 7/13/15, 7/18/16

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Dave Rose 6550 US 30	307 630 8765
Rick Fierro 7312 Berkely Rd	307-634-2579

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Dillon Ohit - Suncor 1715 Fleischli Pkwy Cheyenne, WY 82001	dohit@suncor.com 303-549-8004
Buddy Tennant 158 Rio Verde Circle Cheyenne Wy 82001	buddy_tennant@yahoo.com 970 834 1036
Daryl Johnson 3158 Bluff R Chey WY 82009	djpoundhaven@msn.com 307-632-3413
Kevin Holverson 3381 KS Ranch Rd Cheyenne WY 82007	kevin wvo@aol.com 307 778 7908
RANDY GRIESBACH WYDOT LARAMIE, WY	randy.griesbach@wyo.gov
Linda Mueller 4512 Whitney Rd. Chey.	634-9672
Lynn Singer 6717 Whitney Rd	630 6065
Jim + Barb Boyd 4608 Van Buren Ave	816-716-8722

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
DENNIS AUKER 2810 HOUSE AVE CHEYENNE, WYO 82001	
Ellen Southwell 4918 Cochise Rd Cheyenne Wy 82009	
Mike Cowley 5410 Iron Mtn Rd Cheyenne, WY 82009	
Shauna Almond Roberts 6408 Elizabeth Rd Cheyenne Wy 82009	
Monica Yarborough 9352 Crystal Mountain Rd Cheyenne Wy 82009	
Ed & Pat Smith 6806 Foxglove Drive Cheyenne, Wy 82009	
Kathleen + Lynn Larson 5302 Whitney Rd Chey 82009	
RICHARD JOHNSON	ON FILE

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Mara Funk 6515 Foxglove 82009	307 635 0495 marafunk70@gmail.com
Cody & Finnegan Fournier 3351 Belaire Ave 82001	307 630 2060
Jeannie Spraker + Andy Weber 6602 Foxglove Dr. 82009	sprakerjm@gmail.com
TOM + MARY GABLENZ 6503 HIGH SPRING RD	ZNELBAGTM & MSN.COM
Angi Bruce 6615 Wilderness Dr	307 287-0373
Bill + Connie Holgerson Albin WY 82050	307-246-3294
Carol + Steve Hopkins 6627 Riverbend Road	307-256-6498
Kathryn Byers P.O. Box 20924	wybyers@gmail

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
GARY + NORMA Diesing 6208 IRON MOUNTAIN Rd	307-421-7789
Mick Vosler 10145 Crystal Mtn Rd	307-635-7402
Mike Larson 5518 Blazing Star Rd Chy WY 82009	307-421-4005 wyolarsons@hotmail.com
Mike Lyjan 6751 Say Kally Rd Cheyenne WY 82009	lyjanml1@hotmail.com
Judd Fitzealdt 6770 Whistler Dr. Cheyenne, WY 82009	307-320-5685
Greg Sinick 6717 Whitney Road Cheyenne WY 82009	307-632-1207
Morris + Sharon Jenkins 6300 Green Meadow Pl C	307-638-7818
Lisa Brandes 6983 Sundance Loop	307-631-4533

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
DENNIS WILES 6535 E 4 MILE Rd	Dennis Wiles 307-421-4110
Donald Beckle PO Box 2311 7519 Beckle Rd	(307)630-1181
James Mestack 6861 Dorsey Rd	307-287-1548
KAREN GONZALEZ 6747 Dorsey Rd	gonzalez82009@AOL
Janine Ramage 7119 Julia Rd	307-630-2667
Magen Seeley-Marotz 7099 Say Kally Rd	307-421-5927
Joe Patterson Guardian Development	Joe@guardiancompanies.com
Chris Lyon 4501 Greenhill Ct	3076321665

Whitney Road Corridor Study

PUBLIC OPEN HOUSE

Thursday, June 28, 2018 5:00 p.m. - 6:30 p.m.

Dildine Elementary School, 4312 Van Buren Avenue

Please Enter Your Name & Address	Please Enter Your Phone &/Or Email
Eric Fatherly 6710 Butterfly Dr Cheyenne WY 82009	307-222-8771
RICHARD SCRANTON 7315 JULIA Road CHEYENNE, WYO 82009	
Rod Stone 634-6017 4011 Summit DR	
Joyce Stone 4011 SUMMIT DR	634-6017
DAVE BUMANN LARAMIE COUNTY PUBLIC WORKS	633-4302
TRACEE PETERSON 9428 SnowCrest DR	421-6801
KERRY Jo & MIKE STEPHAN 9555 Crystal Mountain Rd	510-326-3457
Kathy & Quint Davis 6406 Chickadee Dr	631-8713

Peggy & Ed Upton - 801 McGovern Ave

Posted post-it

DENNIS WILES 6535 E 4 MILE Rd

WHITNEY ROAD 10% CORRIDOR PLAN

1

AGENDA

- Study Area and Primary Goals
- Where we have been and what to expect?
- What we heard (Public Meeting No. 1)?
- Details of the Identified Issues?
- Overview of recommended Improvements
- Adjourn to Workshop Area

2

STUDY AREA AND PRIMARY GOALS

- Limits
  - Northern Limit – Storey Blvd./ Beckle Road
  - Southern Limit – U.S. 30
- Primary Goals
  - Understand the community and neighborhood vision for the roadway
  - Improve roadway and intersection safety and function
  - Address drainage and snow drifting

3

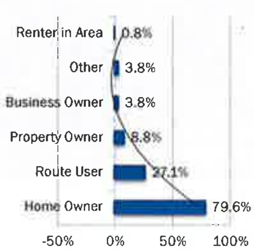
WHERE WE HAVE BEEN AND WHAT TO EXPECT?

Public Outreach Matrix

ACTIVITY	DATE(S)
Public Open House (2)	November 8, 2017; June 28, 2018
Steering Committee (2)	May 9, 2017; January 23, 2018
Sunoco Energy USA Pipeline Plains All American Pipeline	May 10, 2017 October 19, 2017
Submit Draft Plan to MPO	July 20, 2018
Individual One-on-one Meetings w/ Land Owners	March 7, 2018 & TBD
MPO Technical Advisory Committee (1)	August 16, 2018
City Planning Commission	August 20, 2018
County Planning Commission	August 9, 2018
Presentations to the Governing Bodies (County and City)	September, 2018

4

SUMMARY OF PUBLIC MEETING NO. 1

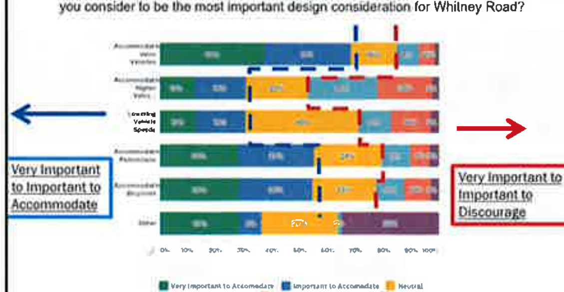


- Who attended?
  - 120 People Sign-in
  - 150 Estimated Attendance
  - 240 Responses
- Other: Real Estate Broker (2), Cheyenne Resident thinking of moving over there (2), Friend of homeowner in area, Homeowner in Cheyenne (1), MPO CAC Member.

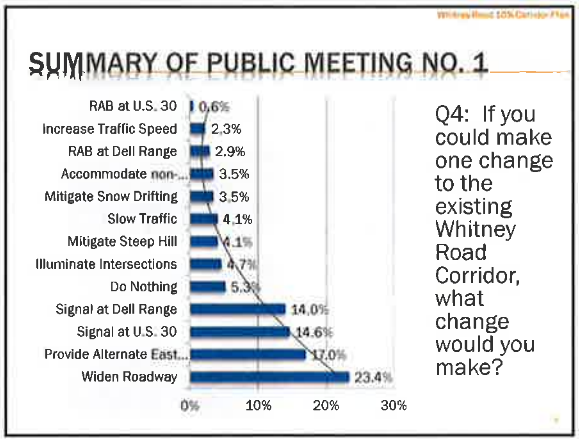
5

SUMMARY OF PUBLIC MEETING NO. 1

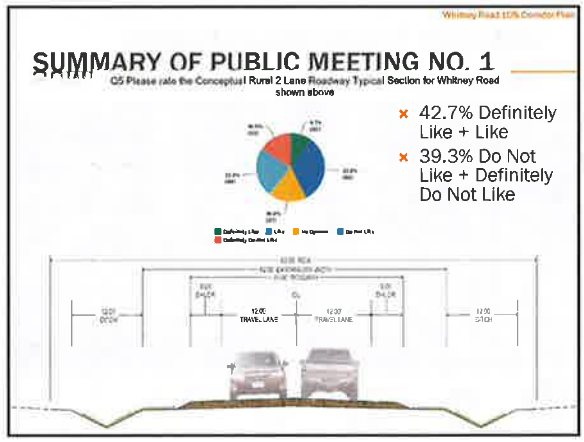
Q3 Please rate the importance of the following transportation users and issues based on what you consider to be the most important design consideration for Whitney Road?



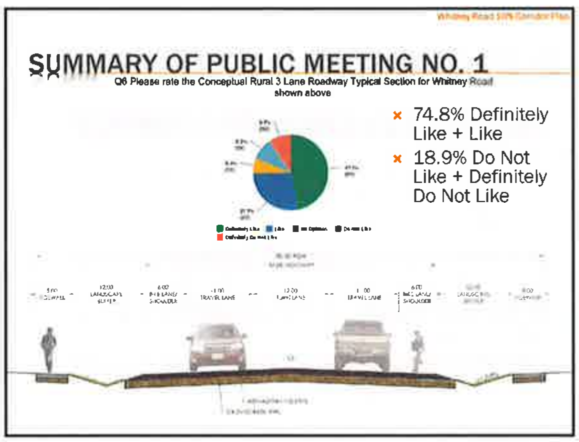
6


SUMMARY OF PUBLIC MEETING NO. 1
RAB at U.S. 30 0.6%
Increase Traffic Speed 2.3%
RAB at Dell Range 2.9%
Accommodate non-... 3.5%
Mitigate Snow Drifting 3.5%
Slow Traffic 4.1%
Mitigate Steep Hill 4.1%
Illuminate Intersections 4.7%
Do Nothing 5.3%
Signal at Dell Range 14.0%
Signal at U.S. 30 14.6%
Provide Alternate East... 17.0%
Widen Roadway 23.4%
0% 10% 20% 30%
Q4: If you could make one change to the existing Whitney Road Corridor, what change would you make?

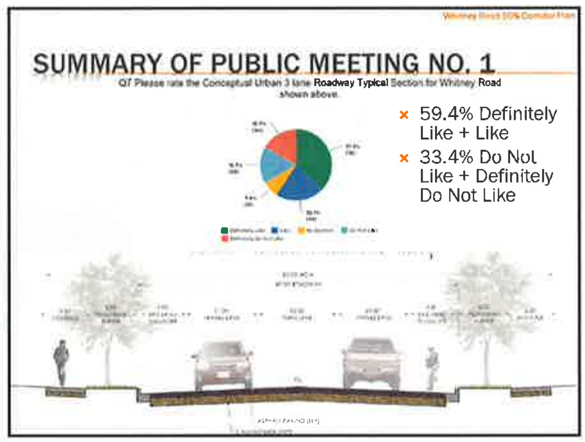
7


SUMMARY OF PUBLIC MEETING NO. 1
Q5 Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above
42.7% Definitely Like + Like
39.3% Do Not Like + Definitely Do Not Like

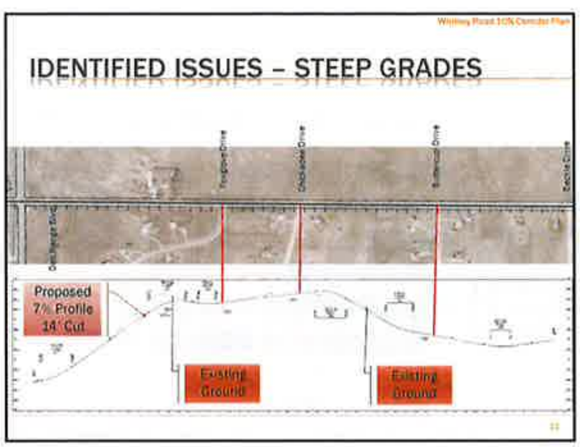
8


SUMMARY OF PUBLIC MEETING NO. 1
Q6 Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above
74.8% Definitely Like + Like
18.9% Do Not Like + Definitely Do Not Like

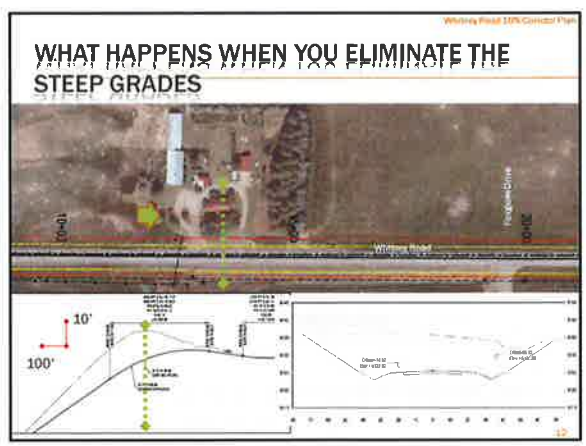
9


SUMMARY OF PUBLIC MEETING NO. 1
Q7 Please rate the Conceptual Urban 3 lane Roadway Typical Section for Whitney Road shown above
59.4% Definitely Like + Like
33.4% Do Not Like + Definitely Do Not Like

10


IDENTIFIED ISSUES – STEEP GRADES
Proposed 7% Profile 14' Cut
Existing Ground
Existing Ground

11


WHAT HAPPENS WHEN YOU ELIMINATE THE STEEP GRADES
10'
100'

12

CRASH DATA

- Intersection Crash Data (January, 2014 to September, 2017)

Whitney Road / U.S. 30		Whitney Road / Dell Range Boulevard		Whitney Road / Beckle Road	
Type	Number	Type	Number	Type	Number
Angle	[illegible]	Angle	[illegible]	Angle	[illegible]
Rear End	[illegible]	Rear End	[illegible]	Rear End	[illegible]
Fixed Object	[illegible]	Fixed Object	[illegible]	Fixed Object	[illegible]
Total	[illegible]	Total	[illegible]	Total	[illegible]
Rate	[illegible]	Rate	[illegible]	Rate	[illegible]

Crash rates are expressed in crashes per million entering vehicles

Severity

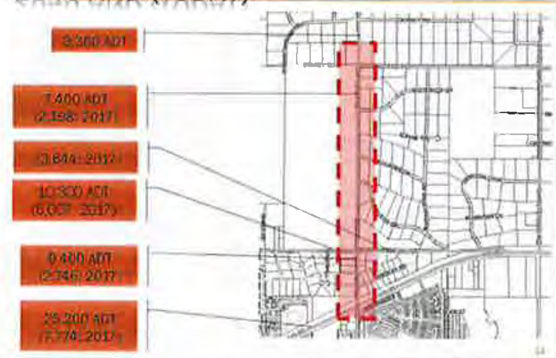
Property Damage	[illegible]	Property Damage	[illegible]	Property Damage	[illegible]
Injury	[illegible]	Injury	[illegible]	Injury	[illegible]
Fatality	[illegible]	Fatality	[illegible]	Fatality	[illegible]
Total	[illegible]	Total	[illegible]	Total	[illegible]

Cause

Failure to Yield ROW	[illegible]	Failure to Yield ROW	[illegible]	Failure to Yield ROW	[illegible]
Following too Closely	[illegible]	Following too Closely	[illegible]	Following too Closely	[illegible]
Speeding	[illegible]	Speeding	[illegible]	Speeding	[illegible]
Drove too Fast for Conditions	[illegible]	Drove too Fast for Conditions	[illegible]	Drove too Fast for Conditions	[illegible]
Total	[illegible]	Total	[illegible]	Total	[illegible]

13

2040 AND (TODAY)



14

GENERAL CORRIDOR RECOMMENDATIONS

Whitney Rd

- Long term
  - Implement Construction Phased Strategies along Corridor.
  - Install Uniform Roadway and Pedestrian lighting
  - Investigate Possible Posted Speed Reduction
    - U.S. 30 East and West of Whitney from 55 mph to 40 mph
    - Whitney Road from Beckel/ Storey Blvd from 45 mph to 30 mph
  - Implement wet and dry utility priority projects as funding resources become available or development becomes the catalyst.
  - Develop/ Create additional egress/ access routes north of Dell Range (i.e. Storey Blvd. West, Iron Mountain Road)
  - Reserve right-of-way as development occurs along the undeveloped corridor.
  - Explore opportunities, as area develops, to provide roadway storm water detention / retention features / facilities.

15

RECOMMENDED TYPICAL SECTIONS

- Whitney Road at the Beckel Road/ Storey Blvd. (Looking North)
  - Interim Rural 2 – Lane Roadway Typical Section

AT THE BECKLE ROAD / STOREY BLVD INTERSECTION
(LOOKING NORTH)

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17

RECOMMENDED TYPICAL SECTIONS

- Dell Range Blvd. to Beckle Road (Looking North)
  - Urban 3 – Lane Roadway Typical Section (Special)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)

17

PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- U.S. 30 to Dell Range Blvd.
  - Urban 3 – Lane Roadway Typical Section

U S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

18

18

Whitney Road 10% Corridor Plan

WHITNEY ROAD AT DELL RANGE BLVD.

19

Whitney Road 10% Corridor Plan

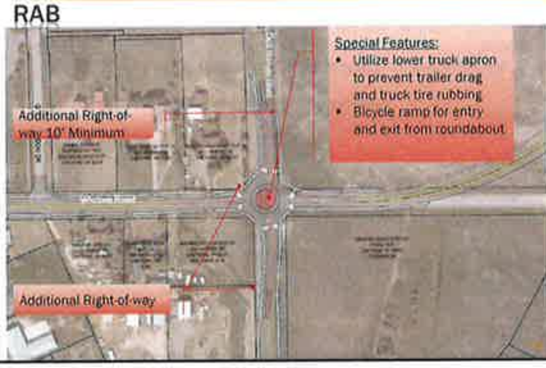
WHITNEY ROAD AT DELL RANGE BLVD.

- Alternative 1
  - Single Lane RAB
- Alternative 2
  - Standard Signalized Intersection

20

Whitney Road 10% Corridor Plan

RECOMMENDED ALTERNATIVE – SINGLE LANE RAB



21

Whitney Road 10% Corridor Plan

INTERIM RECOMMENDATIONS PRIOR TO RECONSTRUCTION

- Transverse Rumble Strips – Northbound and Southbound
- Flashing Beacon on Whitney Road – Improve Visibility for Stop Control
- Intersection Down Lighting on Existing Power Poles or Independent Pole at Intersections

22

Whitney Road 10% Corridor Plan

WHITNEY ROAD AT U.S. 30

23

Whitney Road 10% Corridor Plan

WHITNEY ROAD AT DELL RANGE BLVD.

- Alternative 1
  - Realign Skewed Intersection
  - Signalized Intersection as Warranted
- Alternative 2
  - Leave Intersection Skew and Widening
  - Signalized Intersection as Warranted

24

RECOMMENDED ALTERNATIVE – REALIGN INTERSECTION

25

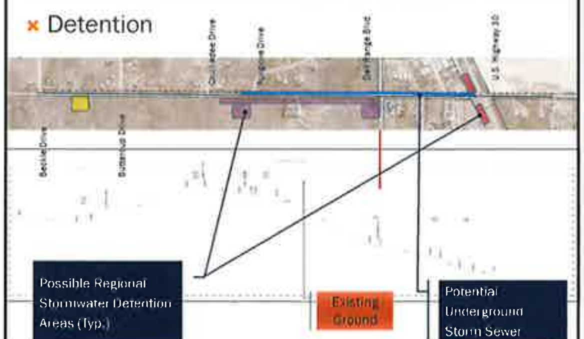
INTERIM OPTIONS - PHASING

- Signalization w/ Future Arm Lengths and Locations
- Eliminate Service Road Connection
- Regional Stormwater Detention Ponds

26

PROPOSED WET UTILIES –STORM

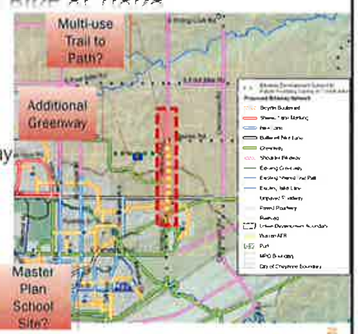
- Detention



27

OTHER NON-MOTORIZED RECOMMENDATIONS - PEDESTRIAN AND BIKE OPTIONS

- Soft surface Multi-use Trail or Additional Trail "Old" Right-of way
- Additional Greenway connection from Whitney to new master plan school site



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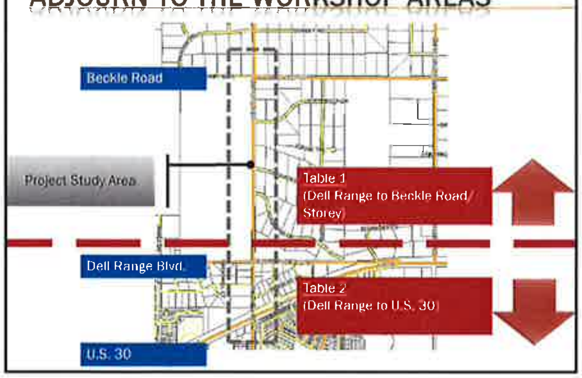
FINAL THOUGHTS

- **Collaborative** effort with input of over 250+ people including professionals, users, property owners, business owners, and other stakeholders
- Provides recommendations that attempt to balance the needs of <u>all</u> the users of roadway
- Provides a vision and framework for the corridor for year 2040 and is <u>not</u> a construction document
- Purpose of the plan is to be guide document for short and long term development of the area. The final plan is dynamic and should be updated to reflect future changes not seen at this time.

29

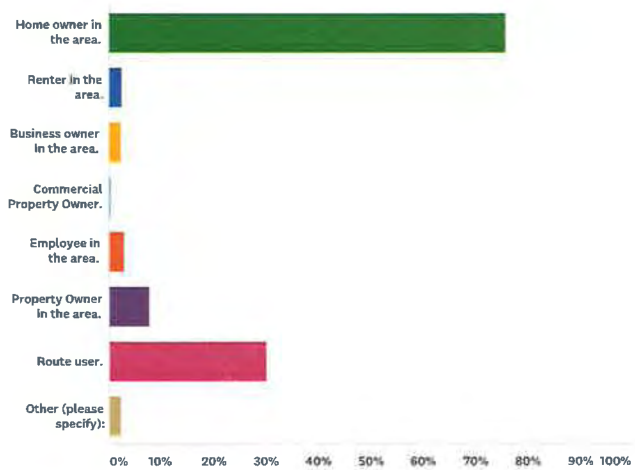
ADJOURN TO THE WORKSHOP AREAS



30

Q1 Which of the following best describes you (Please mark all that apply)?

Answered: 311 Skipped: 0



ANSWER CHOICES	RESPONSES	
Home owner in the area.	75.88%	236
Renter in the area.	2.57%	8
Business owner in the area.	2.25%	7
Commercial Property Owner.	0.32%	1
Employee in the area.	2.89%	9
Property Owner in the area.	7.72%	24
Route user.	30.23%	94
Other (please specify):	2.25%	7
Total Respondents: 311		

#	OTHER (PLEASE SPECIFY):	DATE
1	Former firefighter in the area	7/10/2018 9:53 PM
2	City resident who drives through the area	7/6/2018 10:56 AM
3	S	7/3/2018 3:59 PM
4	Just interested	7/2/2018 12:59 PM

5	Concered Community Member	7/2/2018 8:49 AM
6	Pipeline -Suncor	7/2/2018 8:24 AM
7	Concerned citizen	7/2/2018 1:06 AM

Q2 Please help us keep you informed by giving us the way to contact you (Optional).

Answered: 113 Skipped: 198

ANSWER CHOICES	RESPONSES	
Name:	96.46%	109
Address:	82.30%	93
City/State/ZIP:	67.26%	76
Phone:	68.14%	77
Email:	86.73%	98

#	NAME:	DATE
1	Andy MCMAHON	7/12/2018 9:53 AM
2	Michelle Bain	7/12/2018 7:08 AM
3	Hollingshead	7/11/2018 9:26 PM
4	Brenda oswald	7/11/2018 8:21 PM
5	Kathrin Ryan	7/11/2018 7:58 PM
6	Kelly Archer	7/11/2018 5:21 PM
7	Susan Hopkins	7/11/2018 4:15 PM
8	May Maas	7/11/2018 3:25 PM
9	Kathy K	7/11/2018 3:21 PM
10	William Brewer	7/11/2018 1:39 PM
11	John Payne	7/11/2018 12:28 PM
12	j fred volk	7/11/2018 11:22 AM
13	David Woody	7/11/2018 10:57 AM
14	Audrey J Mayfield	7/11/2018 10:54 AM
15	Christopher Harbeson	7/11/2018 10:01 AM
16	Janet Toler	7/11/2018 9:48 AM
17	Mike Colgan	7/11/2018 9:11 AM
18	D'Anna Feurt	7/11/2018 8:45 AM
19	Mark Trimble	7/11/2018 8:44 AM
20	Ginni Sutherland	7/11/2018 8:07 AM
21	Retha Blakely	7/11/2018 7:17 AM
22	Eugene Schumacher	7/11/2018 7:14 AM
23	Lindsay Kimbrell	7/11/2018 6:51 AM
24	Shelley	7/11/2018 6:42 AM
25	Danielle	7/11/2018 6:22 AM
26	Mike Colgan	7/11/2018 5:51 AM
27	Eric Stransky	7/11/2018 3:28 AM

28	Brittany Wilson	7/10/2018 6:00 PM
29	Jason Johnson	7/10/2018 2:52 PM
30	Ed & Pat Smith	7/10/2018 2:52 PM
31	Shawn Broad	7/9/2018 9:47 PM
32	Georgia Broyles	7/9/2018 9:11 PM
33	Lisa and Robert Brandes	7/9/2018 7:41 PM
34	Lynn Rainey	7/9/2018 6:03 PM
35	Mysty Haight	7/9/2018 3:04 PM
36	James Mestack	7/9/2018 2:49 PM
37	Susie Havner	7/9/2018 11:55 AM
38	Duane Welte	7/8/2018 8:05 PM
39	Tiffany	7/8/2018 4:31 PM
40	Barbara	7/7/2018 10:24 PM
41	Maggie Doss	7/6/2018 7:44 PM
42	Taylor	7/6/2018 11:33 AM
43	Lanae McDonald	7/6/2018 7:31 AM
44	Kathryn Warren	7/5/2018 1:16 PM
45	Jeff Trefren	7/5/2018 11:23 AM
46	Jeff Woods	7/5/2018 8:31 AM
47	Lori Medina	7/5/2018 7:54 AM
48	Max Minnick	7/5/2018 12:34 AM
49	Steven girt	7/4/2018 6:20 PM
50	Kevin Heyborne	7/4/2018 10:36 AM
51	Candace Croswell	7/3/2018 9:13 PM
52	Kari Happold	7/3/2018 9:01 PM
53	Katrina Vosler-Suter	7/3/2018 8:42 PM
54	Ellen Taylor	7/3/2018 8:26 PM
55	Jerry Rief	7/3/2018 6:30 PM
56	Kathie Dreifus	7/3/2018 6:07 PM
57	Ana munoz	7/3/2018 5:03 PM
58	Shirley Welte	7/3/2018 4:37 PM
59	Sheri Emmert	7/3/2018 3:59 PM
60	Cyndi Henderson	7/3/2018 3:58 PM
61	Monica Yarborough	7/3/2018 3:52 PM
62	Jim	7/2/2018 11:09 PM
63	Dutch McBride	7/2/2018 10:35 PM
64	Denise Hopkins	7/2/2018 9:26 PM
65	David Hopkins	7/2/2018 9:13 PM
66	Richard D (Dick) Vosler	7/2/2018 1:06 PM
67	Michael & Jennifer Larson	7/2/2018 9:30 AM
68	Angi Bruce	7/2/2018 9:28 AM

69	Dennis Wiles	7/2/2018 9:25 AM
70	Mike Lujan	7/2/2018 9:20 AM
71	Pam quick	7/2/2018 9:11 AM
72	Magen Seeley-Marotz	7/2/2018 9:06 AM
73	Kerry Jo & Mike Stephan	7/2/2018 9:02 AM
74	Cody Fournier	7/2/2018 8:49 AM
75	Judd Eifealdt	7/2/2018 8:44 AM
76	Judd Eifealdt	7/2/2018 8:41 AM
77	David & Mara Funk	7/2/2018 8:35 AM
78	Buddy Tenrant	7/2/2018 8:29 AM
79	Dillion Ohot -Suncor	7/2/2018 8:24 AM
80	Ellen Southwell	7/2/2018 7:40 AM
81	Joyce Stone	7/2/2018 7:26 AM
82	Rod Stone	7/2/2018 7:20 AM
83	Chris Ryan	7/2/2018 7:16 AM
84	Andy Vehar	7/2/2018 7:12 AM
85	Dave Rose	7/2/2018 7:07 AM
86	Barbara Boyd & Jim Boyd	7/2/2018 7:01 AM
87	Mike Cowley	7/2/2018 6:58 AM
88	Janine Ramage	7/2/2018 6:55 AM
89	Jessie Parker	7/2/2018 6:53 AM
90	Tim and Tammy Bauer	7/2/2018 6:24 AM
91	Dennis Brunner	7/2/2018 5:46 AM
92	Bill Pacheco	7/1/2018 10:03 PM
93	Carl Voigtsberger	7/1/2018 8:03 PM
94	Dale Bratton	7/1/2018 9:22 AM
95	Te	7/1/2018 8:54 AM
96	Caroline Mattson	7/1/2018 7:47 AM
97	Charles Retz	7/1/2018 12:02 AM
98	Michaela Bradshaw	6/30/2018 8:59 PM
99	Linda Schmidt	6/30/2018 5:06 PM
100	Susan Parkins	6/30/2018 8:19 AM
101	Matt	6/30/2018 7:09 AM
102	Karlee ramirez	6/29/2018 10:37 PM
103	Tim Woodard	6/29/2018 9:46 PM
104	Alicia Smith	6/29/2018 9:21 PM
105	Patrick	6/29/2018 9:10 PM
106	Kristin Nuss	6/29/2018 6:51 PM
107	Tim Walsh	6/29/2018 5:41 PM
108	Chad Doss	6/29/2018 5:09 PM
109	Amy Brockel	6/29/2018 4:11 PM

#	ADDRESS:	DATE
1	9891 Hynds Blvd	7/12/2018 9:53 AM
2	6974 Horse Soldier Rd	7/12/2018 7:08 AM
3	6808 Hitching Post Ln.	7/11/2018 9:26 PM
4	6501 Julia Rd	7/11/2018 8:21 PM
5	3713 Gunsmoke Rd	7/11/2018 7:58 PM
6	6824 Sundance Loop	7/11/2018 5:21 PM
7	6509 RIVERBEND RD	7/11/2018 4:15 PM
8	6715 Painted Rock Trail	7/11/2018 3:25 PM
9	9450 McKenna trail	7/11/2018 12:28 PM
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11	4029 Gunsmoke Rd	7/11/2018 10:54 AM
12	6611 horse soldier rd	7/11/2018 9:48 AM
13	3628 Rustic Rd	7/11/2018 9:11 AM
14	6524 Kicking Horse Court	7/11/2018 8:45 AM
15	3501 Ranch View Dr	7/11/2018 8:44 AM
16	6606 Campfire Court	7/11/2018 8:07 AM
17	6903 Snowy River Road	7/11/2018 7:17 AM
18	6509 Campfire Ct	7/11/2018 7:14 AM
19	6511 Painted Rock Trail	7/11/2018 6:51 AM
20	3754 Saddle Ridge Trail	7/11/2018 6:42 AM
21	3628 Rustic Rd	7/11/2018 5:51 AM
22	6613 Horse Soldier Rd	7/11/2018 3:28 AM
23	6601 Sundance Loop	7/10/2018 6:00 PM
24	6806 Foxglove	7/10/2018 2:52 PM
25	11431 Chief Twomoon Road	7/9/2018 9:47 PM
26	1121 Gettysburg Drive	7/9/2018 9:11 PM
27	6983 Sundance Loop	7/9/2018 7:41 PM
28	9208 Heavenly Dr.	7/9/2018 3:04 PM
29	6861 Dorsey Rd	7/9/2018 2:49 PM
30	9335 Crystal Mountain Rd	7/9/2018 11:55 AM
31	7331 Keystone Dr	7/8/2018 8:05 PM
32	7311 e Pershing	7/7/2018 10:24 PM
33	9907 Crystal Mountain Rd	7/6/2018 7:44 PM
34	11804 E Four Mile Rd	7/6/2018 7:31 AM
35	6967 Boot Strap Ct.	7/5/2018 1:16 PM
36	5707 Dell range blvd	7/5/2018 11:23 AM
37	6641 Crested Butte Dr	7/5/2018 8:31 AM
38	6519 Dorsey Road	7/5/2018 7:54 AM
39	6726 telluride dr	7/4/2018 6:20 PM
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42	7422 Monarch dr	7/3/2018 9:01 PM
43	10145 Crystal Mountain Rd.	7/3/2018 8:42 PM
44	7203 Crested Butte Drive	7/3/2018 8:26 PM
45	10501 Crystal Mountaib Rd	7/3/2018 6:30 PM
46	9327 Snow Crest Dr	7/3/2018 6:07 PM
47	7100 telluride dr	7/3/2018 5:03 PM
48	7331 Keystone Dr	7/3/2018 4:37 PM
49	6740 Crested Butte Dr	7/3/2018 3:59 PM
50	9466 Sugarloaf Lane	7/3/2018 3:58 PM
51	9352 Crystal Mountsin Rd	7/3/2018 3:52 PM
52	7907 Aztec Dr	7/2/2018 11:09 PM
53	6603 Riverbend Road	7/2/2018 10:35 PM
54	Dorsey Rd	7/2/2018 9:26 PM
55	10149 Crystal Mtn Rd	7/2/2018 1:06 PM
56	5518 Blazing Star Rd	7/2/2018 9:30 AM
57	6615 Wilderness Trail	7/2/2018 9:28 AM
58	6535 E 4Mile Rd	7/2/2018 9:25 AM
59	6751 Say Valley Rd	7/2/2018 9:20 AM
60	3267 sandstone ln	7/2/2018 9:11 AM
61	7099 Say Kally Rd	7/2/2018 9:06 AM
62	9555 Crystal Mountain Rd	7/2/2018 9:02 AM
63	3351 Belair Ave	7/2/2018 8:49 AM
64	6770 Whistler Dr	7/2/2018 8:44 AM
65	6770 Whistler Dr	7/2/2018 8:41 AM
66	6515 Foxglove	7/2/2018 8:35 AM
67	1580 Rio Glende Circle	7/2/2018 8:29 AM
68	1715 Fleishli Pkwy,	7/2/2018 8:24 AM
69	4011 Summitt Dr.	7/2/2018 7:26 AM
70	4011 Summit Dr	7/2/2018 7:20 AM
71	4501 Greenbull Ct	7/2/2018 7:16 AM
72	6530 US 30	7/2/2018 7:07 AM
73	4608 Van Burenb Ave	7/2/2018 7:01 AM
74	5610 Iron Mtn Rd	7/2/2018 6:58 AM
75	7119 Julia Rd	7/2/2018 6:55 AM
76	6744 Grace Rd	7/2/2018 6:53 AM
77	6809 Laramie st	7/2/2018 6:24 AM
78	11755 Chief Twomoon Rd.	7/2/2018 5:46 AM
79	9131 James Cole Ct	7/1/2018 10:03 PM
80	11303 yellowbear rd	7/1/2018 8:03 PM
81	PO Box 96	7/1/2018 9:22 AM

82	4505 El Camino Dr	7/1/2018 7:47 AM
83	7317 Aztec Dr.	7/1/2018 12:02 AM
84	3711 Blue Sage Rd	6/30/2018 8:59 PM
85	7317 Dorsey Rd	6/30/2018 5:06 PM
86	3531 Fire Side Dr	6/30/2018 8:19 AM
87	3629 Rustic rd	6/30/2018 7:09 AM
88	5914 e 13th st	6/29/2018 10:37 PM
89	8200 Beckle RD	6/29/2018 9:46 PM
90	8401 Hazer Court	6/29/2018 9:21 PM
91	Woods Landing Estates	6/29/2018 6:51 PM
92	9200 jordann lane	6/29/2018 5:41 PM
93	9907 Crystal Mountain Road	6/29/2018 5:09 PM

#	CITY/STATE/ZIP:	DATE
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6	82009	7/11/2018 5:21 PM
7	CHEYENNE	7/11/2018 4:15 PM
8	Cheyenne, WY 82001	7/11/2018 3:25 PM
9	Cheyenne	7/11/2018 1:39 PM
10	Cheyenne Wyoming 82009	7/11/2018 12:28 PM
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13	Cheyenne	7/11/2018 10:54 AM
14	Cheyenne wy 82001	7/11/2018 9:48 AM
15	Cheyenne WY 82001	7/11/2018 9:11 AM
16	Cheyenne, WY 82001	7/11/2018 8:45 AM
17	Cheyenne	7/11/2018 8:44 AM
18	Cheyenne. WY 82001	7/11/2018 8:07 AM
19	Cheyenne, Wy 82001	7/11/2018 7:17 AM
20	Cheyenne, WY 82001	7/11/2018 7:14 AM
21	Cheyenne, WY 82001	7/11/2018 6:51 AM
22	Cheyenne WY 82001	7/11/2018 6:42 AM
23	Cheyenne WY 82001	7/11/2018 5:51 AM
24	Cheyenne, WY 82001	7/11/2018 3:28 AM
25	Cheyenne WY 82009	7/10/2018 6:00 PM
26	Cheyenne, WY	7/10/2018 2:52 PM
27	Cheyenne, Wyoming 82009	7/9/2018 9:47 PM
28	Cheyenne, Wyoming 82001	7/9/2018 9:11 PM

29	Cheyenne	7/9/2018 7:41 PM
30	Cheyenne, Wy 82009	7/9/2018 3:04 PM
31	Cheyenne/WY/82009	7/9/2018 2:49 PM
32	Cheyenne WY 82009	7/9/2018 11:55 AM
33	Cheyenne/WY/82009	7/8/2018 8:05 PM
34	Cheyenne Wyoming 82001	7/7/2018 10:24 PM
35	Cheyenne/Wy/82009	7/6/2018 7:44 PM
36	82001	7/5/2018 1:16 PM
37	Cheyenne WY 82009	7/5/2018 11:23 AM
38	Cheyenne, Wyoming 82009	7/5/2018 8:31 AM
39	Cheyenne, WY 82009	7/5/2018 7:54 AM
40	Cheyenne WY 82009	7/4/2018 6:20 PM
41	Cheyenne, WY 82009	7/4/2018 10:36 AM
42	Cheyenne WY 82009	7/3/2018 9:13 PM
43	Cheynne, WY 82009	7/3/2018 9:01 PM
44	Cheyenne, WY 82009	7/3/2018 8:42 PM
45	Cheyenne, WY 82009	7/3/2018 8:26 PM
46	Cheyenne WY, 82009	7/3/2018 6:30 PM
47	Cheyenne, WY 82009	7/3/2018 6:07 PM
48	Cheyenne why 82009	7/3/2018 5:03 PM
49	Cheyenne WY 82009	7/3/2018 4:37 PM
50	Cheyenne	7/3/2018 3:59 PM
51	Cheyenne Wy 82009	7/3/2018 3:58 PM
52	Cheyenne WY 82009	7/3/2018 3:52 PM
53	Cheyenne	7/2/2018 11:09 PM
54	Cheyenne, WY 82001	7/2/2018 10:35 PM
55	Cheyenne, WY 82009	7/2/2018 9:30 AM
56	Cheyenne WY 82009	7/2/2018 9:20 AM
57	Cheyenne, Wyoming 82001	7/2/2018 9:11 AM
58	Cheyenne, 82001	7/2/2018 8:24 AM
59	Chey 82009	7/2/2018 7:20 AM
60	Cheyenne Wy 82001	7/2/2018 6:24 AM
61	Cheyenne	7/2/2018 5:46 AM
62	Cheyenne, WY 82009	7/1/2018 10:03 PM
63	Cheyenne	7/1/2018 8:03 PM
64	Hillsdale Wy 82060	7/1/2018 9:22 AM
65	Cheyenne, WY 82001	7/1/2018 7:47 AM
66	Cheyenne, WY 82008	7/1/2018 12:02 AM
67	Cheyenne, WY 82001	6/30/2018 8:59 PM
68	Cheyenne, Wyoming 82009	6/30/2018 5:06 PM
69	Cheyenne, WY 82001	6/30/2018 8:19 AM

70	Cheyenne wy 82001	6/30/2018 7:09 AM
71	Cheyenne, wy 82001	6/29/2018 10:37 PM
72	Cheyenne, WY 82009	6/29/2018 9:46 PM
73	Cheyenne, WY 82009	6/29/2018 9:21 PM
74	Cheyenne	6/29/2018 9:10 PM
75	Cheyenne	6/29/2018 5:41 PM
76	Cheyenne/Wy/82009	6/29/2018 5:09 PM

#	PHONE:	DATE
1	3076350433	7/12/2018 7:08 AM
2	3072214831	7/11/2018 9:26 PM
3	307638-1979	7/11/2018 8:21 PM
4	307-214-0027	7/11/2018 5:21 PM
5	3074212743	7/11/2018 4:15 PM
6	3076310428	7/11/2018 1:39 PM
7	307 630-2969	7/11/2018 12:28 PM
8	1307421034	7/11/2018 11:22 AM
9	3072862867	7/11/2018 10:54 AM
10	307 640-3765	7/11/2018 9:11 AM
11	307-286-0436	7/11/2018 8:45 AM
12	3072771271	7/11/2018 8:44 AM
13	3076305802	7/11/2018 8:07 AM
14	307 514-4752	7/11/2018 7:17 AM
15	307-369-4477	7/11/2018 7:14 AM
16	307 640-3765	7/11/2018 5:51 AM
17	307-256-6971	7/11/2018 3:28 AM
18	307-630-5196 307-630-5197	7/10/2018 2:52 PM
19	307-214-6296	7/9/2018 9:47 PM
20	307-632-4635	7/9/2018 9:11 PM
21	307-631-4533	7/9/2018 7:41 PM
22	3073899915	7/9/2018 3:04 PM
23	307-287-1548	7/9/2018 2:49 PM
24	3072146369	7/9/2018 11:55 AM
25	630-992-5416	7/8/2018 8:05 PM
26	2207775	7/7/2018 10:24 PM
27	3074219877	7/6/2018 7:44 PM
28	3072141565	7/5/2018 11:23 AM
29	307-630-4537	7/5/2018 7:54 AM
30	3072861591	7/4/2018 6:20 PM
31	307-350-8105	7/4/2018 10:36 AM
32	410.916.5232	7/3/2018 9:13 PM
33	3076406339	7/3/2018 9:01 PM

34	307-286-7981	7/3/2018 8:42 PM
35	3076381111	7/3/2018 6:30 PM
36	3076374855	7/3/2018 5:03 PM
37	626-222-7168	7/3/2018 3:59 PM
38	3076317547	7/3/2018 3:58 PM
39	307-214-5283	7/3/2018 3:52 PM
40	307-772-0117	7/2/2018 11:09 PM
41	307-286-2315	7/2/2018 10:35 PM
42	635-7402 landline 421-6981 cell	7/2/2018 1:06 PM
43	307-421-4005	7/2/2018 9:30 AM
44	307-287-0373	7/2/2018 9:28 AM
45	307-421-4110	7/2/2018 9:25 AM
46	307-630-3972	7/2/2018 9:20 AM
47	3076316748	7/2/2018 9:11 AM
48	307-421-5927	7/2/2018 9:06 AM
49	510-326-3457	7/2/2018 9:02 AM
50	307-630-2060	7/2/2018 8:49 AM
51	307-320-5685	7/2/2018 8:44 AM
52	307-320-5685	7/2/2018 8:41 AM
53	635-0495	7/2/2018 8:35 AM
54	970-834-1036	7/2/2018 8:29 AM
55	303-549-8002	7/2/2018 8:24 AM
56	634-6017	7/2/2018 7:26 AM
57	634-6017	7/2/2018 7:20 AM
58	307-632-1665	7/2/2018 7:16 AM
59	307-220-2740	7/2/2018 7:12 AM
60	307-630-8965	7/2/2018 7:07 AM
61	816-716-8722	7/2/2018 7:01 AM
62	307-630-8559	7/2/2018 6:58 AM
63	307-630-2667	7/2/2018 6:55 AM
64	3076388018	7/2/2018 6:24 AM
65	3076318883	7/2/2018 5:46 AM
66	3074339287	7/1/2018 8:03 PM
67	3076313448	7/1/2018 9:22 AM
68	307-630-2385	7/1/2018 7:47 AM
69	307-630-7938	7/1/2018 12:02 AM
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71	307-634-6557	6/30/2018 8:19 AM
72	307-631-8545	6/29/2018 10:37 PM
73	307-631-9167	6/29/2018 9:46 PM
74	3077605681	6/29/2018 9:21 PM

75	3076403111	6/29/2018 9:10 PM
76	3077609005	6/29/2018 6:51 PM
77	3074215508	6/29/2018 5:09 PM

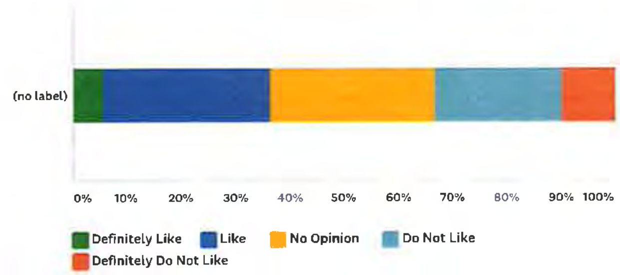
#	EMAIL:	DATE
1	andy@frontieraccess.com	7/12/2018 9:53 AM
2	mbain811@gmail.com	7/12/2018 7:08 AM
3	Raymanhollings@gmail.com	7/11/2018 9:26 PM
4	Brendaoswlad@asdwy.com	7/11/2018 8:21 PM
5	Alisajane521@hotmail.com	7/11/2018 7:24 PM
6	Blka87@msn.com	7/11/2018 6:18 PM
7	Kelly.archer@ymail.com	7/11/2018 5:21 PM
8	skfermelia@gmail.com	7/11/2018 4:15 PM
9	kjgk4749@gmail.com	7/11/2018 3:21 PM
10	brewerwilliam79@yahoo.com	7/11/2018 1:39 PM
11	Johnnyoring77@gmail.com	7/11/2018 12:28 PM
12	dwoodys@msn.com	7/11/2018 10:57 AM
13	dramateacher78@gmail.com	7/11/2018 10:54 AM
14	Ryan.harbeson@gmail.com	7/11/2018 10:01 AM
15	Angel@wyoming.com	7/11/2018 9:48 AM
16	mike.colgan71@yahoo.com	7/11/2018 9:11 AM
17	tweetpea73@gmail.com	7/11/2018 8:45 AM
18	Cleoizzy2@yahoo.com	7/11/2018 8:44 AM
19	Fe1peter3.8@gmail.com	7/11/2018 8:07 AM
20	rethablakely@yahoo.com	7/11/2018 7:17 AM
21	gene_schumacher@msn.com	7/11/2018 7:14 AM
22	lindsayk310@gmail.com	7/11/2018 6:51 AM
23	sheljessbeth@yahoo.com	7/11/2018 6:42 AM
24	mike.colgan71@yahoo.com	7/11/2018 5:51 AM
25	wyo7011@yahoo.com	7/11/2018 3:28 AM
26	Wilson.bryanbrittany@gmail.com	7/10/2018 6:00 PM
27	jasonrusselljohnson@gmail.com	7/10/2018 2:52 PM
28	ekpasmith@aol.com	7/10/2018 2:52 PM
29	shawnbroad1@gmail.com	7/9/2018 9:47 PM
30	Broylesg@msn.com	7/9/2018 9:11 PM
31	Lkbwyo@gmail.com	7/9/2018 7:41 PM
32	Lovegodiva30@gmail.com	7/9/2018 6:03 PM
33	Mystyhaight@hotmail.com	7/9/2018 3:04 PM
34	susie.havner@gmail.com	7/9/2018 11:55 AM
35	duanewelte@sbcglobal.net	7/8/2018 8:05 PM
36	Tiffanyg60@gmail.com	7/8/2018 4:31 PM
37	Starranime2@netzero.com	7/7/2018 10:24 PM

38	Wyomingskimom@gmail.com	7/6/2018 7:44 PM
39	Taylor_arnold101@yahoo.com	7/6/2018 11:33 AM
40	lanaemcdonald@gmail.com	7/6/2018 7:31 AM
41	kathrynlratliff@gmail.com	7/5/2018 1:16 PM
42	Jefftrefren1@gmail.com	7/5/2018 11:23 AM
43	jwoods@cheyennebopu.org	7/5/2018 8:31 AM
44	lamedina44@gmail.com	7/5/2018 7:54 AM
45	Maxminnick@msn.com	7/5/2018 12:34 AM
46	Spgirt@gmail.com	7/4/2018 6:20 PM
47	kheyborn@wyoming.com	7/4/2018 10:36 AM
48	Candace.croswell@gmail.com	7/3/2018 9:13 PM
49	khappold@gmail.com	7/3/2018 9:01 PM
50	kvosler8@gmail.com	7/3/2018 8:42 PM
51	Lntaylor5@gmail.com	7/3/2018 8:26 PM
52	RunWyo@yahoo.com	7/3/2018 6:30 PM
53	Chywy@dreifi.com	7/3/2018 6:07 PM
54	anab_80@hotmail.com	7/3/2018 5:03 PM
55	Sheri336@hotmail.com	7/3/2018 3:59 PM
56	Cyndi.henderson@ymail.com	7/3/2018 3:58 PM
57	Monica.yarborough@gmail.com	7/3/2018 3:52 PM
58	Wyobrewer@vcn.com	7/3/2018 9:47 AM
59	Cancelli1@yahoo.com	7/2/2018 11:09 PM
60	Dutchm31@hotmail.com	7/2/2018 10:35 PM
61	healthyminds101@gmail.com	7/2/2018 9:26 PM
62	usa_eagle78@yahoo.com	7/2/2018 9:13 PM
63	wyolarsons@hotmail.com	7/2/2018 9:30 AM
64	murphyspleasants@gmail.com	7/2/2018 9:25 AM
65	lujanml1@hotmail.com	7/2/2018 9:20 AM
66	Pmmypain@gmail.com	7/2/2018 9:11 AM
67	seeleymj@hotmail.com	7/2/2018 9:06 AM
68	mikerryjc@pacebll.net	7/2/2018 9:02 AM
69	cnfournier@hotmail.com	7/2/2018 8:49 AM
70	jfsanta01@gmail.com	7/2/2018 8:44 AM
71	jfsanta01@gmail.com	7/2/2018 8:41 AM
72	Marafunk70@gmail.com	7/2/2018 8:35 AM
73	buddy_tenrant@yahoo.com	7/2/2018 8:29 AM
74	dohrt@suncor.com	7/2/2018 8:24 AM
75	jacedash@yahoo.com	7/2/2018 7:40 AM
76	rbigals01@aol.com	7/2/2018 7:07 AM
77	blboye@msn.com	7/2/2018 7:01 AM
78	murphycanyonmc@aol.com	7/2/2018 6:58 AM

79	Snoslyd2@yahoo.com	7/2/2018 6:24 AM
80	dennis.brunner@gmail.com	7/2/2018 5:46 AM
81	butte_rat84@yahoo.com	7/1/2018 10:03 PM
82	Fishingtrue@gmail.com	7/1/2018 8:03 PM
83	Cowcopper7@yahoo.com	7/1/2018 9:22 AM
84	cgmattson@yahoo.com	7/1/2018 7:47 AM
85	Retzc@hotmail.com	7/1/2018 12:02 AM
86	Michaelasbradshaw@gmail.com	6/30/2018 8:59 PM
87	Enchant63@gmail.com	6/30/2018 5:06 PM
88	w7par@msn.com	6/30/2018 8:19 AM
89	Msturtevant@gmail.com	6/30/2018 7:09 AM
90	Kmgnurse01@aol.com	6/29/2018 10:37 PM
91	woodard4@hotmail.com	6/29/2018 9:46 PM
92	Asmith0124@msn.com	6/29/2018 9:21 PM
93	Bakingkid17@gmail.com	6/29/2018 9:10 PM
94	Kristinmnuss@gmail.com	6/29/2018 6:51 PM
95	timenim@hotmail.com	6/29/2018 5:41 PM
96	Hcr300@gmail.com	6/29/2018 5:09 PM
97	adeebish@gmail.com	6/29/2018 4:11 PM
98	Randilosalu@gmail.com	6/29/2018 2:32 PM

Q3 Please rate the Recommended Roadway Typical Section for Whitney Road at Beckle Road/ Storey Blvd. (Looking North) as shown.

Answered: 268 Skipped: 43



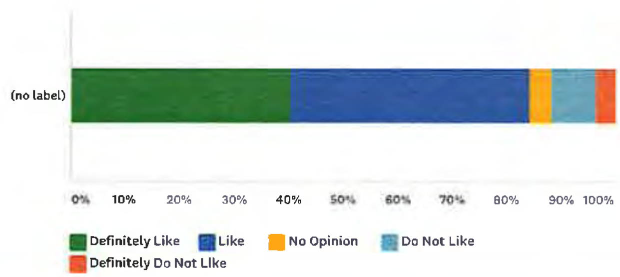
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	5.60% 15	30.97% 83	30.22% 81	23.51% 63	9.70% 26	268	2.99

#	ADDITIONAL COMMENTS OR SUGGESTIONS?	DATE
1	Make larger	7/12/2018 9:41 AM
2	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:13 AM
3	Needs a left turn lane separate of the flow of traffic	7/11/2018 8:01 PM
4	Needs to be wider	7/11/2018 6:19 PM
5	How is this different than how it looks now?	7/11/2018 5:24 PM
6	not much different than it currently is.	7/11/2018 1:21 PM
7	Center turn lane is already needed	7/11/2018 11:00 AM
8	Make it wider. Cheyanimals consistently drive 10 mph under the speed limit, a passing lane is a must.	7/11/2018 8:29 AM
9	Needs to be wider between Hwy 30 and Dell Range? Actually the whole thing needs to be 4 lane.	7/11/2018 7:21 AM
10	The roadway should be wider. Traffic will increase as the area continues to grow. More homes are being built and will create more congestion as time moves on	7/11/2018 3:29 AM
11	Either widen lanes, or make two lanes both ways, also add bike paths, as their are a lot of joggers on Whitney Rd. And add street lights up and down Whitney road, and a way to slow down traffic	7/10/2018 2:55 PM
12	Too narrow between vehicles	7/10/2018 2:52 PM
13	No Area for Walking or Biking.	7/9/2018 2:51 PM
14	no turn lanes. no walking or bike paths.	7/9/2018 12:09 PM
15	Whitney does not need to be widened, you just need to finish roads that could intersect it, such as Four Mile and Storey	7/6/2018 11:38 PM
16	Bicycle lanes!	7/5/2018 7:45 PM
17	Prefer to see a dedicated bike lane	7/6/2018 10:56 AM

18	I would like to see a bike/walking lane.	7/5/2018 8:32 AM
19	Needs to be wider and have a turn bay	7/5/2018 7:53 AM
20	Wider	7/4/2018 9:10 AM
21	Not sure exactly what the question is. Is it asking if I like the current road or is the above picture suppose to be the "new" one. The pic looks like the current one to me and I don't like the current road for safety reasons.	7/3/2018 8:47 PM
22	Would love to have a center lane extending to the end of Whitney Rd to the north.	7/3/2018 6:09 PM
23	Needs sidewalk.	7/3/2018 4:00 PM
24	Would like to see it wider	7/3/2018 3:55 PM
25	I wish the road expansion with wider shoulders and bike lane would continue north as well.	7/3/2018 3:53 PM
26	needs to be paved, more space between north and south bound vehicles and safe placed to walk	7/2/2018 9:31 AM
27	Love	7/2/2018 9:28 AM
28	No Sidewalks or bike paths	7/2/2018 9:20 AM
29	I think their might as well be a bike lane or sidewalk all the way through Whitney.	7/2/2018 9:07 AM
30		7/2/2018 9:04 AM
31	Will this accommodate future extension to Iron Mountain to the North?	7/2/2018 8:38 AM
32	needs to be wider	7/2/2018 8:29 AM
33	I believe given the bicycle traffic a bike lane should be included.	7/2/2018 7:41 AM
34	Storey Blvd to Beckle Rd. does not exist too much private property involved.	7/2/2018 7:27 AM
35	Whitney Road is fine the way it is. this is not needed, a lot of money and headache for nothing.	7/2/2018 7:21 AM
36	4-lane road	7/2/2018 6:53 AM
37	Road needs to be widened	7/1/2018 10:41 PM
38	Isn't this how it is right now?	6/30/2018 8:21 AM
39	As population grows in the area, more and more people are running and walking dogs on the road. Someone is going to get killed if there is no foot path along the road.	6/29/2018 8:15 PM
40	Needs bicycle lanes	6/29/2018 5:12 PM
41	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q4 Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Answered: 268 Skipped: 43



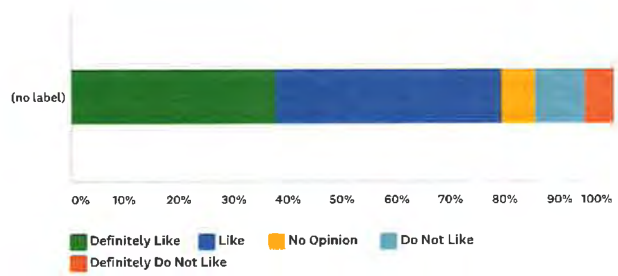
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	40.30% 108	44.03% 118	4.10% 11	8.21% 22	3.36% 9	268	4.10

#	ANY ADDITIONAL COMMENTS?	DATE
1	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:13 AM
2	I like that the sidewalk is set away from the road, it seems safer than having it right by the road	7/11/2018 7:13 PM
3	All lanes need to be at least 12 ft wide!,	7/11/2018 6:19 PM
4	This is great. I have almost died a couple times trying to run on Whitney. Totally my own fault, but this would make that better. I am not sure that a turn lane is really needed....but maybe with all the new housing coming in west of Whitney. If people would do the speed limit, there would be zero need for tailgating.	7/11/2018 5:25 PM
5	No tproblem asonfor a turn land when they are barely any houses to turn into	7/11/2018 4:43 PM
6	but if the sidewalk and bike lane don't go all the way to iron mountain,,,is it worththe money? I would prefer to see tge $ spent on keeping the road up	7/11/2018 1:24 PM
7	why curb and trees?	7/11/2018 1:02 PM
8	No need for separated sidewalk. that creates problems with landscaping and is more expensive	7/11/2018 11:23 AM
9	Remove the bike lane / shoulder and this is a lot better. bikes need to be separated just like pedestrians from the higher speed traffic.	7/11/2018 10:49 AM
10	If commercial projects at Whitney/Dell Range are true, need more lanes.	7/11/2018 9:17 AM
11	Better	7/11/2018 7:21 AM
12	I like the landscaping. The sidewalks away from the roadway are nice too. I feel like they are safer. especially at the speeds people travel on these roads.	7/11/2018 3:30 AM
13	There is enough people in the are to constitute a sidewalk on both sides of the road.	7/9/2018 2:55 PM
14	better. would be better to have 4 lanes for traffic	7/9/2018 12:10 PM

15	Love the bicycle lane!!	7/6/2018 7:48 PM
16	Maybe wider?	7/6/2018 7:34 AM
17	Sidewalk and shoulder are excellent!	7/3/2018 3:53 PM
18	should be the alignment on Whitney no of beckle also car keep as is possible pavement overlay no of beckle	7/2/2018 1:11 PM
19	I think this is the best of the three choices	7/2/2018 9:31 AM
20	but need sidewalk on both sides	7/2/2018 9:20 AM
21	I don't know if a turning lane is necessary, but probably is if the development would be like Saddle Ridge.	7/2/2018 9:09 AM
22	Pedestrian is a waste as no true country person walks anywhere. Landscape is a waste, causes drifts, causes visual obstructions.	7/2/2018 7:42 AM
23	No need for bigger Rd. Too much traffic. Is this for people who live there or others to pass thru?	7/2/2018 7:27 AM
24	What is wrong with Whitney Rd. It is in the County most people ride horses not bikes.	7/2/2018 7:22 AM
25	4-lane	7/2/2018 6:54 AM
26	I	7/1/2018 8:46 PM
27	Please add a bike lane on each side. This would benefit a lot of us in the area and give us a close road to go and enjoy to become a healthier community.	6/30/2018 8:48 PM
28	Needs a street light at the Intersection	6/30/2018 10:26 AM
29	One foot path should be adequate and should save a lot of money.	6/29/2018 8:16 PM
30	If reducing snow drifts is one of the goals. trees and other landscape defeat that purpose.	6/29/2018 8:08 PM
31	I like turn lanes but the sidewalk and the trees I don't.	6/29/2018 3:10 PM
32	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q5 Please rate the Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Answered: 258 Skipped: 53



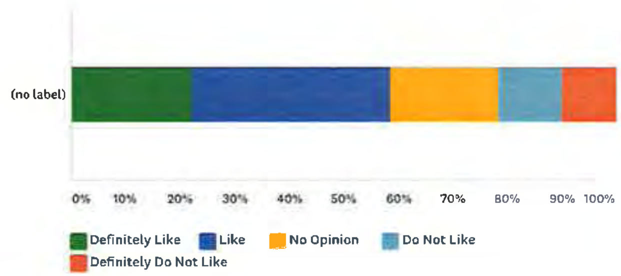
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	37.98% 98	41.47% 107	6.20% 16	9.30% 24	5.04% 13	258	3.98

#	ANY ADDITIONAL COMMENTS?	DATE
1	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:14 AM
2	Needs less landscaping and both right and left turn lanes as well as a lane for thru traffic and sidewalks on both sides. It's set up close to this already and backs up severely during rush hours, especially without a traffic light	7/11/2018 8:05 PM
3	All lanes need to be 12 ' wide	7/11/2018 6:20 PM
4	A turn lane is not needed. in my opinion. Waste of materials. The rest would be good.	7/11/2018 5:26 PM
5	Roundabout for the intersection	7/11/2018 1:00 PM
6	No need for bike lane	7/11/2018 11:24 AM
7	you're moving pedestrians and bikes back into the traffic lanes. these roads likely will have higher traffic speeds and nothing is worse than trying to navigate around peds and bikes. downtown cheyenne bike lanes on carey and pioneer are a nightmare for everyone. even the bikes don't use them. and often are travelling the wrong direction anyway.	7/11/2018 10:51 AM
8	It's better. Road way to narrow.	7/11/2018 7:22 AM
9	This has become quite busy with traffic, both auto and pedestrian. With the anticipated continued boom in growth out here, I believe this should be as wide as possible.	7/11/2018 5:48 AM
10	Who is going to pay for side walk and trees? Who is going to be responsible for snow removal? Why do we need a side walk in the first place. Lived here 20 + years and no walks by here.	7/10/2018 12:25 PM
11	Who is going to pay for the sidewalk, maintain and scoop in the winter. Your sidewalk and landscaping will be on my property where you don't have rights to.	7/10/2018 10:31 AM
12	What about traffic lights at the intersection of Whitney and Dell Range?	7/4/2018 9:07 PM
13	Excellent accommodations for multiple user types!	7/4/2018 9:50 AM
14	Don't know the need for sidewalk expense.	7/3/2018 8:55 PM

15	But add in right turn lane from Whitney to US 30. Would love a traffic light at this intersection as it has gotten a lot busier and will only continue to get more traffic thru this intersection	7/3/2018 6:13 PM
16	I don't like the bike path they should ride on the sidewalk. It is to dangerous for bikes	7/3/2018 5:57 PM
17	Good!	7/2/2018 1:11 PM
18	this is too much for county/city space	7/2/2018 9:32 AM
19	but sidewalks are not detached	7/2/2018 9:21 AM
20	Landscaping the prairie wastes resources and landscaping roads causes drifts - obstructions.	7/2/2018 7:43 AM
21	You can make a bike path however they will ride their bike's on the road.	7/2/2018 7:23 AM
22	Pedestrian Section is too close to the road	7/2/2018 7:02 AM
23	I'm not sure a turn lane is necessary for this short stretch. I drive it daily, most days I'm on it multiple times and have never thought that a turn lane is necessary. A wider road, bike land and sidewalk will be a nice feature though! Carry the bike lane north onto Whitney!!	6/30/2018 8:51 PM
24	Needs a street light at the Intersection	6/30/2018 10:27 AM
25	Make travel lanes 12 feet wide	6/30/2018 9:36 AM
26	Dual foot paths are excessive and costly.	6/29/2018 8:16 PM
27	Run this to Beckle!	6/29/2018 5:15 PM
28	I dont want a sidewalk on my property	6/29/2018 3:10 PM
29	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q6 Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Answered: 252 Skipped: 59



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	22.22% 56	36.51% 92	19.84% 50	11.51% 29	9.92% 25	252	3.50

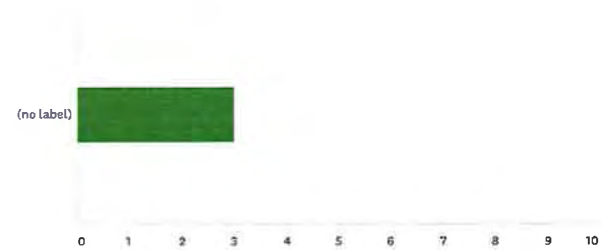
#	ANY ADDITIONAL COMMENTS?	DATE
1	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:14 AM
2	Do not remove service road as it's a good alternative to using U.S 30 in the event of accident or when pulling trailers etc.	7/11/2018 8:10 PM
3	I don't like the idea of 3 lights in one mile (Christiansen, Dell Range and Whitney). We need to time our lights so you don't have to stop at the all. Also the use of a green turn arrow at the beginning of the light would help keep people from running so many lights. Perhaps the traffic could be diverted to Dell Range or Whitney, but not have both of them open to US 30.	7/11/2018 6:48 PM
4	I don't think this is necessary.	7/11/2018 5:27 PM
5	The service road is important because of the speed of Hwy 30 and the weather and ice in that area	7/11/2018 4:46 PM
6	In need of a light at this intersection.	7/11/2018 3:27 PM
7	Not sure if a stop light is needed	7/11/2018 12:35 PM
8	This intersection needs something to help with crossing and turning, this is a grateful idea.	7/11/2018 11:09 AM
9	Unless if this redesign removes that ridiculous set of safety islands on whitney / hwy 30 that now render one and one-half vehicles in a turning lane, then Hell no. mpo and the city love to "offset" roads. the 12th street / sun valley redesign years ago is an absolute mistake. It was one of the reasons why I chose to sell my house in that neighborhood. traffic design into and out of neighborhoods is very important to those who live there. when changes are made that make it worse, people wish they never bought.	7/11/2018 10:55 AM
10	It would upset some people but I think its needed. People haul butt down the service road and run the stop sign constantly.	7/11/2018 10:24 AM
11	Don't put a light it will absolutely kill traffic flow like the stop sign on ridge and storey	7/11/2018 10:09 AM
12	Another light on a highway? No thanks. It really doesn't get that much traffic yet.	7/11/2018 9:46 AM

13	Additional traffic control on US30 is needed. High speeds are very common and crashes frequent.	7/11/2018 8:47 AM
14	While I like how a traffic light will take the Cheyanimal's questionable decision making out of the equation, I do not like the idea of on in the middle of highway 30. This town times traffic lights in the most idiotic way so a driver will get stopped by each one, no matter driving style.	7/11/2018 8:31 AM
15	Stop light is needed.	7/11/2018 7:24 AM
16	Why a stoplight? There is not that Mucj traffic there and putting stop lights on a 55mph road seems like it's just going to slow down traffic unnecessarily.	7/11/2018 7:23 AM
17	Get that stoplight in there ASAP!	7/11/2018 5:49 AM
18	We absolutely need a traffic light here. Many people will wave through oncoming traffic to be courteous. The problem with that is it creates a disruption of the traffic flow. There have been several accidents here that could've been a lot worse. Fortunately, these crashes have mostly been minor injuries. I'm not a fan of the realignment on Whitney north of Hwy 30, but I'll take it if we get a traffic light. There will be lots of slide offs in the winter.	7/11/2018 3:33 AM
19	No sure what this is trying to do	7/10/2018 9:07 PM
20	This needs to remain as is. Does not make any since to change it.	7/10/2018 12:25 PM
21	The service road is a pretty active road with businesses. How would those businesses have access to their property. Hinesley Road was not designed to have that traffic.	7/10/2018 10:33 AM
22	I think a traffic light would be better placed on the dell range side	7/8/2018 4:37 PM
23	Putting a traffic light off the hill will be challenging for those hauling trailers.	7/8/2018 7:36 AM
24	Adding a stop light on a 55mph highway seems very counter productive. But would be much better than another round about! Removing access to the service road from Whitney road is the opposite of what should happen. Instead remove the access from the highway 30 and service road intersection if that would really help. That is a low traffic road portion of this equation and would be best served left alone.	7/5/2018 12:44 AM
25	No stop light. Stop signs on whitney	7/4/2018 9:12 AM
26	With a traffic light!	7/3/2018 9:22 PM
27	Why does anything need to he done here? Provide feedback please	7/2/2018 11:09 PM
28	needs to be done now!!!	7/2/2018 9:32 AM
29	So Needed, Thank You!	7/2/2018 9:28 AM
30	need free right turn lane on Southbound Whitney Rd. to west bound US-30	7/2/2018 9:22 AM
31	Agree with stoplight. What would be the reason to remove the service road access? I think this is a good choice.	7/2/2018 9:10 AM
32	need more	7/2/2018 8:30 AM
33	Why is all this necessary" Fix the roads that have problems now! Isn't this all County?	7/2/2018 7:28 AM
34	Fix the roads we have Dell Range east is in need of repair. keep the service road. in the future it will probably be needed.	7/2/2018 7:24 AM
35	As a business owner of Big Al's located on 6526 HWY 30 the removal of access at Whitney and the Service Rd. is a big concern. We receive 3-5 Tractor trailer deliveries per week that will have problems with the dead en Service Rd. Please contact me anytime. Andy Vehar 304-220-2740 Big Al's Auto 307-637-8955	7/2/2018 7:15 AM
36	Suggest a one way East Bound on 30 Service Road from Whitney to connection at Hwy 30 to accommodate truck deliveries. Also Hinesley to Whitney Alignment needs to be looked at as Southbound Whitney traffic is hard to see.	7/2/2018 7:09 AM
37	I love the light because it will slow down most of the traffic. It would be nice to have it traffic controlled not timed control.	7/2/2018 7:03 AM
38	I like that the intersection will be closer to being perpendicular. Elimination of service road connection should help tremendously.	7/2/2018 6:59 AM
39	Not sure about removal of service road	7/1/2018 10:44 PM

40	This needs to happen.	7/1/2018 12:02 AM
41	Is a roundabout feasible here? I understand there's a bit of larger truck and trailer traffic but let's make this as efficient as possible. I'm not sure adding a traffic light is the best option. I have never had to wait more than a minute to cross the road.	6/30/2018 8:53 PM
42	This is such a dangerous intersection!! Please put a street light here!	6/30/2018 10:28 AM
43	We absolutely need a traffic light above all else at this intersection. It has grown to be an extremely dangerous area over the last three years we have lived here. Those driving highway 30 actually appear to speed up occasionally when individuals are trying to cross on white wy. It's out of control.	6/30/2018 7:12 AM
44	Traffic control is critical. It has become a real hazard at rush-hour and people shooting the gap to cross Highway 30 on Whitney.	6/29/2018 8:21 PM
45	Eliminate the islands and you might have a useful option.	6/29/2018 8:09 PM
46	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q7 Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Answered: 249 Skipped: 62



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	22.49% 56	26.91% 67	5.22% 13	20.08% 50	25.30% 63	249	3.01

#	ANY ADDITIONAL COMMENTS?	DATE
1	This would slow the traffic and control traffic flow	7/12/2018 8:15 AM
2	Why?! What would this help solve? Why is it necessary?	7/12/2018 8:01 AM
3	Make it a controlled intersection and expand Del Range from college to US 30	7/11/2018 9:10 PM
4	Would greatly slow down traffic on US 30 but would help the intersection flow better	7/11/2018 8:11 PM
5	Better than a light, but need to take into account large trailers, etc as was discussed in the meeting. Definitely one lane only.	7/11/2018 6:48 PM
6	Why does Whitney veer off to the west? I think it's necessary during busy times and as you build more houses.	7/11/2018 5:29 PM
7	I suggest a 4 way stop like on Ridge and Story. Also need a street light there it is really dark and and can't the the turn from Dell Range on to Whitney going south to US 30.	7/11/2018 3:25 PM
8	Not a good idea especially in the winter coming south off whitney....way to slick coming down the hill. you will see more accidents not less	7/11/2018 1:28 PM
9	Why signal at us 30 and roundabout at Del Range?	7/11/2018 1:04 PM
10	Not needed	7/11/2018 12:36 PM
11	People in this town are terrible at roundabouts. I've seen too many accidents at converse and pershing.	7/11/2018 11:11 AM
12	No reason for a round about in non complex intersection. This area that is going to see fast increased growth and traffic. Put a traffic light there and be done with it. Works now and when it gets busier in the future	7/11/2018 11:06 AM
13	double down on the hell no.	7/11/2018 10:55 AM
14	The drivers on Del Range are already going 45 mph, most would not slow down and I believe it would cause accidents. If they widened Del Range to include two turn lanes, both right and left at this intersection, I believe it would help.	7/11/2018 10:29 AM
15	Ruins traffic flow same at converse and Pershing	7/11/2018 10:09 AM

16	No one knows how to use a roundabout in this city as it is.	7/11/2018 9:47 AM
17	Roundabouts only work in civilized areas. Cheyanimals have the belief that when one enters a roundabout, they enter a time warp to a new dimension.	7/11/2018 8:33 AM
18	Should make a double for expansion of dell range as it is congested as well	7/11/2018 7:01 AM
19	We need lighting here as well. I wonder whether a traffic light would be better than a roundabout with for people approaching at 45 miles an hour.	7/11/2018 5:51 AM
20	I'll take the roundabout if it is well lit. Again, there have ben many accidents at this intersection as well. It's very difficult to see the turn from Dell Range on the southbound Whitney in the dark. I usually look for the single reflector pole and then slow down. We definitely need more lighting here.	7/11/2018 3:35 AM
21	Hard to negotiate a roundabout with a trailer, there are a lot of trailers being pulled. Need a traffic light	7/10/2018 2:58 PM
22	If is big enough for large motorhomes & Towvehicle	7/10/2018 2:54 PM
23	I think a stop light would be a much better solution.	7/10/2018 12:25 PM
24	You need to sit and watch traffic in the mornings and in the evenings to know that this is not a good solution. Along with the new houses at Whitney Ranch you will increase the amount of traffic accidents in the area. Also with the amount of traffic I think this will not work.	7/10/2018 10:38 AM
25	1) With today's stop light technology, road sensors and such signal lights can be programmed to delay changing or quickly change depending upon traffic coming and going during busiest times of the day. 2) After talking to someone who ran the intersection, lighting and a traffic signal would have helped in recognizing that there was an intersection there. 3) Cutting back on bushes on 4512 Whitney will also help reduce accidents and increase visability. 4) A Traffic Light will work better for increased traffic from Semi's. 5) A Traffic Light will work better for young and aged drivers and those who have large travel trailers and 5th wheel trailers (A Light is a must). 6) Important to keep Whitney straight as possible to not slow down the flow of increased traffic (straight definetely enhances visability). 7) Whitney should have a 5% grade for bicyclists, walkers and wheelchairs especially since commercial buildings will be placed on property from Whitney along DelRange. 8) Do not place a park between Whitney and the expanded 2400 homes, just asking for trouble with Kids crossing the road to get to park or walkway, someone will get ran over. 9) It will be much better in the long run to redo natural gas and oil line on existing path of Whitney, keeping Whitney straight, enhancing visability and lessoning the chances of children getting hurt crossing the road to get to a park or walkway. 10) Whitney should have all the utilities including fiber optic lines run for future expansion of technology.	7/9/2018 3:24 PM
26	i do not like. people drive too fast down whitney to approach a round about. needs to be a light. I do not like the road being closed that goes to foxglove, chickadee and buttecup. why can't there still be a road to access these three streets only. then after buttercup be a culdesec. then bring in a new road from dell range to storey/beckle. this would also alleviate traffic and the number of cars on whitney and the new whitney road. gives different access.	7/9/2018 12:14 PM
27	Traffic speeds need to be reduced for this option to be viable	7/8/2018 4:38 PM
28	Please post a picture of the rest of this idea...if you shift Whitney to the west, how far west and when does it go straight north again?	7/6/2018 11:41 PM
29	I like the roundabout idea as it slows traffic during congested periods.	7/6/2018 10:57 AM
30	Make plenty wide for trailers.	7/6/2018 7:37 AM
31	Should keep people from going 55 past my yard with my kids in the yard	7/5/2018 11:26 AM
32	Too dangerous considering the hill on the east	7/5/2018 7:55 AM
33	Please just use a stop light!!! Round abouts serve a good purpose in low speed residential areas, and where more that 4 directions of traffic meet.	7/5/2018 12:46 AM
34	Awesome idea. Slowing drivers down off the southbound Hill on Whitney would be a great safety improvement as well.	7/4/2018 9:52 AM
35	Roundabout or a traffic light	7/3/2018 9:22 PM
36	No roundabouts!! Please do a traffic signal. We have enough roundabouts that people do not know how to use.	7/3/2018 8:39 PM

37	This is a good alternative option and may reduce commercial traffic thoroughfare and keeping them to US 30 to Pershing / College Dr.	7/3/2018 6:18 PM
38	Single lane ok or needs traffic signal.	7/3/2018 5:59 PM
39	I love single lane roundabouts and find them extremely effective as long as they are large enough to accomodate long truck\camper combinations.	7/3/2018 3:57 PM
40	needs to be done even sooner!!!	7/2/2018 9:32 AM
41	Another useless roundabout Several accidents occur each month in town - not needed	7/2/2018 9:27 AM
42	But need to have overhead street lights. to dark at night at this intersection.	7/2/2018 9:22 AM
43	I am very concerned about the roundabout during the winter at the bottom of a very steep hill. Also having a single lane roundabout seems like it would back up traffic quite a bit dew Dell Range. Is there consideration of Dell Range being widened to 4-lanes at anytime?	7/2/2018 9:12 AM
44	Cheap way of not putting in a light, which would be better at the bottom of a hill. To many assumptions with this plan - assumes everyone will slow down and yield. In the long run a light at what becomes a heavily used intersection will be cheaper than the liability of poor roadway design.	7/2/2018 9:04 AM
45	Would like to see RT turn lane that does not use the roundabout on N. Whitney to D.R. and Del range to S. Whitney road to remove a significant amount of traffic from the circle at peak use times.	7/2/2018 8:46 AM
46	Would like to see Rt turn lane that does not use the Roundabout on N. Whitney to D.R. and Del Range to S. Whitney road to remove a significant amount of traffic from the circle at peak use times.	7/2/2018 8:42 AM
47	Actually if you get it in place by the time I head home from here tonight, I will be delighted. Reduce speed to 40mphn on HWY 30 ASAP from Cheyenne Hills church to Whispering Chase	7/2/2018 8:37 AM
48	Definitely Do Not Like- Semi Traffic alone would destroy this! Definitely Like - If it is built to handle this kind of traffic!	7/2/2018 8:32 AM
49	This whole project should look the future as this will result in a large traffic increase as more travelers find they can circumvent town from 85 via Powderhouse (via N Star) to Iron to Whitney. With traffic already out of control this likely should be 4-lanes or at lest one fulltime deputy should be assigned.	7/2/2018 7:54 AM
50	There is not need!	7/2/2018 7:28 AM
51	Should move intersection to the east to accommodate a double lane both east and west bound DelRange as extra room for truck traffic will be needed.	7/2/2018 7:10 AM
52	It would help to have a flashing light so people can see the roundabout before they actually get to the roundabout	7/2/2018 7:04 AM
53	Definitely need roadway lighting.	7/2/2018 7:00 AM
54	No on a roundabout!	7/1/2018 9:24 AM
55	No roundabout! Please No!!!!! These are not effective traffic control measures in Cheyenne. If you do anything, please do a four way stop or a traffic signal. A roundabout would be detrimental to the traffic flow and area.	7/1/2018 12:04 AM
56	Yes!!!!	6/30/2018 8:54 PM
57	Putting in a roundabout where there isn't a problem is a waste of money in construction costs as well as snow maintenance. Why screw things up with an unnecessary roundabout? Does Cheyenne have to follow Colorado's stupid ideas just because we are forced to have a Metropolitan Planning Commission?	6/29/2018 8:12 PM
58	Roundabouts are dumb, amd useless at that specific section of road. Just put a stoplight	6/29/2018 3:12 PM
59	I have witnessed many people RUN the stop sign there. This eliminates that problem greatly.	6/29/2018 2:40 PM
60	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q8 Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Answered: 76 Skipped: 235

#	RESPONSES	DATE
1	Something needs to be done for both highway 30/Whitney and dellrange/Whitney intersections before serious injuries start occurring from the growing traffic and pedestrian traffic	7/12/2018 8:18 AM
2	Light at Whitney and US30	7/12/2018 7:11 AM
3	Make the intersections at both Del Range and US 30: 4 lane (with turn lane) E-W and Whitney 2 Lane (with turn lane) N-S and make them traditional controlled intersections.	7/11/2018 9:12 PM
4	Keep the country feel, do not make this a thorough Fante in a city	7/11/2018 8:41 PM
5	Widen Whitney so it has right and left turn lanes for all lanes and sides of US 30	7/11/2018 8:12 PM
6	I do not like the idea of Whitney going through the neighborhood to the west. I would rather keep tgevsteep grade than have to drive through a neighborhood. I don't think the speed needs to decrease. 45 is reasonable. I think the reason people want to lower it is because people drive 55-60. I would prefer the proposed neighborhood at dell range and Whitney traffic dump into Dell Range rather than Whitney. This would lead to less traffic on the roundabout. With the increased traffic from Wood's landing Iton Mountain and possible Storey throughway, there will already be a marked increase in traffic.	7/11/2018 6:53 PM
7	A sheriff on the road on occasion would be nice to see. People drive 60 MPH at times on the road. I know that the sherrif's Office is not doing the HIVE like CPD, but it sure would be great. You also need to keep in mind that those of us on North Whitney would not have any way to get to Dell Range if you take the entire road down (for example Sundance loop). We are land locked into Whitney. And not that the only connection is powerdhouse off iron mtn and that takes us way out of our way. I know we are one household, but just food for thought.	7/11/2018 5:32 PM
8	The intersection at whitney and dell range needs controlled but you need to consider the winter driving conditions. The hill north up whitney is luke a skating rink. Add a round a bout and you are going to have traffic backed up daily.	7/11/2018 1:30 PM
9	Get the project out to bid and started before the costs go up	7/11/2018 11:25 AM
10	Think about having a timed traffic light at 30/Whitney and then a busy roundabout right after at Dell Range. The congestion would back up and impact 30/Whitney almost immediately after its built.	7/11/2018 11:11 AM
11	Where can I find out what is going on for US39 and Dell Range? Starrwy@aol.com	7/11/2018 11:07 AM
12	We can be guaranteed that if the public don't like something, then that is the route the planners take under the guise of safety and concern for its citizens. The 12th street / sun valley drive worse and most criticized option was the one picked.	7/11/2018 10:57 AM
13	I believe if Whitney Road between Del Range and US30 was wider it would cause less congestion. The mailboxes are super close to the street and when the mailman is delivering mail to them it cause people to serve into the opposite lane to avoid him. This results in everyone in that lane having to slam on their brakes and has caused a least one accident I'm aware of.	7/11/2018 10:33 AM
14	Connect storey to beckle and run 4 lane two west two east on dell range to 30	7/11/2018 10:10 AM
15	Can we please just get the damn road fixed so it doesn't feel like I'm driving over railroad tracks the whole time? You guys have all these massive plans that serve no purpose at this time and fail to realize how horrible the road itself is. Fix the small shit first and show you actually care about the road and residents before shutting it down to add more of a waste and more stuff that will need repair, but doesn't get it.	7/11/2018 9:49 AM
16	With the residential now mixed with commercial traffic restrictions need to be added. No semi trucks, lower speeds, more control on US30. Reduces noise and increases safely	7/11/2018 8:49 AM

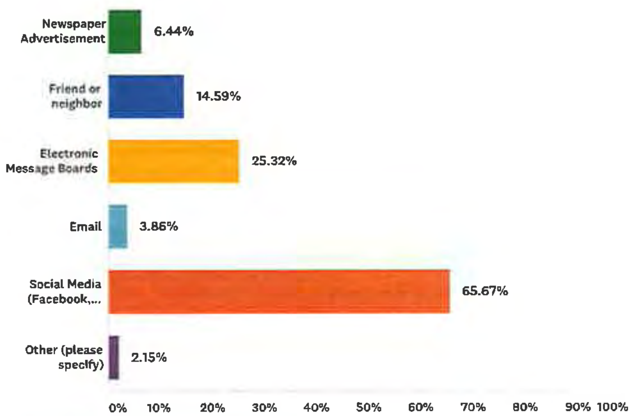
17	While these all seem like fine ideas on paper, one must remember this construction is taking place in Cheyenne, WY. The Cheyanimal is arguably the worst driver on the planet, most likely due to limited brain capacity and sense of entitlement.	7/11/2018 8:34 AM
18	Mainly feel the problem is not wide enough road between us 30 and Dell range on whitney, and the traffic at those intersections. Is it not possible to put in a roundabout along the us30 intersection?	7/11/2018 8:06 AM
19	Will there be flashing signs and or rivets in the road to just add extra visibility to the stop light at Whitney and 30? On south Greeley, as you head north, there is a flashing sign to warn/inform of the light next to me diesel. I would love to see that as you head (coming from the area of 30 with Reese and Cristensen road). As a parent of a soon to be teen driver, I would love to also see rivets (wording?) in the road as you approach the light just to add extra safety. I'm thinking of those creases in the road along a highway shoulder that alert you if you go to far over. Some towns put them in the lane as you approach major intersections. This will be a high speed intersection and I worry about the unavoidable running of the light. What all can we do to minimize that? Thanks	7/11/2018 7:50 AM
20	Widen the stretch of Whitney road between highway 30 and dell range.	7/11/2018 7:34 AM
21	Please install a light at the intersection of US 30 and Whitney. I can't recall how many times I've nearly gotten hit by a people who turn at the same time that I do.	7/11/2018 7:23 AM
22	I would like to see the road widened and some landscaping put in. When I go to the Denver suburbs, their streets are lined with beautiful trees and landscaping. Here in Cheyenne that doesn't happen. All we get is some prairie grass and weeds. The City and County can do more to improve the aesthetics of the area. What they need to do is quit pushing their pet projects and do some stuff that will actually be enjoyed by more of the citizens.	7/11/2018 3:37 AM
23	Need to definitely wide the lanes of Whitney rd, slow down traffic, add street lights, and walking/bike paths. Bottom of Whitney hill needs a traffic light. Punch more roads through to the west	7/10/2018 3:00 PM
24	The intersections at US 30 & Whitney Road and Whitney Road & Dell Range need something done to them need if only temporarily, these 2 intersections are a Nightmare! Also, on your overhead shot of houses on foxglove, the house with the long driveway to A RV garage is our property you have 3 other peoples names by it.	7/10/2018 2:57 PM
25	I feel that a roundabout at the intersection of Whitney and Dell Range would be a very bad idea. I would rather see a traffic signal instead.	7/9/2018 9:52 PM
26	I have received comments lately which indicate a desire for a stop light.	7/9/2018 9:18 PM
27	Connect Whitney and Storey Blvd.	7/9/2018 8:23 PM
28	See prior comments regarding Whitney and Del Range Intersection and going North.	7/9/2018 3:28 PM
29	Make whitney road one speed limit instead of going back and forth between two different speeds.	7/9/2018 3:07 PM
30	need different access points to fox run and other areas, not just one road. leave whitney two lanes for the first three streets. at a second road to approach to beckle/storey	7/9/2018 12:15 PM
31	A traffic light is needed at Whitney and highway 30. It is so dangerous. Lower speed limit on highway 30!!	7/8/2018 10:12 PM
32	Continue the road improvements beyond beckle rd	7/8/2018 8:07 PM
33	Creating a pass thru from Storey through College would help alleviate a lot of traffic on Whitney/Dell Range	7/8/2018 4:40 PM
34	I would like to see Whitney connected to College via Storey/Beckle.	7/8/2018 8:07 AM
35	Traffic light at Whitney and dell range	7/7/2018 7:58 AM
36	Finish the connection between the new storey and the old summit drive	7/6/2018 11:41 PM
37	Cul d sac Dell Range and make all traffic drop down to US 30 at a light.	7/5/2018 6:56 PM
38	The intersections at Whitney and U.S.highway 30 and the intersection at Whitney and Del Range are extremely congested and dangerous. I have seen several accidents in both of these intersections. I think the only real solution is to add stop lights! Especially if you are planning in adding turning lanes!	7/5/2018 1:22 PM
39	Move Dell range south in the right of way planned not north into my yard as proposed	7/5/2018 11:27 AM

40	I think the county should look at connecting some of the roads that would make it easier to get around the area. Like take Whitney all the way through to 85. Connect Storey, connect Four Mile, connect Riding Club, connect Converse and connect Powderhouse. I believe that by connecting these roads it would cut down on traffic and congestion in several other locations.	7/5/2018 8:41 AM
41	A fair amount of traffic could be diverted to Pershing if the quality of that road was improved, which should be in the plan along with the Christiansen overpass project. Once that artery is open, less traffic will be using these 2 intersections, and this will likely be irrelevant.	7/5/2018 12:49 AM
42	Please no roundabout.	7/4/2018 6:22 PM
43	Thank you for collecting data from the community. This is the second survey I've completed and appreciate being able to be involved. Great public involvement!	7/4/2018 9:53 AM
44	I think a stop light is better then a round about due to the commercial traffic and those of us that haul trailers and horse trailers down that corridor.seems more like a nuisance with a round about	7/4/2018 8:48 AM
45	Would like to see Storey connected	7/3/2018 9:23 PM
46	No roundabouts, they are ridiculous!	7/3/2018 8:57 PM
47	Keep in mind that the big hill on Whitney just north of Dell Range is tricky for going up and coming down (traveling south) in the winter.	7/3/2018 8:53 PM
48	Increase speed limit on whitney. Del range and perishing have higher limits	7/3/2018 7:48 PM
49	Flare out intersection from Whitney Rd to residential streets for easier right turns. Especially at Four Mile Rd.	7/3/2018 6:20 PM
50	I think you guys are doing a great job collecting information and presenting it back to community. It's unfortunate that the city did such a poor job designing the roundabout on Pershing as it has given a lot of people a bad taste in regards to them. If done right this corridor will be a great section, moving forward into the next couple of decades.	7/3/2018 4:01 PM
51	Leave the road alone!! You're going to ruin people's properties and livelyhoods who have lived in these areas for decades. City planners and engineers are too lazy to actually plan and execute a proper design that will not create any issues for the residents around this road. Maybe, just maybe, instead of creating issues with a road that is fine, fix problems that need dealt with right now. Just a thought.	7/3/2018 1:49 PM
52	Prefer traffic light over roundabout.	7/3/2018 9:50 AM
53	Raise the speed limit from Del Range to Iron Mountain on Whitney Rd.	7/2/2018 11:10 PM
54	Safety lighting near intersections	7/2/2018 9:30 PM
55	Street lighting at Dell Range and Whitney.	7/2/2018 9:21 PM
56	Finish Storey Blvd form College Drive to Whitney Rd. before starting construction on Whitney Rd. so traffic has another way in and out of Whitney Rd.	7/2/2018 9:23 AM
57	If moving/improving Whitney is years down the road. I am very concerned about the roundabout being placed before the hill on Whitney is reduced. This would be very dangerous during the winter.	7/2/2018 9:14 AM
58	Our family is concerned about the well-being of the prairie dog and badger population currently inhabiting the Whitney Rd corridor. Is there a plan in place to humanely relocate what could be considered an established ecosystem? Presumably, Fox glove, chickadee, and Buttercup roads will continue on into this ecosystem once construction begins - Again, is anything being done to protect such a valuable species who according to the prairie dog coalition, currently only occupy one percent of their original range? Prairie dogs ensure seed diversity of the prairie and grasslands upon which we reside, simply ignoring their value and destroying their habitats will push endangered species like the Black Footed Ferret into extinction. Can we relocate to public Lands? Perhaps Parks and Rec can help with green space or nature persevere so that our children will have nature to appreciate in the future.	7/2/2018 8:59 AM
59	additional access for Storie -4-miile- Iron Mt. will relieve much of traffic on Whitney	7/2/2018 8:46 AM
60	1. Speed Bumps 2. Greatly increased law enforcement patrols. 3. Open up this route to oil traffic.	7/2/2018 7:55 AM
61	Instead of moving Whitney Rd. make them move their pipeline. A million dollars to move on is worth it.	7/2/2018 7:25 AM

62	Should put proposed plans out for review before final meetings, the changes that have been put in since the last meeting are extreme.	7/2/2018 7:10 AM
63	Connect story Blvd	7/2/2018 1:09 AM
64	A roundabout at Whitney and US 30 might work also, although east bound traffic would lose momentum for the hill which could be difficult when icy	7/1/2018 10:46 PM
65	Uniformity is key. And roundabouts are a great option versus traffic lights.	6/30/2018 8:55 PM
66	I especially like the paving of Storey and connecting over to Whitney.	6/30/2018 5:12 PM
67	Why do we keep taking advice from people who don't live in the area. No one likes round abouts so stop putting them in my city. Areas around these roundabouts suffer because of them.	6/30/2018 12:47 PM
68	Anything that would slow traffic at the Whitney dell range and Whitney highway30 intersections would be an improvement. Lights or round about. The speed of drivers and the confusion of who is turning onto those two major roads is nuts	6/30/2018 7:13 AM
69	4 lane all the way! North, south, east, and west! Do it right the first time and don't worry about "fixing" this issue again in 5 years!	6/29/2018 10:12 PM
70	Repair the roads that need it instead of spending tax dollars on dumb ideas like more roundabouts. For instance Dell Range from College to Whitney could definitely stand resurfacing, as could East Pershing from Christianson over the railroad ro the east.	6/29/2018 8:16 PM
71	Thank you!	6/29/2018 7:24 PM
72	There has been talk of completing the connection of Storey Blvd (between Summit and Beckle) once the land to the south is developed. Connecting Storey now instead of later will give residents an alternative route and decrease traffic at the Whitney and Dell Range intersection. Widening Whitney without adding extra travel lanes does nothing to alleviate traffic congestion, and as a landowner on Whitney I am opposed to that idea. Instead, provide an alternative route by completing Storey that not only eases congestion but also provides better fire and emergency access to subdivisions off of Whitney.	6/29/2018 7:05 PM
73	Bicycle lanes! Please!!	6/29/2018 5:17 PM
74	It would be great if the sidewalk went all the way up Whitney.	6/29/2018 4:13 PM
75	Roundabouts are dumb and you're pissing off a lot of us that already live on this road, espcially those of us who live directly off Whitney	6/29/2018 3:13 PM
76	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q9 How did you find out about this meeting (Please check all that apply)?

Answered: 233 Skipped: 78



ANSWER CHOICES	RESPONSES	
Newspaper Advertisement (1)	6.44%	15
Friend or neighbor (2)	14.59%	34
Electronic Message Boards (3)	25.32%	59
Email (4)	3.86%	9
Social Media (Facebook, etc.) (5)	65.67%	153
Other (please specify) (6)	2.15%	5
Total Respondents: 233		

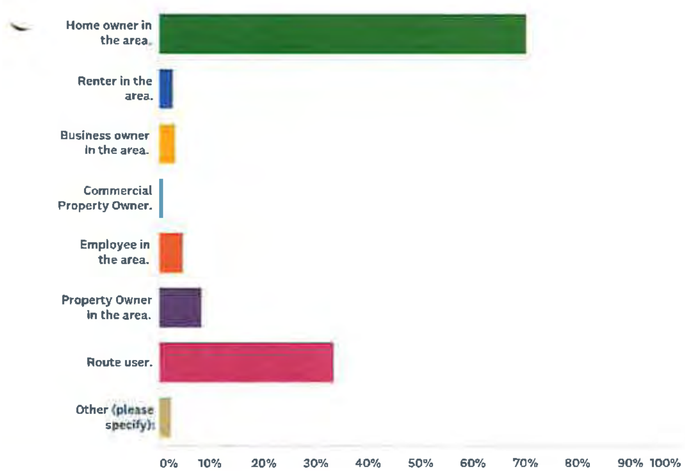
BASIC STATISTICS

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	5.00	3.97	1.35

#	OTHER (PLEASE SPECIFY)	DATE
1	Facebook	7/12/2018 7:59 AM
2	I	7/9/2018 2:25 PM
3	HOA	7/6/2018 10:00 PM
4	CAC Member	7/2/2018 7:04 AM
5	Signs along Dell Range	6/29/2018 8:16 PM

Q1 Which of the following best describes you (Please mark all that apply)?

Answered: 407 Skipped: 0



ANSWER CHOICES	RESPONSES	
Home owner in the area.	70.27%	286
Renter in the area.	2.70%	11
Business owner in the area.	3.19%	13
Commercial Property Owner.	0.74%	3
Employee in the area.	4.67%	19
Property Owner in the area.	8.11%	33
Route user.	33.42%	136
Other (please specify):	2.21%	9
Total Respondents: 407		

#	OTHER (PLEASE SPECIFY):	DATE
1	Customer of business in the area	7/13/2018 8:09 PM
2	First Responder in area	7/12/2018 6:20 PM
3	Former firefighter in the area	7/10/2018 9:53 PM
4	City resident who drives through the area	7/6/2018 10:56 AM

5	S	7/3/2018 3:59 PM
6	Just interested	7/2/2018 12:59 PM
7	Concered Community Member	7/2/2018 8:49 AM
8	Pipeline -Suncor	7/2/2018 8:24 AM
9	Concerned citizen	7/2/2018 1:06 AM

Q2 Please help us keep you informed by giving us the way to contact you (Optional).

Answered: 133 Skipped: 274

ANSWER CHOICES	RESPONSES	
Name:	96.99%	129
Address:	81.95%	109
City/State/ZIP:	69.92%	93
Phone:	67.67%	90
Email:	86.47%	115

#	NAME:	DATE
1	Brian J Heath	7/16/2018 12:44 PM
2	Elizabeth Schock	7/16/2018 8:28 AM
3	Jason	7/15/2018 8:15 PM
4	Shawna Ward	7/15/2018 6:06 PM
5	Jessica Taken	7/15/2018 3:43 PM
6	Matthew Shovelski	7/15/2018 2:50 PM
7	Dan Sutton	7/15/2018 2:48 PM
8	Staci	7/15/2018 2:39 PM
9	Rocky	7/15/2018 2:24 PM
10	Nicholas leuer	7/15/2018 11:42 AM
11	Leif Anderson	7/15/2018 5:54 AM
12	Richard	7/14/2018 9:40 PM
13	Doug Slames	7/13/2018 8:51 PM
14	Kevin Bell	7/13/2018 8:09 PM
15	Robert Mauch	7/13/2018 3:15 PM
16	SAndra Smith	7/13/2018 2:45 PM
17	Jeannie Spraker/Big Al' Auto & Exhaust	7/13/2018 10:21 AM
18	Chad Federer	7/13/2018 5:26 AM
19	Scott Maddison	7/12/2018 6:20 PM
20	Erin Shockley	7/12/2018 1:29 PM
21	Andy MCMAHON	7/12/2018 9:53 AM
22	Michelle Bain	7/12/2018 7:08 AM
23	Hollingshead	7/11/2018 9:26 PM
24	Brenda oswald	7/11/2018 8:21 PM
25	Kathrin Ryan	7/11/2018 7:58 PM
26	Kelly Archer	7/11/2018 5:21 PM
27	Susan Hopkins	7/11/2018 4:15 PM

28	May Maas	7/11/2018 3:25 PM
29	Kathy K	7/11/2018 3:21 PM
30	William Brewer	7/11/2018 1:39 PM
31	John Payne	7/11/2018 12:28 PM
32	j fred volk	7/11/2018 11:22 AM
33	David Woody	7/11/2018 10:57 AM
34	Audrey J Mayfield	7/11/2018 10:54 AM
35	Christopher Harbeson	7/11/2018 10:01 AM
36	Janet Toler	7/11/2018 9:48 AM
37	Mike Colgan	7/11/2018 9:11 AM
38	D'Anna Feurt	7/11/2018 8:45 AM
39	Mark Trimble	7/11/2018 8:44 AM
40	Ginni Sutherland	7/11/2018 8:07 AM
41	Retha Blakely	7/11/2018 7:17 AM
42	Eugene Schumacher	7/11/2018 7:14 AM
43	Lindsay Kimbrell	7/11/2018 6:51 AM
44	Shelley	7/11/2018 6:42 AM
45	Danielle	7/11/2018 6:22 AM
46	Mike Colgan	7/11/2018 5:51 AM
47	Eric Stransky	7/11/2018 3:28 AM
48	Brittany Wilson	7/10/2018 6:00 PM
49	Jason Johnson	7/10/2018 2:52 PM
50	Ed & Pat Smith	7/10/2018 2:52 PM
51	Shawn Broad	7/9/2018 9:47 PM
52	Georgia Broyles	7/9/2018 9:11 PM
53	Lisa and Robert Brandes	7/9/2018 7:41 PM
54	Lynn Rainey	7/9/2018 6:03 PM
55	Mysty Haight	7/9/2018 3:04 PM
56	James Mestack	7/9/2018 2:49 PM
57	Susie Havner	7/9/2018 11:55 AM
58	Duane Welte	7/8/2018 8:05 PM
59	Tiffany	7/8/2018 4:31 PM
60	Barbara	7/7/2018 10:24 PM
61	Maggie Doss	7/6/2018 7:44 PM
62	Taylor	7/6/2018 11:33 AM
63	Lanae McDonald	7/6/2018 7:31 AM
64	Kathryn Warren	7/5/2018 1:16 PM
65	Jeff Trefren	7/5/2018 11:23 AM
66	Jeff Woods	7/5/2018 8:31 AM
67	Lori Medina	7/5/2018 7:54 AM
68	Max Minnick	7/5/2018 12:34 AM

69	Steven girt	7/4/2018 6:20 PM
70	Kevin Heyborne	7/4/2018 10:36 AM
71	Candace Croswell	7/3/2018 9:13 PM
72	Kari Happold	7/3/2018 9:01 PM
73	Katrina Vosler-Suter	7/3/2018 8:42 PM
74	Ellen Taylor	7/3/2018 8:26 PM
75	Jerry Rief	7/3/2018 6:30 PM
76	Kathie Dreifus	7/3/2018 6:07 PM
77	Ana munoz	7/3/2018 5:03 PM
78	Shirley Welte	7/3/2018 4:37 PM
79	Sheri Emmert	7/3/2018 3:59 PM
80	Cyndi Henderson	7/3/2018 3:58 PM
81	Monica Yarborough	7/3/2018 3:52 PM
82	Jim	7/2/2018 11:09 PM
83	Dutch McBride	7/2/2018 10:35 PM
84	Denise Hopkins	7/2/2018 9:26 PM
85	David Hopkins	7/2/2018 9:13 PM
86	Richard D (Dick) Vosler	7/2/2018 1:06 PM
87	Michael & Jennifer Larson	7/2/2018 9:30 AM
88	Angi Bruce	7/2/2018 9:28 AM
89	Dennis Wiles	7/2/2018 9:25 AM
90	Mike Lujan	7/2/2018 9:20 AM
91	Pam quick	7/2/2018 9:11 AM
92	Magen Seeley-Marotz	7/2/2018 9:06 AM
93	Kerry Jo & Mike Stephan	7/2/2018 9:02 AM
94	Cody Fournier	7/2/2018 8:49 AM
95	Judd Eifealdt	7/2/2018 8:44 AM
96	Judd Eifealdt	7/2/2018 8:41 AM
97	David & Mara Funk	7/2/2018 8:35 AM
98	Buddy Tenrant	7/2/2018 8:29 AM
99	Dillion Ohot -Suncor	7/2/2018 8:24 AM
100	Ellen Southwell	7/2/2018 7:40 AM
101	Joyce Stone	7/2/2018 7:26 AM
102	Rod Stone	7/2/2018 7:20 AM
103	Chris Ryan	7/2/2018 7:16 AM
104	Andy Vehar	7/2/2018 7:12 AM
105	Dave Rose	7/2/2018 7:07 AM
106	Barbara Boyd & Jim Boyd	7/2/2018 7:01 AM
107	Mike Cowley	7/2/2018 6:58 AM
108	Janine Ramage	7/2/2018 6:55 AM
109	Jessie Parker	7/2/2018 6:53 AM

110	Tim and Tammy Bauer	7/2/2018 6:24 AM
111	Dennis Brunner	7/2/2018 5:46 AM
112	Bill Pacheco	7/1/2018 10:03 PM
113	Carl Voigtsberger	7/1/2018 8:03 PM
114	Dale Bratton	7/1/2018 9:22 AM
115	Te	7/1/2018 8:54 AM
116	Caroline Mattson	7/1/2018 7:47 AM
117	Charles Retz	7/1/2018 12:02 AM
118	Michaela Bradshaw	6/30/2018 8:59 PM
119	Linda Schmidt	6/30/2018 5:06 PM
120	Susan Parkins	6/30/2018 8:19 AM
121	Matt	6/30/2018 7:09 AM
122	Karlee ramirez	6/29/2018 10:37 PM
123	Tim Woodard	6/29/2018 9:46 PM
124	Alicia Smith	6/29/2018 9:21 PM
125	Patrick	6/29/2018 9:10 PM
126	Kristin Nuss	6/29/2018 6:51 PM
127	Tim Walsh	6/29/2018 5:41 PM
128	Chad Doss	6/29/2018 5:09 PM
129	Amy Brockel	6/29/2018 4:11 PM

#	ADDRESS:	DATE
1	4701 Blazing Star Rd	7/16/2018 12:44 PM
2	Schrader lane	7/15/2018 6:15 PM
3	311 E. 6th Ave.	7/15/2018 3:43 PM
4	4113 Gem Trail	7/15/2018 2:50 PM
5	6889 Solitude Loop	7/15/2018 2:48 PM
6	7537 Reese Rd. Lot 23	7/15/2018 2:39 PM
7	3833 Rain Dancer trail	7/15/2018 11:42 AM
8	6973 Elizabeth Rd	7/15/2018 5:54 AM
9	Hammond	7/14/2018 9:40 PM
10	5020 Atlantic Drive	7/13/2018 8:51 PM
11	3400 s Greeley Hwy	7/13/2018 3:15 PM
12	4701 Craigy J Dr	7/13/2018 2:45 PM
13	6602 Foxglove Dr./6526 US Hwy 30 Service Rd.	7/13/2018 10:21 AM
14	6800 U.S Hwy. 30	7/13/2018 5:26 AM
15	4079 Antelope Meadows	7/12/2018 6:20 PM
16	11316 Chief Twomoon Road	7/12/2018 1:29 PM
17	9891 Hynds Blvd	7/12/2018 9:53 AM
18	6974 Horse Soldier Rd	7/12/2018 7:08 AM
19	6808 Hitching Post Ln.	7/11/2018 9:26 PM
20	6501 Julia Rd	7/11/2018 8:21 PM

21	3713 Gunsmoke Rd	7/11/2018 7:58 PM
22	6824 Sundance Loop	7/11/2018 5:21 PM
23	6509 RIVERBEND RD	7/11/2018 4:15 PM
24	6715 Painted Rock Trail	7/11/2018 3:25 PM
25	9450 McKenna trail	7/11/2018 12:28 PM
26	3531 Gunsmoke Rd	7/11/2018 10:57 AM
27	4029 Gunsmoke Rd	7/11/2018 10:54 AM
28	6611 horse soldier rd	7/11/2018 9:48 AM
29	3628 Rustic Rd	7/11/2018 9:11 AM
30	6524 Kicking Horse Court	7/11/2018 8:45 AM
31	3501 Ranch View Dr	7/11/2018 8:44 AM
32	6606 Campfire Court	7/11/2018 8:07 AM
33	6903 Snowy River Road	7/11/2018 7:17 AM
34	6509 Campfire Ct	7/11/2018 7:14 AM
35	6511 Painted Rock Trail	7/11/2018 6:51 AM
36	3754 Saddle Ridge Trail	7/11/2018 6:42 AM
37	3628 Rustic Rd	7/11/2018 5:51 AM
38	6613 Horse Soldier Rd	7/11/2018 3:28 AM
39	6601 Sundance Loop	7/10/2018 6:00 PM
40	6806 Foxglove	7/10/2018 2:52 PM
41	11431 Chief Twomoon Road	7/9/2018 9:47 PM
42	1121 Gettysburg Drive	7/9/2018 9:11 PM
43	6983 Sundance Loop	7/9/2018 7:41 PM
44	9208 Heavenly Dr.	7/9/2018 3:04 PM
45	6861 Dorsey Rd	7/9/2018 2:49 PM
46	9335 Crystal Mountain Rd	7/9/2018 11:55 AM
47	7331 Keystone Dr	7/8/2018 8:05 PM
48	7311 e Pershing	7/7/2018 10:24 PM
49	9907 Crystal Mountain Rd	7/6/2018 7:44 PM
50	11804 E Four Mile Rd	7/6/2018 7:31 AM
51	6967 Boot Strap Ct	7/5/2018 1:16 PM
52	5707 Dell range blvd	7/5/2018 11:23 AM
53	6641 Crested Butte Dr	7/5/2018 8:31 AM
54	6519 Dorsey Road	7/5/2018 7:54 AM
55	6726 telluride dr	7/4/2018 6:20 PM
56	6578 Crested Butte	7/4/2018 10:36 AM
57	7297 Monarch Drive	7/3/2018 9:13 PM
58	7422 Monarch dr	7/3/2018 9:01 PM
59	10145 Crystal Mountain Rd.	7/3/2018 8:42 PM
60	7203 Crested Butte Drive	7/3/2018 8:26 PM
61	10501 Crystal Mountaib Rd	7/3/2018 6:30 PM

62	9327 Snow Crest Dr	7/3/2018 6:07 PM
63	7100 telluride dr	7/3/2018 5:03 PM
64	7331 Keystone Dr	7/3/2018 4:37 PM
65	6740 Crested Butte Dr	7/3/2018 3:59 PM
66	9466 Sugarloaf Lane	7/3/2018 3:58 PM
67	9352 Crystal Mountsin Rd	7/3/2018 3:52 PM
68	7907 Aztec Dr	7/2/2018 11:09 PM
69	6603 Riverbend Road	7/2/2018 10:35 PM
70	Dorsey Rd	7/2/2018 9:26 PM
71	10149 Crystal Mtn Rd	7/2/2018 1:06 PM
72	5518 Blazing Star Rd	7/2/2018 9:30 AM
73	6615 Wilderness Trail	7/2/2018 9:28 AM
74	6535 E 4Mile Rd	7/2/2018 9:25 AM
75	6751 Say Valley Rd	7/2/2018 9:20 AM
76	3267 sandstone ln	7/2/2018 9:11 AM
77	7099 Say Kally Rd	7/2/2018 9:06 AM
78	9555 Crystal Mountain Rd	7/2/2018 9:02 AM
79	3351 Belair Ave	7/2/2018 8:49 AM
80	6770 Whistler Dr	7/2/2018 8:44 AM
81	6770 Whistler Dr	7/2/2018 8:41 AM
82	6515 Foxglove	7/2/2018 8:35 AM
83	1580 Rio Glende Circle	7/2/2018 8:29 AM
84	1715 Fleishli Pkwy.	7/2/2018 8:24 AM
85	4011 Summitt Dr.	7/2/2018 7:26 AM
86	4011 Summit Dr	7/2/2018 7:20 AM
87	4501 Greenbull Ct	7/2/2018 7:16 AM
88	6530 US 30	7/2/2018 7:07 AM
89	4608 Van Buronb Ave	7/2/2018 7:01 AM
90	5610 Iron Mtn Rd	7/2/2018 6:58 AM
91	7119 Julia Rd	7/2/2018 6:55 AM
92	6744 Grace Rd	7/2/2018 6:53 AM
93	6809 Laramie st	7/2/2018 6:24 AM
94	11755 Chief Twomoon Rd.	7/2/2018 5:46 AM
95	9131 James Cole Ct	7/1/2018 10:03 PM
96	11303 yellowbear rd	7/1/2018 8:03 PM
97	PO Box 96	7/1/2018 9:22 AM
98	4505 El Camino Dr	7/1/2018 7:47 AM
99	7317 Aztec Dr	7/1/2018 12:02 AM
100	3711 Blue Sage Rd	6/30/2018 8:59 PM
101	7317 Dorsey Rd	6/30/2018 5:06 PM
102	3531 Fire Side Dr	6/30/2018 8:19 AM

103	3629 Rustic rd	6/30/2018 7:09 AM
104	5914 e 13th st	6/29/2018 10:37 PM
105	8200 Beckle RD	6/29/2018 9:46 PM
106	8401 Hazer Court	6/29/2018 9:21 PM
107	Woods Landing Estates	6/29/2018 6:51 PM
108	9200 jordann lane	6/29/2018 5:41 PM
109	9907 Crystal Mountain Road	6/29/2018 5:09 PM

#	CITY/STATE/ZIP:	DATE
1	Cheyenne	7/16/2018 12:44 PM
2	82009	7/15/2018 6:15 PM
3	Cheyenne	7/15/2018 3:43 PM
4	Cheyenne	7/15/2018 2:50 PM
5	Cheyenne	7/15/2018 2:48 PM
6	Cheyenne Wy 82009	7/15/2018 2:39 PM
7	Cheyenne WY 82001	7/15/2018 11:42 AM
8	Cheyenne/WY/82009	7/15/2018 5:54 AM
9	Cheyenne,wy,82001	7/14/2018 9:40 PM
10	Cheyenne	7/13/2018 8:51 PM
11	Cheyenne	7/13/2018 8:09 PM
12	Cheyenne wyo	7/13/2018 3:15 PM
13	Cheyenne WY. 82009	7/13/2018 2:45 PM
14	Cheyenne, WY 82009 & 82001	7/13/2018 10:21 AM
15	Cheyenne Wy 82001	7/13/2018 5:26 AM
16	Burns	7/12/2018 6:20 PM
17	Cheyenne, WY 82009	7/12/2018 1:29 PM
18	Cheyenne 72009	7/12/2018 9:53 AM
19	Cheyenne	7/12/2018 7:08 AM
20	82001	7/11/2018 9:26 PM
21	Cheyenne, WY 82009	7/11/2018 8:21 PM
22	Cheyenne. WY 82001	7/11/2018 7:58 PM
23	82009	7/11/2018 5:21 PM
24	CHEYENNE	7/11/2018 4:15 PM
25	Cheyenne, WY 82001	7/11/2018 3:25 PM
26	Cheyenne	7/11/2018 1:39 PM
27	Cheyenne Wyoming 82009	7/11/2018 12:28 PM
28	cheyenne	7/11/2018 11:22 AM
29	Cheyenne WY 82001	7/11/2018 10:57 AM
30	Cheyenne	7/11/2018 10:54 AM
31	Cheyenne wy 82001	7/11/2018 9:48 AM
32	Cheyenne WY 82001	7/11/2018 9:11 AM
33	Cheyenne, WY 82001	7/11/2018 8:45 AM

34	Cheyenne	7/11/2018 8:44 AM
35	Cheyenne, WY 82001	7/11/2018 8:07 AM
36	Cheyenne, Wy 82001	7/11/2018 7:17 AM
37	Cheyenne, WY 82001	7/11/2018 7:14 AM
38	Cheyenne, WY 82001	7/11/2018 6:51 AM
39	Cheyenne WY 82001	7/11/2018 6:42 AM
40	Cheyenne WY 82001	7/11/2018 5:51 AM
41	Cheyenne, WY 82001	7/11/2018 3:28 AM
42	Cheyenne WY 82009	7/10/2018 6:00 PM
43	Cheyenne, WY	7/10/2018 2:52 PM
44	Cheyenne, Wyoming 82009	7/9/2018 9:47 PM
45	Cheyenne, Wyoming 82001	7/9/2018 9:11 PM
46	Cheyenne	7/9/2018 7:41 PM
47	Cheyenne, Wy 82009	7/9/2018 3:04 PM
48	Cheyenne/WY/82009	7/9/2018 2:49 PM
49	Cheyenne WY 82009	7/9/2018 11:55 AM
50	Cheyenne/WY/82009	7/8/2018 8:05 PM
51	Cheyenne Wyoming 82001	7/7/2018 10:24 PM
52	Cheyenne/Wy/82009	7/6/2018 7:44 PM
53	82001	7/5/2018 1:16 PM
54	Cheyenne WY 82009	7/5/2018 11:23 AM
55	Cheyenne, Wyoming 82009	7/5/2018 8:31 AM
56	Cheyenne. WY 82009	7/5/2018 7:54 AM
57	Cheyenne WY 82009	7/4/2018 6:20 PM
58	Cheyenne, WY 82009	7/4/2018 10:36 AM
59	Cheyenne WY 82009	7/3/2018 9:13 PM
60	Cheynne, WY 82009	7/3/2018 9:01 PM
61	Cheyenne, WY 82009	7/3/2018 8:42 PM
62	Cheyenne, WY 82009	7/3/2018 8:26 PM
63	Cheyenne WY. 82009	7/3/2018 6:30 PM
64	Cheyenne, WY 82009	7/3/2018 6:07 PM
65	Cheyenne why 82009	7/3/2018 5:03 PM
66	Cheyenne WY 82009	7/3/2018 4:37 PM
67	Cheyenne	7/3/2018 3:59 PM
68	Cheyenne Wy 82009	7/3/2018 3:58 PM
69	Cheyenne WY 82009	7/3/2018 3:52 PM
70	Cheyenne	7/2/2018 11:09 PM
71	Cheyenne. WY 82001	7/2/2018 10:35 PM
72	Cheyenne, WY 82009	7/2/2018 9:30 AM
73	Cheyenne WY 82009	7/2/2018 9:20 AM
74	Cheyenne. Wyoming 82001	7/2/2018 9:11 AM

75	Cheyenne, 82001	7/2/2018 8:24 AM
76	Chey 82009	7/2/2018 7:20 AM
77	Cheyenne Wy 82001	7/2/2018 6:24 AM
78	Cheyenne	7/2/2018 5:46 AM
79	Cheyenne, WY 82009	7/1/2018 10:03 PM
80	Cheyenne	7/1/2018 8:03 PM
81	Hillsdale Wy 82060	7/1/2018 9:22 AM
82	Cheyenne. WY 82001	7/1/2018 7:47 AM
83	Cheyenne, WY 82008	7/1/2018 12:02 AM
84	Cheyenne, WY 82001	6/30/2018 8:59 PM
85	Cheyenne. Wyoming 82009	6/30/2018 5:06 PM
86	Cheyenne. WY 82001	6/30/2018 8:19 AM
87	Cheyenne wy 82001	6/30/2018 7:09 AM
88	Cheyenne, wy 82001	6/29/2018 10:37 PM
89	Cheyenne. WY 82009	6/29/2018 9:46 PM
90	Cheyenne, WY 82009	6/29/2018 9:21 PM
91	Cheyenne	6/29/2018 9:10 PM
92	Cheyenne	6/29/2018 5:41 PM
93	Cheyenne/Wy/82009	6/29/2018 5:09 PM

#	PHONE:	DATE
1	3076311545	7/16/2018 12:44 PM
2	9709804931	7/16/2018 8:28 AM
3	3072750189	7/15/2018 3:43 PM
4	3072568694	7/15/2018 2:50 PM
5	3074214920	7/15/2018 2:48 PM
6	3072212586	7/15/2018 2:39 PM
7	8033541594	7/15/2018 11:42 AM
8	307-256-6126	7/14/2018 9:40 PM
9	3076375038	7/13/2018 8:51 PM
10	307 2567691	7/13/2018 3:15 PM
11	307 6304048	7/13/2018 2:45 PM
12	307-214-0434 or 307-637-8955	7/13/2018 10:21 AM
13	307 635-5515	7/13/2018 5:26 AM
14	3076350433	7/12/2018 7:08 AM
15	3072214831	7/11/2018 9:26 PM
16	307638-1979	7/11/2018 8:21 PM
17	307-214-0027	7/11/2018 5:21 PM
18	3074212743	7/11/2018 4:15 PM
19	3076310428	7/11/2018 1:39 PM
20	307 630-2969	7/11/2018 12:28 PM
21	1307421034	7/11/2018 11:22 AM

22	3072862867	7/11/2018 10:54 AM
23	307 640-3765	7/11/2018 9:11 AM
24	307-286-0436	7/11/2018 8:45 AM
25	3072771271	7/11/2018 8:44 AM
26	3076305802	7/11/2018 8:07 AM
27	307 514-4752	7/11/2018 7:17 AM
28	307-369-4477	7/11/2018 7:14 AM
29	307 640-3765	7/11/2018 5:51 AM
30	307-256-6971	7/11/2018 3:28 AM
31	307-630-5196 307-630-5197	7/10/2018 2:52 PM
32	307-214-6296	7/9/2018 9:47 PM
33	307-632-4635	7/9/2018 9:11 PM
34	307-631-4533	7/9/2018 7:41 PM
35	3073899915	7/9/2018 3:04 PM
36	307-287-1548	7/9/2018 2:49 PM
37	3072146369	7/9/2018 11:55 AM
38	630-992-5416	7/8/2018 8:05 PM
39	2207775	7/7/2018 10:24 PM
40	3074219877	7/6/2018 7:44 PM
41	3072141565	7/5/2018 11:23 AM
42	307-630-4537	7/5/2018 7:54 AM
43	3072861591	7/4/2018 6:20 PM
44	307-350-8105	7/4/2018 10:36 AM
45	410.916.5232	7/3/2018 9:13 PM
46	3076406339	7/3/2018 9:01 PM
47	307-286-7981	7/3/2018 8:42 PM
48	3076381111	7/3/2018 6:30 PM
49	3076374855	7/3/2018 5:03 PM
50	626-222-7168	7/3/2018 3:59 PM
51	3076317547	7/3/2018 3:58 PM
52	307-214-5283	7/3/2018 3:52 PM
53	307-772-0117	7/2/2018 11:09 PM
54	307-286-2315	7/2/2018 10:35 PM
55	635-7402 landline 421-6981 cell	7/2/2018 1:06 PM
56	307-421-4005	7/2/2018 9:30 AM
57	307-287-0373	7/2/2018 9:28 AM
58	307-421-4110	7/2/2018 9:25 AM
59	307-630-3972	7/2/2018 9:20 AM
60	3076316748	7/2/2018 9:11 AM
61	307-421-5927	7/2/2018 9:06 AM
62	510-326-3457	7/2/2018 9:02 AM

63	307-630-2060	7/2/2018 8:49 AM
64	307-320-5685	7/2/2018 8:44 AM
65	307-320-5685	7/2/2018 8:41 AM
66	635-0495	7/2/2018 8:35 AM
67	970-834-1036	7/2/2018 8:29 AM
68	303-549-8002	7/2/2018 8:24 AM
69	634-6017	7/2/2018 7:26 AM
70	634-6017	7/2/2018 7:20 AM
71	307-632-1665	7/2/2018 7:16 AM
72	307-220-2740	7/2/2018 7:12 AM
73	307-630-8965	7/2/2018 7:07 AM
74	816-716-8722	7/2/2018 7:01 AM
75	307-630-8559	7/2/2018 6:58 AM
76	307-630-2667	7/2/2018 6:55 AM
77	3076388018	7/2/2018 6:24 AM
78	3076318883	7/2/2018 5:46 AM
79	3074339287	7/1/2018 8:03 PM
80	3076313448	7/1/2018 9:22 AM
81	307-630-2385	7/1/2018 7:47 AM
82	307-630-7938	7/1/2018 12:02 AM
83	3076401599	6/30/2018 8:59 PM
84	307-634-6557	6/30/2018 8:19 AM
85	307-631-8545	6/29/2018 10:37 PM
86	307-631-9167	6/29/2018 9:46 PM
87	3077605681	6/29/2018 9:21 PM
88	3076403111	6/29/2018 9:10 PM
89	3077609005	6/29/2018 6:51 PM
90	3074215508	6/29/2018 5:09 PM

#	EMAIL:	DATE
1	bheath@west-inc.com	7/16/2018 12:44 PM
2	lm.henrie@gmail.com	7/16/2018 8:28 AM
3	Ward049@gmail.com	7/15/2018 6:06 PM
4	takenjessica@gmail.com	7/15/2018 3:43 PM
5	shovelskim@aol.com	7/15/2018 2:50 PM
6	D1_sutton@msn.com	7/15/2018 2:48 PM
7	Stacid112@gmail.com	7/15/2018 2:39 PM
8	Nleuer_11@yahoo.com	7/15/2018 11:42 AM
9	frypan9@gmail.com	7/15/2018 5:54 AM
10	Rickhammond1@charter.net	7/14/2018 9:40 PM
11	dslame@bresnan.net	7/13/2018 8:51 PM
12	Superchicken6w@gmail.com	7/13/2018 8:09 PM

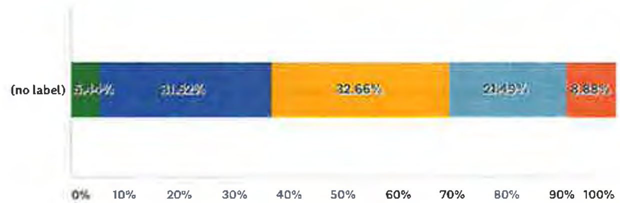
13	Ssmith4701@gmail.com	7/13/2018 2:45 PM
14	sprakerjm@gmail.com or bigalsauto01@gmail.com	7/13/2018 10:21 AM
15	Chad.fms@gmail.com	7/13/2018 5:26 AM
16	firedoc82009@yahoo.com	7/12/2018 6:20 PM
17	erinmariemoulton@gmail.com	7/12/2018 1:29 PM
18	andy@frontieraccess.com	7/12/2018 9:53 AM
19	mbain811@gmail.com	7/12/2018 7:08 AM
20	Raymanhollings@gmail.com	7/11/2018 9:26 PM
21	Brendaoswlad@asdwy.com	7/11/2018 8:21 PM
22	Alisajane521@hotmail.com	7/11/2018 7:24 PM
23	Blka87@msn.com	7/11/2018 6:18 PM
24	Kelly.archer@ymail.com	7/11/2018 5:21 PM
25	skfermelia@gmail.com	7/11/2018 4:15 PM
26	kjgk4749@gmail.com	7/11/2018 3:21 PM
27	brewerwilliam79@yahoo.com	7/11/2018 1:39 PM
28	Johnnyoring77@gmail.com	7/11/2018 12:28 PM
29	dwoodys@msn.com	7/11/2018 10:57 AM
30	dramateacher78@gmail.com	7/11/2018 10:54 AM
31	Ryan.harbeson@gmail.com	7/11/2018 10:01 AM
32	Angel@wyoming.com	7/11/2018 9:48 AM
33	mike.colgan71@yahoo.com	7/11/2018 9:11 AM
34	tweetpea73@gmail.com	7/11/2018 8:45 AM
35	Cleoizzy2@yahoo.com	7/11/2018 8:44 AM
36	Fe1peter3.8@gmail.com	7/11/2018 8:07 AM
37	rethablakely@yahoo.com	7/11/2018 7:17 AM
38	gene_schumacher@msn.com	7/11/2018 7:14 AM
39	lindsayk310@gmail.com	7/11/2018 6:51 AM
40	sheljessbeth@yahoo.com	7/11/2018 6:42 AM
41	mike.colgan71@yahoo.com	7/11/2018 5:51 AM
42	wyo7011@yahoo.com	7/11/2018 3:28 AM
43	Wilson.bryanbrittany@gmail.com	7/10/2018 6:00 PM
44	jasonrusselljohnson@gmail.com	7/10/2018 2:52 PM
45	ekpasmith@aol.com	7/10/2018 2:52 PM
46	shawnbroad1@gmail.com	7/9/2018 9:47 PM
47	Broylesg@msn.com	7/9/2018 9:11 PM
48	Lkbwyo@gmail.com	7/9/2018 7:41 PM
49	Lovegodiva30@gmail.com	7/9/2018 6:03 PM
50	Mystyhaight@hotmail.com	7/9/2018 3:04 PM
51	susie.havner@gmail.com	7/9/2018 11:55 AM
52	duanewelte@sbcglobal.net	7/8/2018 8:05 PM
53	Tiffanyg60@gmail.com	7/8/2018 4:31 PM

54	Starranime2@netzero.com	7/7/2018 10:24 PM
55	Wyomingskimom@gmail.com	7/6/2018 7:44 PM
56	Taylor_arnold101@yahoo.com	7/6/2018 11:33 AM
57	lanaemcdonald@gmail.com	7/6/2018 7:31 AM
58	kathrynlratliff@gmail.com	7/5/2018 1:16 PM
59	Jefftrefren1@gmail.com	7/5/2018 11:23 AM
60	jwoods@cheyennebopu.org	7/5/2018 8:31 AM
61	lamedina44@gmail.com	7/5/2018 7:54 AM
62	Maxminnick@msn.com	7/5/2018 12:34 AM
63	Spgirt@gmail.com	7/4/2018 6:20 PM
64	kheyborn@wyoming.com	7/4/2018 10:36 AM
65	Candace.croswell@gmail.com	7/3/2018 9:13 PM
66	khappold@gmail.com	7/3/2018 9:01 PM
67	kvosler8@gmail.com	7/3/2018 8:42 PM
68	Lntaylor5@gmail.com	7/3/2018 8:26 PM
69	RunWyo@yahoo.com	7/3/2018 6:30 PM
70	Chywy@dreifi.com	7/3/2018 6:07 PM
71	anab_80@hotmail.com	7/3/2018 5:03 PM
72	Sheri336@hotmail.com	7/3/2018 3:59 PM
73	Cyndi.henderson@ymail.com	7/3/2018 3:58 PM
74	Monica.yarborough@gmail.com	7/3/2018 3:52 PM
75	Wyobrewer@vcn.com	7/3/2018 9:47 AM
76	Cancelli1@yahoo.com	7/2/2018 11:09 PM
77	Dutchm31@hotmail.com	7/2/2018 10:35 PM
78	healthyminds101@gmail.com	7/2/2018 9:26 PM
79	usa_eagle78@yahoo.com	7/2/2018 9:13 PM
80	wyolarsons@hotmail.com	7/2/2018 9:30 AM
81	murphyspleasants@gmail.com	7/2/2018 9:25 AM
82	lujanml1@hotmail.com	7/2/2018 9:20 AM
83	Pmmypain@gmail.com	7/2/2018 9:11 AM
84	seeleymj@hotmail.com	7/2/2018 9:06 AM
85	mikerryjc@pacebll.net	7/2/2018 9:02 AM
86	cnfournier@hotmail.com	7/2/2018 8:49 AM
87	jfsanta01@gmail.com	7/2/2018 8:44 AM
88	jfsanta01@gmail.com	7/2/2018 8:41 AM
89	Marafunk70@gmail.com	7/2/2018 8:35 AM
90	buddy_tenrant@yahoo.com	7/2/2018 8:29 AM
91	dohrt@suncor.com	7/2/2018 8:24 AM
92	jacedash@yahoo.com	7/2/2018 7:40 AM
93	rbigals01@aol.com	7/2/2018 7:07 AM
94	blboye@msn.com	7/2/2018 7:01 AM

95	murphycanyonmc@aol.com	7/2/2018 6:58 AM
96	Snoslyd2@yahoo.com	7/2/2018 6:24 AM
97	dennis.brunner@gmail.com	7/2/2018 5:46 AM
98	butte_rat84@yahoo.com	7/1/2018 10:03 PM
99	Fishingtrue@gmail.com	7/1/2018 8:03 PM
100	Cowcopper7@yahoo.com	7/1/2018 9:22 AM
101	cgmattson@yahoo.com	7/1/2018 7:47 AM
102	Retzc@hotmail.com	7/1/2018 12:02 AM
103	Michaelasbradshaw@gmail.com	6/30/2018 8:59 PM
104	Enchant63@gmail.com	6/30/2018 5:06 PM
105	w7par@msn.com	6/30/2018 8:19 AM
106	Msturtevant@gmail.com	6/30/2018 7:09 AM
107	Kmgnurse01@aol.com	6/29/2018 10:37 PM
108	woodard4@hotmail.com	6/29/2018 9:46 PM
109	Asmith0124@msn.com	6/29/2018 9:21 PM
110	Bakingkid17@gmail.com	6/29/2018 9:10 PM
111	Kristinmnuss@gmail.com	6/29/2018 6:51 PM
112	timenim@hotmail.com	6/29/2018 5:41 PM
113	Hcr300@gmail.com	6/29/2018 5:09 PM
114	adeebish@gmail.com	6/29/2018 4:11 PM
115	Randilosalu@gmail.com	6/29/2018 2:32 PM

Q3 Please rate the Recommended Roadway Typical Section for Whitney Road at Beckle Road/ Storey Blvd. (Looking North) as shown.

Answered: 349 Skipped: 58



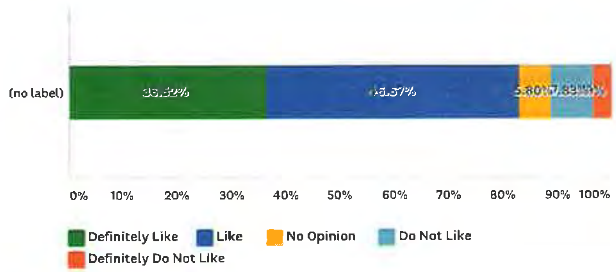
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	5.44% 19	31.52% 110	32.66% 114	21.49% 75	8.88% 31	349	3.03

#	ADDITIONAL COMMENTS OR SUGGESTIONS?	DATE
1	Why aren't we making this two lanes each way?	7/15/2018 2:35 PM
2	Have middle lane for turning	7/15/2018 1:13 PM
3	My opinion is paved shoulder	7/15/2018 11:44 AM
4	Bicycle and pedestrian travel not accounted for. A separate "Greenway-style" path on one side heading north from this point would get LOTS of use.	7/15/2018 6:03 AM
5	Center turn lane because of all the new development. You'll just have to spend money to do it again!	7/13/2018 8:57 PM
6	You cannot close off access to businesses at the frontage road entrance off of hwy 30. This will affect numerous businesses	7/13/2018 8:11 PM
7	No reason to not widen it all the way out to iron mtn	7/13/2018 2:25 PM
8	It's a little narrow	7/13/2018 5:27 AM
9	Should be 14' wide lane to accommodate larger fire apparatus in the county	7/12/2018 6:22 PM
10	Make larger	7/12/2018 9:41 AM
11	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:13 AM
12	Needs a left turn lane separate of the flow of traffic	7/11/2018 8:01 PM
13	Needs to be wider	7/11/2018 6:19 PM
14	How is this different than how it looks now?	7/11/2018 5:24 PM
15	not much different than it currently is.	7/11/2018 1:21 PM
16	Center turn lane is already needed	7/11/2018 11:00 AM
17	Make it wider. Cheyanimals consistently drive 10 mph under the speed limit. a passing lane is a must.	7/11/2018 8:29 AM

18	Needs to be wider between Hwy 30 and Dell Range? Actually the whole thing needs to be 4 lane.	7/11/2018 7:21 AM
19	The roadway should be wider. Traffic will increase as the area continues to grow. More homes are being built and will create more congestion as time moves on.	7/11/2018 3:29 AM
20	Either widen lanes, or make two lanes both ways, also add bike paths, as their are a lot of joggers on Whitney Rd. And add street lights up and down Whitney road, and a way to slow down traffic	7/10/2018 2:55 PM
21	Too narrow between vehicles	7/10/2018 2:52 PM
22	No Area for Walking or Biking.	7/9/2018 2:51 PM
23	no turn lanes. no walking or bike paths.	7/9/2018 12:09 PM
24	Whitney does not need to be widened, you just need to finish roads that could intersect it, such as Four Mile and Storey	7/6/2018 11:38 PM
25	Bicycle lanes!	7/6/2018 7:45 PM
26	Prefer to see a dedicated bike lane	7/6/2018 10:56 AM
27	I would like to see a bike/walking lane.	7/5/2018 8:32 AM
28	Needs to be wider and have a turn bay	7/5/2018 7:53 AM
29	Wider	7/4/2018 9:10 AM
30	Not sure exactly what the question is. Is it asking if I like the current road or is the above picture suppose to be the "new" one. The pic looks like the current one to me and I don't like the current road for safety reasons.	7/3/2018 8:47 PM
31	Would love to have a center lane extending to the end of Whitney Rd to the north.	7/3/2018 6:09 PM
32	Needs sidewalk.	7/3/2018 4:00 PM
33	Would like to see it wider	7/3/2018 3:55 PM
34	I wish the road expansion with wider shoulders and bike lane would continue north as well.	7/3/2018 3:53 PM
35	needs to be paved. more space between north and south bound vehicles and safe placed to walk	7/2/2018 9:31 AM
36	Love	7/2/2018 9:28 AM
37	No Sidewalks or bike paths	7/2/2018 9:20 AM
38	I think their might as well be a bike lane or sidewalk all the way through Whitney.	7/2/2018 9:07 AM
39		7/2/2018 9:04 AM
40	Will this accommodate future extension to Iron Mountain to the North?	7/2/2018 8:38 AM
41	needs to be wider	7/2/2018 8:29 AM
42	I believe given the bicycle traffic a bike lane should be included.	7/2/2018 7:41 AM
43	Storey Blvd to Beckle Rd. does not exist too much private property involved.	7/2/2018 7:27 AM
44	Whitney Road is fine the way it is. this is not needed. a lot of money and headache for nothing.	7/2/2018 7:21 AM
45	4-lane road	7/2/2018 6:53 AM
46	Road needs to be widened	7/1/2018 10:41 PM
47	Isn't this how it is right now?	6/30/2018 8:21 AM
48	As population grows in the area, more and more people are running and walking dogs on the road. Someone is going to get killed if there is no foot path along the road.	6/29/2018 8:15 PM
49	Needs bicycle lanes	6/29/2018 5:12 PM
50	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q4 Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Answered: 345 Skipped: 62



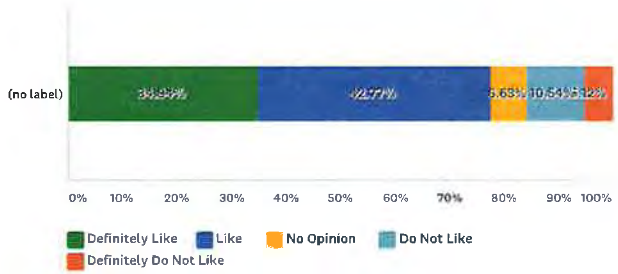
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	36.52% 126	46.67% 161	5.80% 20	7.83% 27	3.19% 11	345	4.06

#	ANY ADDITIONAL COMMENTS?	DATE
1	This would be better as two lanes each way with a center turn lane.	7/15/2018 2:36 PM
2	Landscape area is a wasted space and unnecessary. Shoulder is acceptable, but bike lane designation promotes bicycles with car traffic, which is dangerous and encourages irrational ideas of bicycles as regular transportation. Bicycle travel should be considered a leisure activity.	7/15/2018 12:39 PM
3	Like accommodations for bicycle and pedestrian traffic as well as turn lane.	7/15/2018 6:03 AM
4	Instead of having a bike lane where the shoulder is, I would suggest making the sidewalk part of the greenway or like the greenway. It will not be safe for bike riders to be on the regular roadway as there will not be enough room for the bigger trucks and the bicycles to travel safely. I see vehicles move way over for pedestrians and bicycles, without regard to oncoming traffic or they will stop all together causing the vehicles behind them to slam on their brakes. Also, with the hills it's almost impossible to see any bicycles that may be at the top of the hill until you're right on top of them, again causing an unsafe condition for both driver and rider.	7/13/2018 10:26 AM
5	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:13 AM
6	I like that the sidewalk is set away from the road, it seems safer than having it right by the road	7/11/2018 7:13 PM
7	All lanes need to be at least 12 ft wide!,,	7/11/2018 6:19 PM
8	This is great. I have almost died a couple times trying to run on Whitney. Totally my own fault, but this would make that better. I am not sure that a turn lane is really needed....but maybe with all the new housing coming in west of Whitney. If people would do the speed limit, there would be zero need for tailgating.	7/11/2018 5:25 PM
9	No tproblem asonfor a turn land when they are barely any houses to turn into	7/11/2018 4:43 PM
10	but if the sidewalk and bike lane don't go all the way to iron mountain...is it worththe money? I would prefer to see tge $ spent on keeping the road up	7/11/2018 1:24 PM
11	why curb and trees?	7/11/2018 1:02 PM

12	No need for separated sidewalk, that creates problems with landscaping and is more expensive	7/11/2018 11:23 AM
13	Remove the bike lane / shoulder and this is a lot better, bikes need to be separated just like pedestrians from the higher speed traffic.	7/11/2018 10:49 AM
14	If commercial projects at Whitney/Dell Range are true, need more lanes.	7/11/2018 9:17 AM
15	Better	7/11/2018 7:21 AM
16	I like the landscaping. The sidewalks away from the roadway are nice too. I feel like they are safer, especially at the speeds people travel on these roads.	7/11/2018 3:30 AM
17	There is enough people in the are to constitute a sidewalk on both sides of the road	7/9/2018 2:55 PM
18	better. would be better to have 4 lanes for traffic	7/9/2018 12:10 PM
19	Love the bicycle lane!!	7/8/2018 7:48 PM
20	Maybe wider?	7/6/2018 7:34 AM
21	Sidewalk and shoulder are excellent!	7/3/2018 3:53 PM
22	should be the alignment on Whitney no of beckle also car keep as is possible pavement overlay no of beckle	7/2/2018 1:11 PM
23	I think this is the best of the three choices	7/2/2018 9:31 AM
24	but need sidewalk on both sides	7/2/2018 9:20 AM
25	I don't know if a turning lane is necessary, but probably is if the development would be like Saddle Ridge.	7/2/2018 9:09 AM
26	Pedestrian is a waste as no true country person walks anywhere. Landscape is a waste. causes drifts, causes visual obstructions.	7/2/2018 7:42 AM
27	No need for bigger Rd. Too much traffic. Is this for people who live there or others to pass thru?	7/2/2018 7:27 AM
28	What is wrong with Whitney Rd. It is in the County most people ride horses not bikes.	7/2/2018 7:22 AM
29	4-lane	7/2/2018 6:54 AM
30	I	7/1/2018 8:46 PM
31	Please add a bike lane on each side. This would benefit a lot of us in the area and give us a close road to go and enjoy to become a healthier community.	6/30/2018 8:48 PM
32	Needs a street light at the Intersection	6/30/2018 10:26 AM
33	One foot path should be adequate and should save a lot of money.	6/29/2018 8:16 PM
34	If reducing snow drifts is one of the goals, trees and other landscape defeat that purpose.	6/29/2018 8:08 PM
35	I like turn lanes but the sidewalk and the trees I don't.	6/29/2018 3:10 PM
36	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q5 Please rate the Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Answered: 332 Skipped: 75



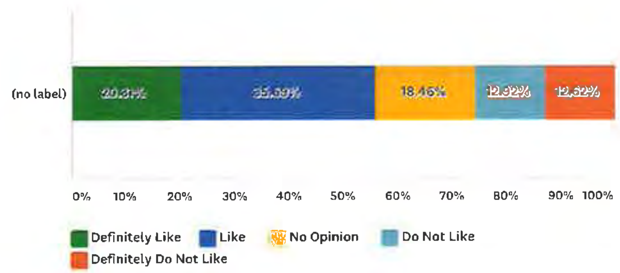
	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	34.94% 116	42.77% 142	6.63% 22	10.54% 35	5.12% 17	332	3.92

#	ANY ADDITIONAL COMMENTS?	DATE
1	This should also be two lanes each way with a center turn lane.	7/15/2018 2:36 PM
2	Landscaping is wasteful usage of land/space, bike travel with cars is irrational and dangerous.	7/15/2018 12:40 PM
3	Bicycle and pedestrian travel is decent with this proposal.	7/15/2018 6:03 AM
4	How are the businesses you will close off access to supposed to survive?	7/13/2018 8:13 PM
5	Limits access to businesses	7/13/2018 11:35 AM
6	Again, there would not be enough room for bike riders and large vehicles on this stretch of road. A greenway type option would be much safer for everyone.	7/13/2018 10:28 AM
7	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:14 AM
8	Needs less landscaping and both right and left turn lanes as well as a lane for thru traffic and sidewalks on both sides. It's set up close to this already and backs up severely during rush hours, especially without a traffic light	7/11/2018 8:05 PM
9	All lanes need to be 12 ' wide	7/11/2018 6:20 PM
10	A turn lane is not needed, in my opinion. Waste of materials. The rest would be good.	7/11/2018 5:26 PM
11	Roundabout for the intersection	7/11/2018 1:00 PM
12	No need for bike lane	7/11/2018 11:24 AM
13	you're moving pedestrians and bikes back into the traffic lanes. these roads likely will have higher traffic speeds and nothing is worse than trying to navigate around peds and bikes. downtown cheyenne bike lanes on carey and pioneer are a nightmare for everyone. even the bikes don't use them, and often are travelling the wrong direction anyway.	7/11/2018 10:51 AM
14	It's better. Road way to narrow.	7/11/2018 7:22 AM
15	This has become quite busy with traffic, both auto and pedestrian. With the anticipated continued boom in growth out here, I believe this should be as wide as possible.	7/11/2018 5:48 AM

16	Who is going to pay for side walk and trees? Who is going to be responsible for snow removal? Why do we need a side walk in the first place. Lived here 20 + years and no walks by here.	7/10/2018 12:25 PM
17	Who is going to pay for the sidewalk, maintain and scoop in the winter. Your sidewalk and landscaping will be on my property where you don't have rights to.	7/10/2018 10:31 AM
18	What about traffic lights at the intersection of Whitney and Dell Range?	7/4/2018 9:07 PM
19	Excellent accommodations for multiple user types!	7/4/2018 9:50 AM
20	Don't know the need for sidewalk expense.	7/3/2018 8:55 PM
21	But add in right turn lane from Whitney to US 30. Would love a traffic light at this intersection as it has gotten a lot busier and will only continue to get more traffic thru this intersection	7/3/2018 6:13 PM
22	I don't like the bike path they should ride on the sidewalk. It is to dangerous for bikes	7/3/2018 5:57 PM
23	Good!	7/2/2018 1:11 PM
24	this is too much for county/city space	7/2/2018 9:32 AM
25	but sidewalks are not detached	7/2/2018 9:21 AM
26	Landscaping the prairie wastes resources and landscaping roads causes drifts - obstructions.	7/2/2018 7:43 AM
27	You can make a bike path however they will ride their bike's on the road	7/2/2018 7:23 AM
28	Pedestrian Section is too close to the road	7/2/2018 7:02 AM
29	I'm not sure a turn lane is necessary for this short stretch, I drive it daily, most days I'm on it multiple times and have never thought that a turn lane is necessary. A wider road, bike land and sidewalk will be a nice feature though! Carry the bike lane north onto Whitney!!	6/30/2018 8:51 PM
30	Needs a street light at the Intersection	6/30/2018 10:27 AM
31	Make travel lanes 12 feet wide	6/30/2018 9:36 AM
32	Dual foot paths are excessive and costly.	6/29/2018 8:16 PM
33	Run this to Beckle!	6/29/2018 5:15 PM
34	I dont want a sidewalk on my property	6/29/2018 3:10 PM
35	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:13 PM

Q6 Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Answered: 325 Skipped: 82



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	20.31% 66	35.69% 116	18.46% 60	12.92% 42	12.62% 41	325	3.38

#	ANY ADDITIONAL COMMENTS?	DATE
1	Service road is primary access to business in this area, and connection removal will restrict access. This will cause economic harm to these businesses. It is also unnecessary, no traffic problems are caused by service road connection to Whitney Rd.	7/15/2018 12:43 PM
2	A traffic light here (or a roundabout) definitely needed here.	7/15/2018 6:06 AM
3	Cuts off frontage road businesses and makes customers travel out of the way to access. Also would add traffic to the side and back streets around the frontage road businesses.	7/13/2018 10:52 PM
4	Would require employees of frontage road businesses to travel miles out of their way (maybe not a big deal for one trip, but added up for everyday it becomes expensive in time and fuel)	7/13/2018 10:46 PM
5	HORRIBLE for Big Al's !! YOU try running a business with this sort of recommendation!!	7/13/2018 8:54 PM
6	How about we close off access to your businesses an cut you off from your livelihood? This city is getting stupider all the time!! You want to do stuff to make everyone happy that wants to buy those big expensive house an crap on the people who have lived here there whole lives supporting this city and county!! You people need to pull your heads out of your a$$es!!	7/13/2018 8:17 PM
7	Businesses need that extra exitway.	7/13/2018 2:26 PM

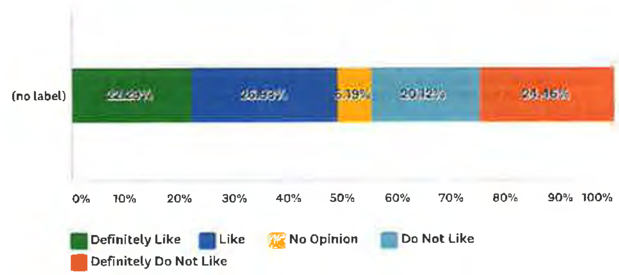
8	I have no objection to the stop light, but I do have a HUGE objection to removing the service road connection to Whitney Rd. The simple option would be to not remove this. It's not safety concern, like the US 30 and Whitney intersection. Another option would be to insert a turn in for the service road from Hwy 30, about where the proposed turn around is featured in the plans. There is quite a bit of semi truck, motorhome, large truck and trailer traffic on this service road going to and from the businesses on the service road. Not only that, but limiting access to these businesses would hurt those companies. In the winter, access from Woodhouse is almost impossible as it drifts so high with snow you can't drive a vehicle through. Trying to get the large trucks up the icy hill to the east exit of the service road is difficult as well. The turn around proposed would not be large enough for the semi trucks to be able to turn around, most likely resulting in these trucks and traffic getting stuck in the ditch. I know there was concern about having a turn out from highway 30 too close to the proposed stop lights at the hwy 30 and Whitney intersection, but there's close turn outs all the way down Dell Range to accommodate the businesses there, so it would be the same here as well. It shouldn't be an issue, especially if the speed limit were to be dropped from 55 to 45. Future plans for moving the Dell Range to Hwy 30 intersection would also interfere with access to the businesses and residences on the service road. From the information I received at the meeting, it sounds like there will be a possibility of wanting to remove the east service road access to Hwy 30 as well. Again, this would hurt these businesses and in turn could devalue property for residents who are left with only a single access point coming from Woodhouse. Please, consider working with the businesses and residents who will be directly affected by the proposed change. We're not against change, but to make changes that would so vastly affect the businesses and families of the people who work for these businesses without at least attempting to find a solution that will work for all parties would be incredibly disheartening to say the least.	7/13/2018 10:45 AM
9	This would be a serious hindrance to the daily operations of our business as well as to our customers.	7/13/2018 10:12 AM
10	This would make it difficult for my accessibility to my business and my mailbox	7/13/2018 5:29 AM
11	Although this may be a safer aspect, there are business along the Service road that would be restricted to only one entrance.	7/12/2018 1:31 PM
12	There needs to be traffic lights at dell range and Whitney and Whitney and highway 30. There are numerous wrecks and close calls at these intersections. With the housing development and population growth these need to be addressed	7/12/2018 8:14 AM
13	Do not remove service road as it's a good alternative to using U.S 30 in the event of accident or when pulling trailers etc.	7/11/2018 8:10 PM
14	I don't like the idea of 3 lights in one mile (Christiansen, Dell Range and Whitney). We need to time our lights so you don't have to stop at the all. Also the use of a green turn arrow at the beginning of the light would help keep people from running so many lights. Perhaps the traffic could be diverted to Dell Range or Whitney, but not have both of them open to US 30.	7/11/2018 6:48 PM
15	I don't think this is necessary.	7/11/2018 5:27 PM
16	The service road is important because of the speed of Hwy 30 and the weather and ice in that area	7/11/2018 4:46 PM
17	In need of a light at this intersection.	7/11/2018 3:27 PM
18	Not sure if a stop light is needed	7/11/2018 12:35 PM
19	This intersection needs something to help with crossing and turning. this is a grateful idea.	7/11/2018 11:09 AM
20	Unless if this redesign removes that ridiculous set of safety islands on whitney / hwy 30 that now render one and one-half vehicles in a turning lane, then Hell no. mpo and the city love to "offset" roads, the 12th street / sun valley redesign years ago is an absolute mistake. It was one of the reasons why I chose to sell my house in that neighborhood. traffic design into and out of neighborhoods is very important to those who live there. when changes are made that make it worse, people wish they never bought.	7/11/2018 10:55 AM
21	It would upset some people but I think its needed. People haul butt down the service road and run the stop sign constantly.	7/11/2018 10:24 AM
22	Don't put a light it will absolutely kill traffic flow like the stop sign on ridge and storey	7/11/2018 10:09 AM
23	Another light on a highway? No thanks. It really doesn't get that much traffic yet.	7/11/2018 9:46 AM
24	Additional traffic control on US30 is needed. High speeds are very common and crashes frequent.	7/11/2018 8:47 AM

25	While I like how a traffic light will take the Cheyanimal's questionable decision making out of the equation, I do not like the idea of on in the middle of highway 30. This town times traffic lights in the most idiotic way so a driver will get stopped by each one, no matter driving style.	7/11/2018 8:31 AM
26	Stop light is needed.	7/11/2018 7:24 AM
27	Why a stoplight? There is not that Mucj traffic there and putting stop lights on a 55mph road seems like it's just going to slow down traffic unnecessarily.	7/11/2018 7:23 AM
28	Get that stoplight in there ASAP!	7/11/2018 5:49 AM
29	We absolutely need a traffic light here. Many people will wave through oncoming traffic to be courteous. The problem with that is it creates a disruption of the traffic flow. There have been several accidents here that could've been a lot worse. Fortunately, these crashes have mostly been minor injuries. I'm not a fan of the realignment on Whitney north of Hwy 30, but I'll take it if we get a traffic light. There will be lots of slide offs in the winter.	7/11/2018 3:33 AM
30	No sure what this is trying to do	7/10/2018 9:07 PM
31	This needs to remain as is. Does not make any since to change it.	7/10/2018 12:25 PM
32	The service road is a pretty active road with businesses. How would those businesses have access to their property. Hinesley Road was not designed to have that traffic.	7/10/2018 10:33 AM
33	I think a traffic light would be better placed on the dell range side	7/8/2018 4:37 PM
34	Putting a traffic light off the hill will be challenging for those hauling trailers.	7/6/2018 7:36 AM
35	Adding a stop light on a 55mph highway seems very counter productive. But would be much better than another round about! Removing access to the service road from Whitney road is the opposite of what should happen. Instead remove the access from the highway 30 and service road intersection if that would really help. That is a low traffic road portion of this equation and would be best served left alone.	7/5/2018 12:44 AM
36	No stop light. Stop signs on whitney	7/4/2018 9:12 AM
37	With a traffic light!	7/3/2018 9:22 PM
38	Why does anything need to he done here? Provide feedback please	7/2/2018 11:09 PM
39	needs to be done now!!!	7/2/2018 9:32 AM
40	So Needed. Thank You!	7/2/2018 9:28 AM
41	need free right turn lane on Southbound Whitney Rd. to west bound US-30	7/2/2018 9:22 AM
42	Agree with stoplight. What would be the reason to remove the service road access? I think this is a good choice.	7/2/2018 9:10 AM
43	need more	7/2/2018 8:30 AM
44	Why is all this necessary" Fix the roads that have problems now! Isn't this all County?	7/2/2018 7:28 AM
45	Fix the roads we have Dell Range east is in need of repair. keep the service road. in the future it will probably be needed.	7/2/2018 7:24 AM
46	As a business owner of Big Al's located on 6526 HWY 30 the removal of access at Whitney and the Service Rd. is a big concern. We receive 3-5 Tractor trailer deliveries per week that will have problems with the dead en Service Rd. Please contact me anytime. Andy Vehar 304-220-2740 Big Al's Auto 307-637-8955	7/2/2018 7:15 AM
47	Suggest a one way East Bound on 30 Service Road from Whitney to connection at Hwy 30 to accommodate truck deliveries. Also Hinesley to Whitney Alignment needs to be looked at as Southbound Whitney traffic is hard to see.	7/2/2018 7:09 AM
48	I love the light because it will slow down most of the traffic. It would be nice to have it traffic controlled not timed control.	7/2/2018 7:03 AM
49	I like that the intersection will be closer to being perpendicular. Elimination of service road connection should help tremendously.	7/2/2018 6:59 AM
50	Not sure about removal of service road	7/1/2018 10:44 PM
51	This needs to happen.	7/1/2018 12:02 AM

52	Is a roundabout feasible here? I understand there's a bit of larger truck and trailer traffic but let's make this as efficient as possible. I'm not sure adding a traffic light is the best option. I have never had to wait more than a minute to cross the road.	6/30/2018 8:53 PM
53	This is such a dangerous intersection!! Please put a street light here!	6/30/2018 10:28 AM
54	We absolutely need a traffic light above all else at this intersection. It has grown to be an extremely dangerous area over the last three years we have lived here. Those driving highway 30 actually appear to speed up occasionally when individuals are trying to cross on white wy. It's out of control.	6/30/2018 7:12 AM
55	Traffic control is critical. It has become a real hazard at rush-hour and people shooting the gap to cross Highway 30 on Whitney.	6/29/2018 8:21 PM
56	Eliminate the islands and you might have a useful option.	6/29/2018 8:09 PM
57	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q7 Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Answered: 323 Skipped: 84



	DEFINITELY LIKE	LIKE	NO OPINION	DO NOT LIKE	DEFINITELY DO NOT LIKE	TOTAL	WEIGHTED AVERAGE
(no label)	22.29% 72	26.93% 87	6.19% 20	20.12% 65	24.46% 79	323	3.02

#	ANY ADDITIONAL COMMENTS?	DATE
1	Terrible idea at the bottom of a hill what happens when it is Ivey and snowy.	7/15/2018 10:51 PM
2	Poor design, traffic at current intersection with stop sign is optimal. Traffic can be decreased from this intersection if more northern roads, specifically Storey Blvd. and Four Mile Road. were made to be connected from College Dr. all the way through Whitney to Christensen Rd.	7/15/2018 12:46 PM
3	Yes!!!!	7/15/2018 6:07 AM
4	Hope it will cut down on north and south bound drivers who do not stop at all.	7/13/2018 10:47 PM
5	Not real fond of roundabouts anywhere!!	7/13/2018 8:17 PM
6	This is incompatible with BOTH current and future use of Dell Range. Dell Range is the primary route between I-80 Archer interchange (toward the east) and Cheyenne's primary retail area (Dell Range from College to Powderhouse). It is planned to be upgraded to 4 lanes. A roundabout in any capacity would fail to improve the intersection: 1. The gaps in traffic entering from Dell Range would be insufficient. 2. Traffic on Dell Range would be slowed even when no traffic is entering from Whitney. 3. Westbound traffic on Dell Range would be spread out instead of grouped, reducing access opportunity from side streets on Dell Range between Whitney and College. 4. A single lane roundabout would increase construction costs for widening Dell Range in the future. 5. A high proportion of through traffic on Dell Range would take the roundabout at higher than ideal speeds. Just like the one at Converse/Pershing/19th.	7/13/2018 7:50 PM
7	Round abouts are stupid why this state believes these work is beyond me.. just put in a light.	7/13/2018 2:27 PM
8	I don't see how this will be large enough to accommodate the larger trucks and trailers and semis that travel this stretch of road regularly. Trying to make a larger roundabout doesn't seem like an option either, as you would have to take away from residents property lines. It looks like another option would be to move the whole setup further north to enlarge the roundabout to a portion of the undeveloped land. I would imagine that would need to be purchased from the land owner, but it might be a better option than asking a property owner who has an established residence to give up portions of their property. I understand there is a need for something at this intersection. Do keep in mind, Dell Range gets incredibly icy during the winter months, with the wind and snow creating a sheet of ice that is very difficult to drive on going straight. I can't imagine it will be any easier trying to navigate the roundabout in it.	7/13/2018 10:54 AM

9	A stoplight would be a better option for this intersection. Too many people do not know how to properly use a roundabout which causes more confusion.	7/12/2018 1:32 PM
10	This would slow the traffic and control traffic flow	7/12/2018 8:15 AM
11	Why?! What would this help solve? Why is it necessary?	7/12/2018 8:01 AM
12	Make it a controlled intersection and expand Del Range from college to US 30	7/11/2018 9:10 PM
13	Would greatly slow down traffic on US 30 but would help the intersection flow better	7/11/2018 8:11 PM
14	Better than a light, but need to take into account large trailers, etc as was discussed in the meeting. Definitely one lane only.	7/11/2018 6:48 PM
15	Why does Whitney veer off to the west? I think it's necessary during busy times and as you build more houses.	7/11/2018 5:29 PM
16	I suggest a 4 way stop like on Ridge and Story. Also need a street light there it is really dark and and can't the the turn from Dell Range on to Whitney going south to US 30.	7/11/2018 3:25 PM
17	Not a good idea especially in the winter coming south off whitney....way to slick coming down the hill, you will see more accidents not less	7/11/2018 1:28 PM
18	Why signal at us 30 and roundabout at Del Range?	7/11/2018 1:04 PM
19	Not needed	7/11/2018 12:36 PM
20	People in this town are terrible at roundabouts. I've seen too many accidents at converse and pershing.	7/11/2018 11:11 AM
21	No reason for a round about in non complex intersection. This area that is going to see fast increased growth and traffic . Put a traffic light there and be done with it. Works now and when it gets busier in the future	7/11/2018 11:06 AM
22	double down on the hell no.	7/11/2018 10:55 AM
23	The drivers on Del Range are already going 45 mph, most would not slow down and I believe it would cause accidents. If they widened Del Range to include two turn lanes, both right and left at this intersection, I believe it would help.	7/11/2018 10:29 AM
24	Ruins traffic flow same at converse and Pershing	7/11/2018 10:09 AM
25	No one knows how to use a roundabout in this city as it is.	7/11/2018 9:47 AM
26	Roundabouts only work in civilized areas. Cheyanimals have the belief that when one enters a roundabout, they enter a time warp to a new dimension.	7/11/2018 8:33 AM
27	Should make a double for expansion of dell range as it is congested as well	7/11/2018 7:01 AM
28	We need lighting here as well. I wonder whether a traffic light would be better than a roundabout with for people approaching at 45 miles an hour.	7/11/2018 5:51 AM
29	I'll take the roundabout if it is well lit. Again, there have ben many accidents at this intersection as well. It's very difficult to see the turn from Dell Range on the southbound Whitney in the dark. I usually look for the single reflector pole and then slow down. We definitely need more lighting here.	7/11/2018 3:35 AM
30	Hard to negotiate a roundabout with a trailer, there are a lot of trailers being pulled. Need a traffic light	7/10/2018 2:58 PM
31	If is big enough for large motorhomes & Towvehicle	7/10/2018 2:54 PM
32	I think a stop light would be a much better solution.	7/10/2018 12:25 PM
33	You need to sit and watch traffic in the mornings and in the evenings to know that this is not a good solution. Along with the new houses at Whitney Ranch you will increase the amount of traffic accidents in the area. Also with the amount of traffic I think this will not work.	7/10/2018 10:38 AM

34	1) With today's stop light technology, road sensors and such signal lights can be programmed to delay changing or quickly change depending upon traffic coming and going during busiest times of the day. 2) After talking to someone who ran the intersection, lighting and a traffic signal would have helped in recognizing that there was an intersection there. 3) Cutting back on bushes on 4512 Whitney will also help reduce accidents and increase visability. 4) A Traffic Light will work better for increased traffic from Semi's. 5) A Traffic Light will work better for young and aged drivers and those who have large travel trailers and 5th wheel trailers (A Light is a must). 6) Important to keep Whitney straight as possible to not slow down the flow of increased traffic (straight definetely enhances visability). 7) Whitney should have a 5% grade for bicyclists, walkers and wheelchairs especially since commercial buildings will be placed on property from Whitney along DelRange. 8) Do not place a park between Whitney and the expanded 2400 homes, just asking for trouble with Kids crossing the road to get to park or walkway, someone will get ran over. 9) It will be much better in the long run to redo natural gas and oil line on existing path of Whitney, keeping Whitney straight, enhancing visability and lessoning the chances of children getting hurt crossing the road to get to a park or walkway. 10) Whitney should have all the utilities including fiber optic lines run for future expansion of technology.	7/9/2018 3:24 PM
35	i do not like. people drive too fast down whitney to approach a round about. needs to be a light. I do not like the road being closed that goes to foxglove, chickadee and buttecup. why can't there still be a road to access these three streets only. then after buttercup be a culdesec. then bring in a new road from dell range to storey/beckle. this would also alleviate traffic and the number of cars on whitney and the new whitney road. gives different access.	7/9/2018 12:14 PM
36	Traffic speeds need to be reduced for this option to be viable	7/8/2018 4:38 PM
37	Please post a picture of the rest of this idea...if you shift Whitney to the west, how far west and when does it go straight north again?	7/6/2018 11:41 PM
38	I like the roundabout idea as it slows traffic during congested periods.	7/6/2018 10:57 AM
39	Make plenty wide for trailers.	7/6/2018 7:37 AM
40	Should keep people from going 55 past my yard with my kids in the yard	7/5/2018 11:26 AM
41	Too dangerous considering the hill on the east	7/5/2018 7:55 AM
42	Please just use a stop light!!! Round abouts serve a good purpose in low speed residential areas, and where more that 4 directions of traffic meet.	7/5/2018 12:46 AM
43	Awesome idea. Slowing drivers down off the southbound Hill on Whitney would be a great safety improvement as well.	7/4/2018 9:52 AM
44	Roundabout or a traffic light	7/3/2018 9:22 PM
45	No roundabouts!! Please do a traffic signal. We have enough roundabouts that people do not know how to use.	7/3/2018 8:39 PM
46	This is a good alternative option and may reduce commercial traffic thoroughfare and keeping them to US 30 to Pershing / College Dr.	7/3/2018 6:18 PM
47	Single lane ok or needs traffic signal.	7/3/2018 5:59 PM
48	I love single lane roundabouts and find them extremely effective as long as they are large enough to accomodate long truck\camper combinations.	7/3/2018 3:57 PM
49	needs to be done even sooner!!!	7/2/2018 9:32 AM
50	Another useless roundabout Several accidents occur each month in town - not needed	7/2/2018 9:27 AM
51	But need to have overhead street lights. to dark at night at this intersection.	7/2/2018 9:22 AM
52	I am very concerned about the roundabout during the winter at the bottom of a very steep hill. Also having a single lane roundabout seems like it would back up traffic quite a bit dew Dell Range. Is there consideration of Dell Range being widened to 4-lanes at anytime?	7/2/2018 9:12 AM
53	Cheap way of not putting in a light, which would be better at the bottom of a hill. To many assumptions with this plan - assumes everyone will slow down and yield. In the long run a light at what becomes a heavily used intersection will be cheaper than the liability of poor roadway design.	7/2/2018 9:04 AM
54	Would like to see RT turn lane that does not use the roundabout on N. Whitney to D.R. and Del range to S. Whitney road to remove a significant amount of traffic from the circle at peak use times.	7/2/2018 8:46 AM

55	Would like to see Rt turn lane that does not use the Roundabout on N. Whitney to D.R. and Del Range to S. Whitney road to remove a significant amount of traffic from the circle at peak use times.	7/2/2018 8:42 AM
56	Actually if you get it in place by the time I head home from here tonight, I will be delighted. Reduce speed to 40mphn on HWY 30 ASAP from Cheyenne Hills church to Whispering Chase	7/2/2018 8:37 AM
57	Definitely Do Not Like- Semi Traffic alone would destroy this! Definitely Like - If it is built to handle this kind of traffic!	7/2/2018 8:32 AM
58	This whole project should look the future as this will result in a large traffic increase as more travelers find they can circumvent town from 85 via Powderhouse (via N Star) to Iron to Whitney. With traffic already out of control this likely should be 4-lanes or at lest one fulltime deputy should be assigned.	7/2/2018 7:54 AM
59	There is not need!	7/2/2018 7:28 AM
60	Should move intersection to the east to accommodate a double lane both east and west bound DelRange as extra room for truck traffic will be needed.	7/2/2018 7:10 AM
61	It would help to have a flashing light so people can see the roundabout before they actually get to the roundabout	7/2/2018 7:04 AM
62	Definitely need roadway lighting.	7/2/2018 7:00 AM
63	No on a roundabout!	7/1/2018 9:24 AM
64	No roundabout! Please No!!!!! These are not effective traffic control measures in Cheyenne. If you do anything, please do a four way stop or a traffic signal. A roundabout would be detrimental to the traffic flow and area.	7/1/2018 12:04 AM
65	Yes!!!!	6/30/2018 8:54 PM
66	Putting in a roundabout where there isn't a problem is a waste of money in construction costs as well as snow maintenance. Why screw things up with an unnecessary roundabout? Does Cheyenne have to follow Colorado's stupid ideas just because we are forced to have a Metropolitan Planning Commission?	6/29/2018 8:12 PM
67	Roundabouts are dumb, amd useless at that specific section of road. Just put a stoplight	6/29/2018 3:12 PM
68	I have witnessed many people RUN the stop sign there. This eliminates that problem greatly.	6/29/2018 2:40 PM
69	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q8 Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Answered: 87 Skipped: 320

#	RESPONSES	DATE
1	Traffic in this area would be significantly reduced with a connection of Storey Blvd and Four Mile Rd through Whitney all the way to Christensen RD. As well as further reductions when Christensen exit/overpass project is completed from Interstate 80. Funds would be better spent with more effective results with the development of these alternative routes.	7/15/2018 12:50 PM
2	I also like how you have drawn up Whitney Road up the hill from Dell Range---the curve should provide a gentler grade and hopefully be safer.	7/15/2018 6:08 AM
3	I said what I came to say... Big Al's has done so much for Cheyenne, etc, leave the service road as it is. Thank you	7/13/2018 8:55 PM
4	Add a stop light ar Del Range and Highway 30	7/13/2018 2:50 PM
5	Whitney needs fixed all the way out to iron mountain. Needs to be widened all the way	7/13/2018 2:27 PM
6	Do not do the del range highway 30 shut down. Terrible decision	7/13/2018 11:36 AM
7	I think visiting with the businesses and residents of the areas that will be affected the most by changes would be a huge step in the right direction. I agree there needs to be something done, as the way Whitney sits right now is not very safe. At the very least, Whitney needs to be widened. I'm having a hard time understanding how all the funding for this project has already been approved without having a final plan approval. I certainly hope this meeting was not just a way to say the public was asked to be involved and these are actually the final designs that have already been approved. I'm not the only person or business that would like to have a discussion about the service road access. I ask that you at least visit with us before making any final decisions. Thank you.	7/13/2018 11:01 AM
8	Definitely a stoplight at whitney road and highway 30!	7/12/2018 10:36 PM
9	No	7/12/2018 9:57 PM
10	To prepare for future growth, please expand to four lanes (two lanes going north and south bound). Additionally, Dell range should be expanded to four lanes.	7/12/2018 4:05 PM
11	I do not agree with changing the speed limit on Whitney to 30 MPH. This seems more dangerous, as most people will not abide by this. If Dell range can be 40 MPH, why can a HWY outside of town not be. For those of us who drive this every day, the speed limit should be kept the same.	7/12/2018 1:34 PM
12	Something needs to be done for both highway 30/Whitney and dellrange/Whitney intersections before serious injuries start occurring from the growing traffic and pedestrian traffic	7/12/2018 8:18 AM
13	Light at Whitney and US30	7/12/2018 7:11 AM
14	Make the intersections at both Del Range and US 30: 4 lane (with turn lane) E-W and Whitney 2 Lane (with turn lane) N-S and make them traditional controlled intersections.	7/11/2018 9:12 PM
15	Keep the country feel. do not make this a thorough Fante in a city	7/11/2018 8:41 PM
16	Widen Whitney so it has right and left turn lanes for all lanes and sides of US 30	7/11/2018 8:12 PM
17	I do not like the idea of Whitney going through the neighborhood to the west. I would rather keep tgevsteep grade than have to drive through a neighborhood. I don't think the speed needs to decrease. 45 is reasonable. I think the reason people want to lower it is because people drive 55-60. I would prefer the proposed neighborhood at dell range and Whitney traffic dump into Dell Range rather than Whitney. This would lead to less traffic on the roundabout. With the increased traffic from Wood's landing Iton Mountain and possible Storey throughway, there will already be a marked increase in traffic.	7/11/2018 6:53 PM

#	RESPONSES	DATE
18	A sheriff on the road on occasion would be nice to see. People drive 60 MPH at times on the road. I know that the sherriff's Office is not doing the HIVE like CPD, but it sure would be great. You also need to keep in mind that those of us on North Whitney would not have any way to get to Dell Range if you take the entire road down (for example Sundance loop). We are land locked into Whitney. And not that the only connection is powerdhouse off iron mtn and that takes us way out of our way. I know we are one household, but just food for thought.	7/11/2018 5:32 PM
19	The intersection at whitney and dell range needs controlled but you need to consider the winter driving conditions. The hill north up whitney is luke a skating rink. Add a round a bout and you are going to have traffic backed up daily.	7/11/2018 1:30 PM
20	Get the project out to bid and started before the costs go up	7/11/2018 11:25 AM
21	Think about having a timed traffic light at 30/Whitney and then a busy roundabout right after at Dell Range. The congestion would back up and impact 30/Whitney almost immediately after its built.	7/11/2018 11:11 AM
22	Where can I find out what is going on for US39 and Dell Range? Starrwy@aol.com	7/11/2018 11:07 AM
23	We can be guaranteed that if the public don't like something, then that is the route the planners take under the guise of safety and concern for its citizens. The 12th street / sun valley drive worse and most criticized option was the one picked.	7/11/2018 10:57 AM
24	I believe if Whitney Road between Del Range and US30 was wider it would cause less congestion. The mailboxes are super close to the street and when the mailman is delivering mail to them it cause people to serve into the opposite lane to avoid him. This results in everyone in that lane having to slam on their brakes and has caused a least one accident I'm aware of.	7/11/2018 10:33 AM
25	Connect storey to beckle and run 4 lane two west two east on dell range to 30	7/11/2018 10:10 AM
26	Can we please just get the damn road fixed so it doesn't feel like I'm driving over railroad tracks the whole time? You guys have all these massive plans that serve no purpose at this time and fail to realize how horrible the road itself is. Fix the small shit first and show you actually care about the road and residents before shutting it down to add more of a waste and more stuff that will need repair, but doesn't get it.	7/11/2018 9:49 AM
27	With the residential now mixed with commercial traffic restrictions need to be added. No semi trucks, lower speeds, more control on US30. Reduces noise and increases safety	7/11/2018 8:49 AM
28	While these all seem like fine ideas on paper, one must remember this construction is taking place in Cheyenne, WY. The Cheyanimal is arguably the worst driver on the planet, most likely due to limited brain capacity and sense of entitlement.	7/11/2018 8:34 AM
29	Mainly feel the problem is not wide enough road between us 30 and Dell range on whitney, and the traffic at those intersections. Is it not possible to put in a roundabout along the us30 intersection?	7/11/2018 8:06 AM
30	Will there be flashing signs and or rivets in the road to just add extra visibility to the stop light at Whitney and 30? On south Greeley, as you head north, there is a flashing sign to warn/inform of the light next to me diesel. I would love to see that as you head (coming from the area of 30 with Reese and Cristensen road). As a parent of a soon to be teen driver, I would love to also see rivets (wording?) in the road as you approach the light just to add extra safety. I'm thinking of those creases in the road along a highway shoulder that alert you if you go to far over. Some towns put them in the lane as you approach major intersections. This will be a high speed intersection and I worry about the unavoidable running of the light. What all can we do to minimize that? Thanks	7/11/2018 7:50 AM
31	Widen the stretch of Whitney road between highway 30 and dell range.	7/11/2018 7:34 AM
32	Please install a light at the intersection of US 30 and Whitney. I can't recall how many times I've nearly gotten hit by a people who turn at the same time that I do.	7/11/2018 7:23 AM
33	I would like to see the road widened and some landscaping put in. When I go to the Denver suburbs, their streets are lined with beautiful trees and landscaping. Here in Cheyenne that doesn't happen. All we get is some prairie grass and weeds. The City and County can do more to improve the aesthetics of the area. What they need to do is quit pushing their pet projects and do some stuff that will actually be enjoyed by more of the citizens.	7/11/2018 3:37 AM
34	Need to definitely wide the lanes of Whitney rd, slow down traffic, add street lights, and walking/bike paths. Bottom of Whitney hill needs a traffic light. Punch more roads through to the west	7/10/2018 3:00 PM

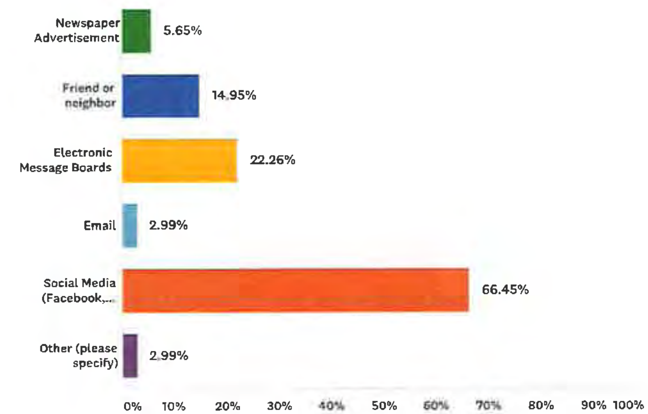
35	The intersections at US 30 & Whitney Road and Whitney Road & Dell Range need something done to them need if only temporarily, these 2 intersections are a Nightmare! Also, on your overhead shot of houses on foxglove, the house with the long driveway to A RV garage is our property you have 3 other peoples names by it.	7/10/2018 2:57 PM
36	I feel that a roundabout at the intersection of Whitney and Dell Range would be a very bad idea. I would rather see a traffic signal instead.	7/9/2018 9:52 PM
37	I have received comments lately which indicate a desire for a stop light.	7/9/2018 9:18 PM
38	Connect Whitney and Storey Blvd.	7/9/2018 8:23 PM
39	See prior comments regarding Whitney and Del Range Intersection and going North.	7/9/2018 3:28 PM
40	Make whitney road one speed limit instead of going back and forth between two different speeds.	7/9/2018 3:07 PM
41	need different access points to fox run and other areas, not just one road. leave whitney two lanes for the first three streets, at a second road to approach to beckle/storey	7/9/2018 12:15 PM
42	A traffic light is needed at Whitney and highway 30. It is so dangerous. Lower speed limit on highway 30!!	7/8/2018 10:12 PM
43	Continue the road improvements beyond beckle rd	7/8/2018 8:07 PM
44	Creating a pass thru from Storey through College would help alleviate a lot of traffic on Whitney/Dell Range	7/8/2018 4:40 PM
45	I would like to see Whitney connected to College via Storey/Beckle.	7/8/2018 8:07 AM
46	Traffic light at Whitney and dell range	7/7/2018 7:58 AM
47	Finish the connection between the new storey and the old summit drive	7/6/2018 11:41 PM
48	Cul d sac Dell Range and make all traffic drop down to US 30 at a light.	7/5/2018 6:58 PM
49	The intersections at Whitney and U.S.highway 30 and the intersection at Whitney and Del Range are extremely congested and dangerous. I have seen several accidents in both of these intersections. I think the only real solution is to add stop lights! Especially if you are planning in adding turning lanes!	7/5/2018 1:22 PM
50	Move Dell range south in the right of way planned not north into my yard as proposed	7/5/2018 11:27 AM
51	I think the county should look at connecting some of the roads that would make it easier to get around the area. Like take Whitney all the way through to 85. Connect Storey, connect Four Mile, connect Riding Club, connect Converse and connect Powderhouse. I believe that by connecting these roads it would cut down on traffic and congestion in several other locations.	7/5/2018 8:41 AM
52	A fair amount of traffic could be diverted to Pershing if the quality of that road was improved, which should be in the plan along with the Christiansen overpass project. Once that artery is open, less traffic will be using these 2 intersections, and this will likely be irrelevant.	7/5/2018 12:49 AM
53	Please no roundabout.	7/4/2018 6:22 PM
54	Thank you for collecting data from the community. This is the second survey I've completed and appreciate being able to be involved. Great public involvement!	7/4/2018 9:53 AM
55	I think a stop light is better then a round about due to the commercial traffic and those of us that haul trailers and horse trailers down that corridor,seems more like a nuisance with a round about	7/4/2018 8:48 AM
56	Would like to see Storey connected	7/3/2018 9:23 PM
57	No roundabouts, they are ridiculous!	7/3/2018 8:57 PM
58	Keep in mind that the big hill on Whitney just north of Dell Range is tricky for going up and coming down (traveling south) in the winter.	7/3/2018 8:53 PM
59	Increase speed limit on whitney. Del range and perishing have higher limits	7/3/2018 7:48 PM
60	Flare out intersection from Whitney Rd to residential streets for easier right turns. Especially at Four Mile Rd.	7/3/2018 6:20 PM
61	I think you guys are doing a great job collecting information and presenting it back to community. It's unfortunate that the city did such a poor job designing the roundabout on Pershing as it has given a lot of people a bad taste in regards to them. If done right this corridor will be a great section, moving forward into the next couple of decades.	7/3/2018 4:01 PM

62	Leave the road alone!! You're going to ruin people's properties and livelyhoods who have lived in these areas for decades. City planners and engineers are too lazy to actually plan and execute a proper design that will not create any issues for the residents around this road. Maybe, just maybe, instead of creating issues with a road that is fine, fix problems that need dealt with right now. Just a thought.	7/3/2018 1:49 PM
63	Prefer traffic light over roundabout.	7/3/2018 9:50 AM
64	Raise the speed limit from Del Range to Iron Mountain on Whitney Rd.	7/2/2018 11:10 PM
65	Safety lighting near intersections	7/2/2018 9:30 PM
66	Street lighting at Dell Range and Whitney.	7/2/2018 9:21 PM
67	Finish Storey Blvd form College Drive to Whitney Rd. before starting construction on Whitney Rd. so traffic has another way in and out of Whitney Rd.	7/2/2018 9:23 AM
68	If moving/improving Whitney is years down the road, I am very concerned about the roundabout being placed before the hill on Whitney is reduced. This would be very dangerous during the winter.	7/2/2018 9:14 AM
69	Our family is concerned about the well-being of the prairie dog and badger population currently inhabiting the Whitney Rd corridor. Is there a plan in place to humanely relocate what could be considered an established ecosystem? Presumably, Fox glove, chickadee, and Buttercup roads will continue on into this ecosystem once construction begins - Again, is anything being done to protect such a valuable species who according to the prairie dog coalition, currently only occupy one percent of their original range? Prairie dogs ensure seed diversity of the prairie and grasslands upon which we reside, simply ignoring their value and destroying their habitats will push endangered species like the Black Footed Ferret into extinction. Can we relocate to public Lands? Perhaps Parks and Rec can help with green space or nature persevere so that our children will have nature to appreciate in the future.	7/2/2018 8:59 AM
70	additional access for Storie -4-mile- Iron Mt. will relieve much of traffic on Whitney	7/2/2018 8:46 AM
71	1. Speed Bumps 2. Greatly increased law enforcement patrols. 3. Open up this route to oil traffic.	7/2/2018 7:55 AM
72	Instead of moving Whitney Rd. make them move their pipeline. A million dollars to move on is worth it.	7/2/2018 7:25 AM
73	Should put proposed plans out for review before final meetings, the changes that have been put in since the last meeting are extreme.	7/2/2018 7:10 AM
74	Connect story Blvd	7/2/2018 1:09 AM
75	A roundabout at Whitney and US 30 might work also, although east bound traffic would lose momentum for the hill which could be difficult when icy	7/1/2018 10:46 PM
76	Uniformity is key. And roundabouts are a great option versus traffic lights.	6/30/2018 8:55 PM
77	I especially like the paving of Storey and connecting over to Whitney.	6/30/2018 5:12 PM
78	Why do we keep taking advice from people who don't live in the area. No one likes round abouts so stop putting them in my city. Areas around these roundabouts suffer because of them.	6/30/2018 12:47 PM
79	Anything that would slow traffic at the Whitney dell range and Whitney highway30 intersections would be an improvement. Lights or round about. The speed of drivers and the confusion of who is turning onto those two major roads is nuts	6/30/2018 7:13 AM
80	4 lane all the way! North, south, east, and west! Do it right the first time and don't worry about "fixing" this issue again in 5 years!	6/29/2018 10:12 PM
81	Repair the roads that need it instead of spending tax dollars on dumb ideas like more roundabouts. For instance Dell Range from College to Whitney could definitely stand resurfacing, as could East Pershing from Christianson over the railroad ro the east.	6/29/2018 8:16 PM
82	Thank you!	6/29/2018 7:24 PM

83	There has been talk of completing the connection of Storey Blvd (between Summit and Beckle) once the land to the south is developed. Connecting Storey now instead of later will give residents an alternative route and decrease traffic at the Whitney and Dell Range intersection. Widening Whitney without adding extra travel lanes does nothing to alleviate traffic congestion, and as a landowner on Whitney I am opposed to that idea. Instead, provide an alternative route by completing Storey that not only eases congestion but also provides better fire and emergency access to subdivisions off of Whitney.	6/29/2018 7:05 PM
84	Bicycle lanes! Please!!	6/29/2018 5:17 PM
85	It would be great if the sidewalk went all the way up Whitney.	6/29/2018 4:13 PM
86	Roundabouts are dumb and you're pissing off a lot of us that already live on this road, espcially those of us who live directly off Whitney	6/29/2018 3:13 PM
87	Please punch through Storey. It would relieve so much pressure on Whitney and Del Range.	6/29/2018 2:14 PM

Q9 How did you find out about this meeting (Please check all that apply)?

Answered: 301 Skipped: 106



ANSWER CHOICES	RESPONSES	
Newspaper Advertisement (1)	5.65%	17
Friend or neighbor (2)	14.95%	45
Electronic Message Boards (3)	22.26%	67
Email (4)	2.99%	9
Social Media (Facebook, etc.) (5)	66.45%	200
Other (please specify) (6)	2.99%	9
Total Respondents: 301		

BASIC STATISTICS

Minimum	Maximum	Median	Mean	Standard Deviation
1.00	6.00	5.00	4.03	1.35

#	OTHER (PLEASE SPECIFY)	DATE
1	Richard Johnson	7/15/2018 8:11 PM
2	I	7/15/2018 6:16 PM
3	Richard Johnson	7/15/2018 1:53 PM
4	Local News Story	7/13/2018 7:52 PM
5	Facebook	7/12/2018 7:59 AM
6	I	7/9/2018 2:25 PM

7	HOA	7/6/2018 10:00 PM
8	CAC Member	7/2/2018 7:04 AM
9	Signs along Dell Range	6/29/2018 8:16 PM

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☐ Home owner in the area
- ☒ Employee in the area
- ☐ Renter in the area
- ☐ Property Owner in the area
- ☐ Business owner in the area
- ☒ Route user
- ☐ Commercial Property owner
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Jessie Parker
Address: 6788 Grace Rd
Phone:
Email:

Please send requirements for traffic lights on state Rds

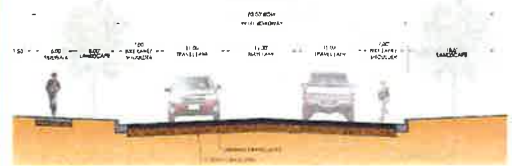
Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

4-lane road

(Please Turn Over)



Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

4 lane

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- ☐ Newspaper Advertisement
- ☐ Email
- ☐ Friend or neighbor
- ☐ Social Media (Facebook, etc.)
- ☐ Electronic Message Boards
- ☐ Other__________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**.

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Janine Ramage
Address: 7119 Julia Rd
Phone: 307-620-3667
Email:

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☒	☐

Any additional comments?

(Please Turn Over)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

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Whitney Road Corridor Study Comment Sheet

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- [ ] Renter in the area
- [ ] Business owner in the area
- [ ] Commercial Property owner
- [ ] Employee in the area
- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Mike Cowley
Address: 5610 Iron Mtn. Rd
Phone: 307-630-8559
Email: murphycanyonmc@aol.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

(Please Turn Over)

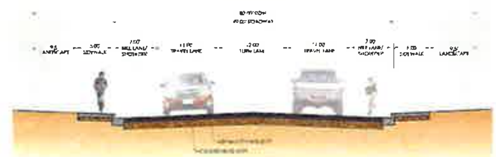
DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

U.S.30 TO DELL RANGE BLVD
(LOOKING NORTH)



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

I like that the intersection will be closer to being perpendicular. Elimination of Service Road connection should help tremendously.

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

Definitely need roadway lighting.

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

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- [ ] Friend or neighbor
- [x] Electronic Message Boards
- [ ] Email
- [ ] Social Media (Facebook etc.)
- [ ] Other__________ (Please specify)

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Whitney Road Corridor Study Comment Sheet

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Barbara Boyd + Jim Boyd
Address: 4608 Van Buren Ave
Phone: 816-716-8722
Email: blboyd7@msn.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☒	☐

Any additional comments?
Pedestrian section is too close to the road

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?
I love the light because it will slow down most of the traffic. It would be nice to have it traffic controled and not timed control

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?
It would help to have a flashing light so people can see the round about before they actually get to the roundabout

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- ☐ Electronic Message Boards
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- ☒ Other CAC member (Please specify)

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- [ ] Employee in the area
- [x] Property Owner in the area
- [x] Route user
- [ ] Other ________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Dave Rose
Address: 6530 US 30
Phone: 307-630-8965
Email: RBIGALS01@aol.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD (LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

U.S.30 TO DELL RANGE BLVD (LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like ☐ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Suggest a one way East Bound on 30 Service Road from Whitney to connection at Hwy 30 to accomodate truck deliveries

Also Hinesley to Whitney Allignment needs to be looked at as South bound whitney traffic is hard to see

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

Should move intersection to the east to accomodate a double lane both east + west bound del range as extra room for truck trailer traffic will be needed

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Should put proposed plans out for review before final meetings, the changes that have been put in since the last meeting are extreme.

How did you find out about this meeting (Please check all that apply)?

- [x] Newspaper Advertisement
- [x] Friend or neighbor
- [x] Electronic Message Boards
- [ ] Email
- [ ] Social Media (Facebook, etc.)
- [ ] Other ________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☐ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: ______
Address: ______
Phone: ______
Email: ______

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

______

(Please Turn Over)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

______

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

______

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	X

Any additional comments?

As a business owner of Big Al's located on 6556 Hwy 30 the Removal of access at Whitney & the Service Rd is a big Concern. We Receive 3-5 Tractor trailer deliveries per week that will have Problems with the dirt Rd Service Rd. Please Contact Me any time
Andy Vehar 307-220-2740
Big Al's Auto 307 637 8955

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☐

Any additional comments?

______

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

______

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- [ ] Business owner in the area
- [ ] Route user
- [ ] Commercial Property owner
- [ ] Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: [illegible]
Address: 4501 [illegible] Ct
Phone: 307 632 1665
Email:

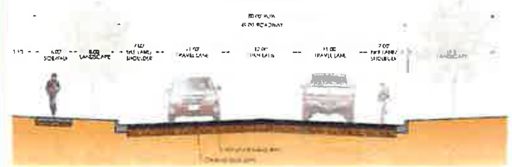
Please rate the Recommended Roadway Typical Section Whitney Road at Beckie Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☑	☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

U.S.30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☑	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☑	☑	☐	☐	☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- [x] Friend or neighbor
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Whitney Road Corridor Study Comment Sheet

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- [ ] Renter in the area
- [ ] Property Owner in the area
- [ ] Business owner in the area
- [ ] Route user
- [ ] Commercial Property owner
- [ ] Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Rod Stone

Address: 4011 Summit DR Chey 82007

Phone: 634-6617

Email:

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Whitney Road is fine the way it is. This is not needed. A lot of money and headaks for nothing

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments? What is wrong with Whitney Rd. It is in the County most people Ride Horses not bikes

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments? You can make a bike path however they will Ride their bike's on the Road.

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

Fix the Roads we have Dell Range East is in need of of Repair. Keep the service Road. In the future it will probably be needed.

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like ☐ Like ☐ No Opinion ☒ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Instead of moving Whitney Rd make them move there pipeline. It million dollars to move one no worth it.

How did you find out about this meeting (Please check all that apply)?

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- [ ] Friend or neighbor
- [ ] Social Media (Facebook, etc)
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6-28-18

Whitney Road Corridor Study Comment Sheet

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- [ ] Business owner in the area
- [ ] Commercial Property owner
- [ ] Employee in the area
- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Joyce Stone
Address: 4411 Summit Dr
Phone: 634-6017
Email:

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	X

Any additional comments?
Storey Blvd to Beckle Rd does not exist. Too much ^private^ property involved.

(Please Turn Over)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	X

Any additional comments?
No Need for bigger Rd. Too much traffic. Is this for people who live there or others to pass thru?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	X	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	X

Any additional comments?
Why is all this necessary? Fix the roads that have problems now! Isn't this all County?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	X

Any additional comments?
There is no need!

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- [ ] Friend or neighbor
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Whitney Road Corridor Study Comment Sheet

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- [ ] Commercial Property owner
- [ ] Employee in the area
- [x] Property Owner in the area
- [x] Route user
- [ ] Other__________ (Please specify)

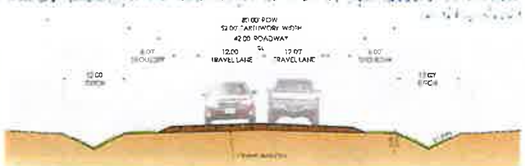
Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Ellen Southwell

Address:

Phone:

Email: Jacedash@yahoo.com



Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

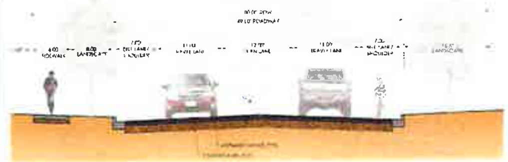
Definitely Like ☐ Like ☐ No Opinion ☒ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

I believe given the bicycle traffic a bike lane should be included.

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



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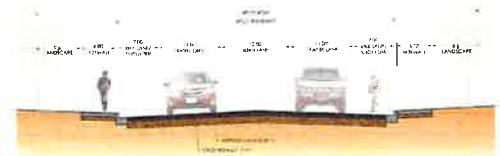
Definitely Like ☒ Like ☒ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

pedestrian is a waste as no true country person walks anywhere. landscape is a waste, causes drifts, causes visual obstructions

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)



Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☒

Any additional comments?

landscaping the prairie wastes resources and landscaping roads causes drifts + obstructions

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like ☐ Like ☐ No Opinion ☒ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like ☒ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

This whole project should look to the future as this will result in a large traffic increase as more travelers find they can circumvent town from 85 via powderhouse (via HStar) to iron mtn to whitney.

With traffic already out of control this likely should be 4 lanes or at least one fulltime deputy should be assigned

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

1. Speed bumps
2. Greatly increased law enforcement patrols
3. Open up this route to oil traffic.

How did you find out about this meeting (Please check all that apply)?

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☒ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: ______________________

Address: ______________________

Phone: ______________________

Email: ______________________

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

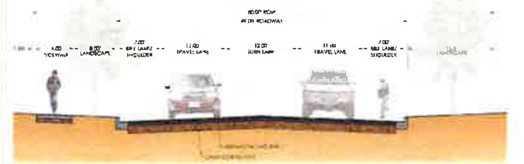
Any additional comments?

____

____

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

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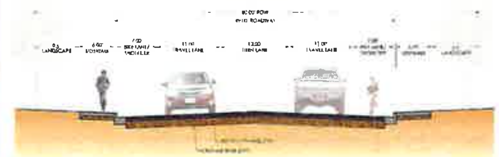
U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

____

____

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

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(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☒	☐	☐

Any additional comments?

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Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- ☐ Business owner in the area
- ☐ Route user
- ☐ Commercial Property owner
- ☒ Other *Pipeline - Suncor* (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: *Dillon Ohit - Suncor*
Address: *1715 Fleischli Pkwy, Cheyenne 82001*
Phone: *303 549-8003*
Email: *dohit@suncor.com*

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like ☐ Like ☐ No Opinion ☒ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

(Please Turn Over)

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Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☒ Definitely Do Not Like ☐

Any additional comments?

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Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like ☐

Any additional comments?

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- [x] Employee in the area
- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Buddy Tennant
Address: 1550 Rio Verde Circle
Phone: 970 834 1036
Email: buddy_tennant@yahoo.com

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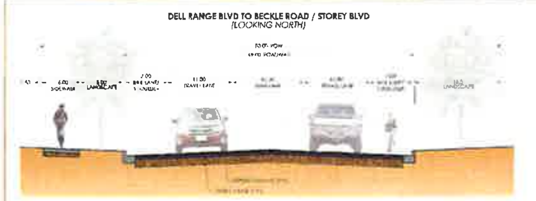
Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

needs to be wider

(Please Turn Over)



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☐	☒	☐	☐	☐

Any additional comments?

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☒	☐	☐

Any additional comments?

need more data

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

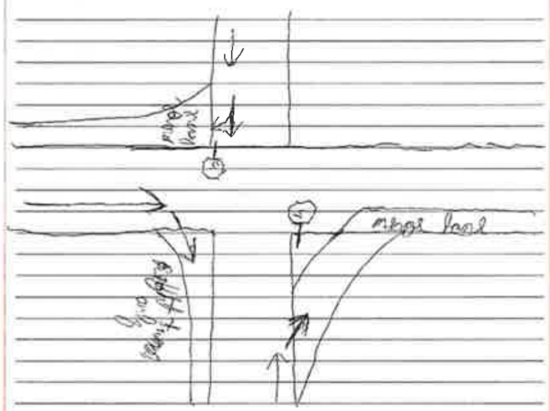
Recommended Alternative Whitney Road at Dell Range Blvd: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☒

Any additional comments?

Semi Traffic alone would destroy this.
If it is built to handle this kind of traffic!

Do you have any additional ideas, information, or other comments that you would like to provide at this time?



How did you find out about this meeting (Please check all that apply)?

- [ ] Newspaper Advertisement
- [ ] Friend or neighbor
- [ ] Electronic Message Boards
- [ ] Email
- [x] Social Media (Facebook, etc.)
- [ ] Other________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by July 10, 2018

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: David & Mara Funk
Address: 6515 Foxglove
Phone: 635 0495
Email: marafunk70@gmail.com

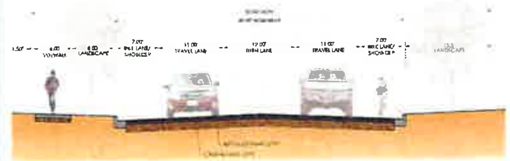
Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

U S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

Actually if you get it in place by the time I head home from here tonight, I will be delighted ☺

Reduce speed to 40 mph on Hwy 30 ASAP from Cheyenne Hills church to Whispering Chase

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- ☑ Property Owner in the area
- ☐ Business owner in the area
- ☐ Route user
- ☐ Commercial Property owner
- ☐ Other_________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: __________

Address: __________

Phone: __________

Email: __________

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

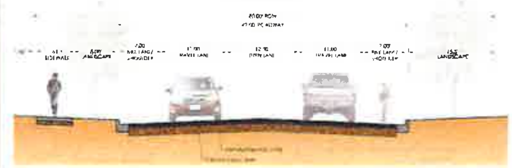
Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

WILL THIS ACCOMMODATE FUTURE EXTENSION TO IRON MOUNTAIN TO THE NORTH ?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- [ ] Business owner in the area
- [x] Route user
- [ ] Commercial Property owner
- [ ] Other ______ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Judd Eifealdt
Address: 6770 Whistler Dr
Phone: 307-320-5685
Email: jfsrentn61@gmail.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☒	☐	☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
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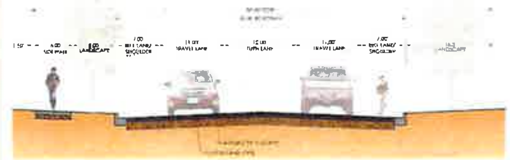

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

U.S.30 TO DELL RANGE BLVD
(LOOKING NORTH)

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☒	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☒	☐

Any additional comments?

Would like to see Rt turn lane that does not use the Round about on N. Whitney to D.R. and Del range to S. Whitney road to remove a significant amount of traffic from the circle at peak use times.

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

additional access for store - Yonke - Tren Ml. will relieve much of traffic on Whitney.

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- [ ] Friend or neighbor
- [ ] Social Media (Facebook, etc.)
- [x] Electronic Message Boards
- [ ] Other ______ (Please specify)

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- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other Concerned community member (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Cody Fournier (Contact Information Only)
Address: 3351 Belvin Ave
Phone: 307 630 2060
Email: [illegible]@hotmail.com

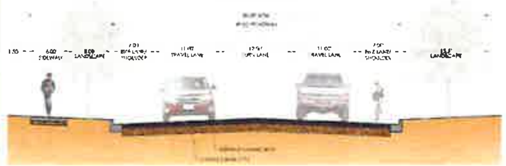
Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD (LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

U.S. 30 TO DELL RANGE BLVD (LOOKING NORTH)

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30. "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Our family is concerned about the continuation of the prairie dog population currently inhabiting the Whitney Rd corridor. Is there a plan in place to humanely relocate what could be considered an established ecosystem? Presumably, Foxes, [illegible], and [illegible] will continue on with this ecosystem once construction begins — Again, is anything being done to protect such a valuable species who, according to the prairie dog coalition, currently only occupy one percent of their original range? Prairie dogs ensure biodiversity of the prairie and grasslands upon which we reside, simply ignoring their value and destroying their habitats (with endangered species like the black footed ferret) into extinction. Can we relocate to public lands? Perhaps Parks and Rec can help build green space or nature preserves so that our children will have some nature to appreciate in the future.

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- ☐ Email
- ☒ Social Media (Facebook, etc.)
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- [ ] Employee in the area
- [ ] Renter in the area
- [ ] Property Owner in the area
- [ ] Business owner in the area
- [ ] Route user
- [ ] Commercial Property owner
- [ ] Other _________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: KERRYJo & Mike Stephan
Address: 9555 Crystal Mountain Rd
Phone: 510 326 3457
Email: mikerryj@pacbell.net

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

(Please Turn Over)

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☑	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☒	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

Cheap way of not putting in a light, which would be better at the bottom of a hill. To many assumptions with this plan - assumes everyone will slow down and yield. IN THE LONG RUN A LIGHT AT WHAT BECOMES A HEAVILY USED INTERSECTION WILL BE CHEAPER THAN THE LIABILITY OF POOR ROUNDABOUT DESIGN

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- [ ] Newspaper Advertisement
- [ ] Email
- [ ] Friend or neighbor
- [ ] Social Media (Facebook, etc)
- [x] Electronic Message Boards
- [ ] Other _________ (Please specify)

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- [ ] Business owner in the area
- [ ] Commercial Property owner
- [ ] Employee in the area
- [X] Property Owner in the area
- [ ] Route user
- [ ] Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Mason Seeley-Mantz

Address: 7099 Say Kelly Rd

Phone: 307-421-5927

Email: Seeleymj@hotmail.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like ☐ | Like ☐ | No Opinion ☒ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

I think their might as well be a bike lane OR sidewalk all the way through Whitney.

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD (LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like ☐ | Like ☒ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

I don't know if a turning lane is necessary, but probably is if the development would be like Saddle Ridge

U S 30 TO DELL RANGE BLVD (LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U S 30 to Dell Range Blvd (Looking North) as shown above

Definitely Like ☐ | Like ☒ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

"Realign" Whitney Road at U S Highway 30

Recommended Alternative Whitney Road at U.S 30: "Realign" Whitney Road at U S Highway 30 and remove U S 30 Service Road connection to Whitney Road

Definitely Like ☐ | Like ☒ | No Opinion ☐ | Do Not Like ☐ | Definitely Do Not Like ☐

Any additional comments?

Agree with stoplight. What would be the reason to remove the service road access

I think this is a good choice

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd : Single Lane Roundabout

Definitely Like ☐ | Like ☐ | No Opinion ☐ | Do Not Like ☒ | Definitely Do Not Like ☐

Any additional comments?

I am very concerned about the roundabout during the winter at the bottom of a very steep hill. Also having a single lane roundabout ~~[illegible]~~ seems like it would back up traffic quite a bit down Dell Range.

Is there consideration of Dell Range being widened to 4 lanes at anytime?

Do you have any additional ideas, information or other comments that you would like to provide at this time?

If moving/improving Whitney is years down the road, I am very concerned about the roundabout being placed before the hill on Whitney is fixed. This would be very dangerous during the winter. ~~[illegible]~~

How did you find out about this meeting (Please check all that apply)?

- [ ] Newspaper Advertisement
- [ ] Friend or neighbor
- [X] Electronic Message Boards
- [ ] Email
- [ ] Social Media (Facebook, etc.)
- [ ] Other__________ (Please specify)

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- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Mike Lujan
Address: 6751 Sox Kelly Rd Cheyenn WY 82009
Phone: 307-630-3922
Email: lujanml14@hotmail.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?
no side walks or bike paths

(Please Turn Over)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?
but need side walk on both sides

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?
but side walks are not [illegible]

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?
need [illegible] right turn lane on South bound Whitney Rd to west bound US 30

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?
but need to have over head street lights. To dark at night at the [illegible]

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

Finish Storey Blvd from Collar Drive to Whitney Rd before starting construction on Whitney Rd, so traffic has another way in and out of Whitney Rd

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- ☒ Electronic Message Boards
- ☐ Email
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- [ ] Property Owner in the area
- [ ] Route user
- [ ] Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Dennis Wiles
Address: 6535 E 4 Mile Rd
Phone: 307-421-4118
Email: murphyspleasants@gmail.com

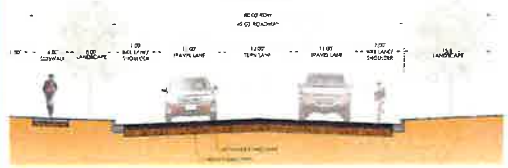
Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd. (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

U.S. 30 TO DELL RANGE BLVD
(LOOKING NORTH)

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

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Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

Another useless Roundabout
Several accidents occur each month
in town — Not needed

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

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- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Angi Bruce
Address: 6615 Wilderness Trail
Phone: # 307-287-0373
Email:

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

☑ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments? Love

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD (LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

☑ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

U.S 30 TO DELL RANGE BLVD (LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

☑ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

☑ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments? So needed, thank you!

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

☑ Definitely Like ☐ Like ☐ No Opinion ☐ Do Not Like ☐ Definitely Do Not Like

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- ☐ Newspaper Advertisement
- ☐ Friend or neighbor
- ☐ Electronic Message Boards
- ☐ Email
- ☑ Social Media (facebook, etc)
- ☐ Other__________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- [x] Home owner in the area
- [ ] Employee in the area
- [ ] Renter in the area
- [ ] Property Owner in the area
- [ ] Business owner in the area
- [ ] Route user
- [ ] Commercial Property owner
- [ ] Other_____________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Michael & Jennifer LARSON
Address: 5518 Blazing Star Rd Cheyenne wy 82009
Phone: 307-421-4005
Email: wyolarsons@hotmail.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above

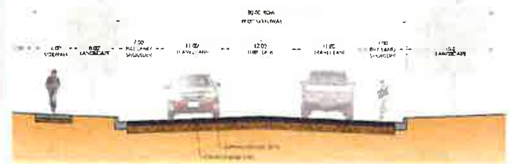
Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

Needs to be Paved, more space between North + Southbound vechiles and safe Place to walk.

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

I think this is the best of the three Choices

U S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☒	☐

Any additional comments?

This is too much Room for County/city Space

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

needs to be done now!!

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

Needs to be done Even Sooner!!

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- [ ] Newspaper Advertisement
- [ ] Email
- [ ] Friend or neighbor
- [ ] Social Media (Facebook, etc.)
- [x] Electronic Message Boards
- [ ] Other_____________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

RECEIVED [illegible] - 2 2018

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other__________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Richard D (Rick) Vasler
Address: 10199 Crystal Mtn Rd
Phone: 638-7407 Landline [illegible] Cell
Email: N/A

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

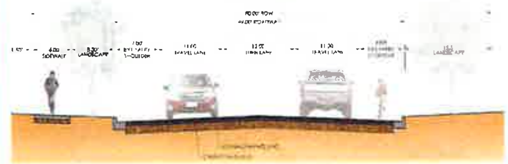
Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

~~Whitney is already busy and only going to get busier. Grant Road~~ will not be satisfactory Disregard! Misunderstanding on Grant [illegible]

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

[illegible] the alignment on Whitney [illegible] the [illegible] as it with a possible pavement overlay N. of Beckle

U S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd. (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments? Good!

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd.

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- ☒ Newspaper Advertisement
- ☐ Friend or neighbor
- ☐ Electronic Message Boards
- ☐ Email
- ☐ Social Media (Facebook, etc.)
- ☐ Other__________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@aviinc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- [x] Home owner in the area
- [ ] Renter in the area
- [ ] Business owner in the area
- [ ] Commercial Property owner
- [ ] Employee in the area
- [x] Property Owner in the area
- [x] Route user
- [ ] Other ________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: ED & PAT SMITH
Address: 6806 FOXGLOVE DRIVE CHEYENNE, WY
Phone: 307/630-5196 307/630-5197
Email: ekpasmith@aol.com

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

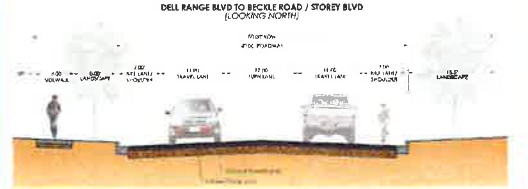
Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☒	☐

Any additional comments?

TOO NARROW BETWEEN VEHICLES

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)



Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

IT IS BIG ENOUGH FOR LARGE MOTORHOMES & TOWVEHICLE 70'

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

THE INTERSECTIONS AT US 30 & WHITNEY ROAD AND WHITNEY ROAD & DELL RANGE NEED SOMETHING DONE TO THEM NOW IF ONLY TEMPORARILY. THESE 2 INTERSECTIONS ARE A NIGHTMARE!!

ALSO ON YOUR OVERHEAD SHOT OF HOUSES ON FOXGLOVE, THE HOUSE WITH THE LONG DRIVEWAY TO A RV GARAGE IS OUR PROPERTY. YOU HAVE 3 OTHER PEOPLES NAMES BY IT.

How did you find out about this meeting (Please check all that apply)?

- [x] Newspaper Advertisement
- [ ] Friend or neighbor
- [ ] Electronic Message Boards
- [ ] Email
- [ ] Social Media (Facebook, etc.)
- [ ] Other ________ (Please specify)

Thank you for providing input for this important project.
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Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and
Email: avi@avipc.com

Whitney Road Corridor Study Comment Sheet

Which of the following best describes you (Please check all that apply)?

- ☒ Home owner in the area
- ☐ Renter in the area
- ☐ Business owner in the area
- ☐ Commercial Property owner
- ☐ Employee in the area
- ☐ Property Owner in the area
- ☐ Route user
- ☐ Other________ (Please specify)

Please help us keep you informed by giving us the best way to contact you (Optional)?

Name: Richard D (Rick) Vosler
Address: 10145 Crystal Mtn Rd
Phone: 635-7402 Landline 421-6901 Cell
Email: N/A

Please rate the Recommended Roadway Typical Section Whitney Road at Beckle Road/ Storey Blvd (Looking North) a shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☐	☐	☐	☒

Any additional comments?

~~[illegible]~~ [illegible] Misunderstanding on [illegible]

(Please Turn Over)

DELL RANGE BLVD TO BECKLE ROAD / STOREY BLVD
(LOOKING NORTH)

Please rate the Recommended Typical Section for Whitney Road from Dell Range Blvd. to Beckle Road/ Storey Blvd (Looking North) as shown above

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments?

[illegible]

U.S 30 TO DELL RANGE BLVD
(LOOKING NORTH)

Please rate the Conceptual Urban 3 Lane Typical Roadway Section for Whitney Road from U.S. 30 to Dell Range Blvd (Looking North) as shown above.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☒	☐	☐	☐	☐

Any additional comments? Good!

"Realign" Whitney Road at U.S. Highway 30

Recommended Alternative Whitney Road at U.S. 30: "Realign" Whitney Road at U.S. Highway 30 and remove U.S. 30 Service Road connection to Whitney Road.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

(Please Turn Over)

Single Lane Roundabout Whitney Road at Dell Range Blvd

Recommended Alternative Whitney Road at Dell Range Blvd.: Single Lane Roundabout.

Definitely Like	Like	No Opinion	Do Not Like	Definitely Do Not Like
☐	☒	☐	☐	☐

Any additional comments?

Do you have any additional ideas, information, or other comments that you would like to provide at this time?

How did you find out about this meeting (Please check all that apply)?

- ☒ Newspaper Advertisement
- ☐ Friend or neighbor
- ☐ Electronic Message Boards
- ☐ Email
- ☐ Social Media (Facebook, etc.)
- ☐ Other________ (Please specify)

Thank you for providing input for this important project.
If you prefer to mail, email, or complete your comments online please do so by **July 10, 2018**

Online: https://www.surveymonkey.com/r/WhitneyRd2 or
Mail them to: AVI, P.C. 1103 Old Town Lane, Cheyenne, Wyoming 82009 or scan and Email: avi@avipc.com

APPENDIX C

Presentations

ENGINEERING
PLANNING
SURVEYING
PC

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AGENDA

Quarterly Meeting
MPO Citizens Advisory Committee
Laramie County Library, Willow Room (1st floor)
May 15, 2019

1) Call meeting to order (introductions if needed)
2) Approval of the November 15, 2018 minutes
3) Presentation and Approval of the draft *FY '20-'23 Transportation Improvement Program*
4) 2019 Cheyenne Transit Program – Greg Singer our Operations Coordinator
5) Greenway and Trails – Richard Zita
6) Update on MPO Planning Projects
   a) *Whitney Road Corridor Plan*
   b) *2018 East Dell Range and US 30*
   c) *Parsley Boulevard Corridor Plan*
   d) *Archer Greenway and Trail Connector Plan*
   e) *Municipal Complex Pedestrian Routing Plan*
   f) *PlanCheyenne Master Transportation Plan*
   g) *Others*
7) Other Business
8) Next Meeting meeting– August 22, 2019.

MEETING MINUTES

Subject:	**Project Update Meeting**		
Client:	Metropolitan Planning Organization (MPO)		
Project:	**Whitney Road 10% Corridor Plan**	Project No:	2-3987.17
Meeting Date:	**6/09/2017 @ 2:00 PM – 3:15 PM**	Meeting Location:	MPO Office

Minutes compiled by: C. Pickett, PE and T. Cobb, PE, AVI, P.C. 6/9/2017 & 6/12/2017.

Minutes are in plain type. **Action items are in bold type.**

ATTENDEES: Nancy Olson, MPO; Tom Mason, MPO; Tom Cobb, AVI; Cassie Pickett, AVI.

TOPICS OF DISCUSSION:

I. PETROLEUM PIPELINE BACKGROUND

Two petroleum pipelines parallel Whitney Road on the East and West. A 12.75" diameter Suncor Energy petroleum pipeline runs parallel along the east borrow ditch approximately 30' off of the centerline of the existing roadway while the All American High Plains runs parallel along the west side Whitney. The exact locations of the utilities are not known at this time.

A meeting was conducted with Suncor Energy on May 9, 2017 at the Suncor offices. During that meeting Suncor conveyed the following information:

Suncor Pipeline

- Suncor believes that the easement they have executed requires any movement of the pipeline be paid by the party requiring the changes. **AVI will research and acquire a copy of the existing easement.**

- Pipeline impacts were directed to the area of Whitney between Foxglove Drive and Dell Range Blvd where approximately a 26' cut would be required to place the roadway and sidewalk at a 5% maximum vertical grade. Suncor indicated the cost to move 700' of impacted pipeline would be approximately $1,000,000. Alternatives were discussed for either horizontal or vertical options to minimize impacts but, the pipeline cost of the pipeline move apparently is due to the fact connections to the existing pipeline can only take place during scheduled shut-downs.

- Separation distances were discussed from pipeline edge to a retaining wall as an option to realignment. Suncor preferred not to entertain the use of a retaining wall due to safety concerns.

- Suncor will provide pothole services of their line at their own cost in order to provide additional information for the project. **AVI will need to contact one-call to initiate the locate.**

All American High Plains Pipeline

- All American High Plains Pipeline has not been responsive to requests for a meeting at this time. **AVI will continue to efforts to schedule a meeting.**

II. POSSIBLE DESIGN ALTERNATIVES

The following ideas were brainstormed during the discussion for possible alternatives for Whitney Road in regard to the pipeline utility impacts:

- Roadway paved shoulder over the top of the pipeline.
- Realigning Whitney Road to the west in order to leave the pipeline undisturbed.
- Realigning Whitney Road using a series of horizontal curves from Storey Blvd / Beckel Road to Dell Range Blvd. in order to reduce the vertical grade rather than lowering the roadway profile.

AVI will investigate the feasibility of the alternatives presented and report to the Steering Committee and MPO on these options at future meetings.

III. PUBLIC INVOLVEMENT

Information Sheet

- The Information Sheet is on the MPO Website and will be used as informational handouts for people that would like a project overview.

- More information needs to be provided about the project to add to the Whitney Road Website.

Public Notification Options

- A draft of a neighborhood/ local project information and initial contact post card was discussed. Some suggestions for the cards include:
  - Find something to place on the front of the card that highlights or emphasizes the Whitney Road Corridor Study.
  - Add additional contact information for an option to be able to mail contact information.
  - An option was discussed of providing a notification sign in public locations with a Survey Monkey Link for area north of Beckel Road/ Storey to gather contact information. Given the number of residences north this would be more economical than sending the notification/ contact cards.
  - Would community mailboxes be an adequate place for an informational sign to be placed? **MPO will find GIS cluster box locations. AVI and MPO will investigate the feasibility of placement of information signs in these areas.**
  - Variable Message Signs could be utilized with the Survey Monkey Link requesting information from the public but, would be cost prohibitive.
  - The Notifications should contain the following information:
    1. Request Contact Information,

2. Available Meeting Times,
3. "How would you like to see Whitney Road Improved."

Neighborhood Meetings

The contact is setup to contain three Neighborhood Meetings and One Public Meeting. Depending on the responses from the Notification/ Contact Cards, it may better to contact two Neighborhood Meetings and two Public Meetings. This would allow some flexibility in the Public Meetings to have present alternatives and presented a recommended/ preferred option or have an informational meeting and an alternatives meeting. Meeting place options were discussed including area resident homes and Our Savior Lutheran Church. However, after reviewing the area map, feasible locations for Public and Neighborhood Meetings include:

- Our Savior Lutheran Church: 5101 Dell Range Blvd. (P) 632.2580.
- Dildine Elementary School: 4312 Van Buren Avenue (P) 771.2320.
- Saddle Ridge Elementary School: 6815 Wilderness Trail (P) 771.2360.

AVI will contact the Lutheran Church for availability and whether or not a use fee would be charged for Neighborhood or Public Meetings in the facility. Additional discussions will be required to finalize locations and dates for the meeting after the Notification/ Contact Information Cards are mailed and information is collected.

1

AGENDA

- Study Area and Primary Goals
- Summary of Public Outreach
- Overview of recommended Improvements
- Questions

2

STUDY AREA AND PRIMARY GOALS

- Limits
  - Northern Limit – Storey Blvd./ Beckle Road
  - Southern Limit – U.S. 30
- Primary Goals
  - Understand the community and neighborhood vision for the roadway
  - Improve roadway and intersection safety and function
  - Address drainage and snow drifting

3

SUMMARY OF PUBLIC OUTREACH

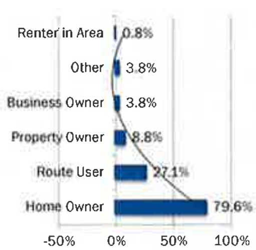
Public Outreach Matrix

[illegible]	[illegible]
Public Open House (2)	November 8, 2017, June 28, 2018
Steering Committee (2)	May 9, 2017, January 23, 2018
Suncor Energy USA Pipeline Plains All American Pipeline	May 10, 2017 October 19, 2017
Individual One-on-one Meetings w/ Land Owners	March 7, 2018 & TBT
MPO Technical Advisory Committee (1)	June 13, 2018
City Planning Commission	August 6, 2018
County Planning Commission	August 9, 2018

- Comprehensive
- Foundation
  - Transparency
  - Listening
- Strong Opinions Expressed

4

SUMMARY OF PUBLIC MEETING NO. 1



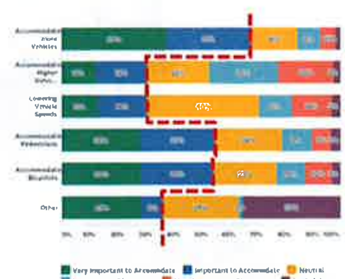
- Who attended?
  - 120 People Sign-in
  - 150 Estimated Attendance
  - 240 Responses (1/10/18)

- Other: Real Estate Broker (2), Cheyenne Resident thinking of moving over there (2), Friend of homeowner in area, Homeowner in Cheyenne (1), MPO CAC Member.

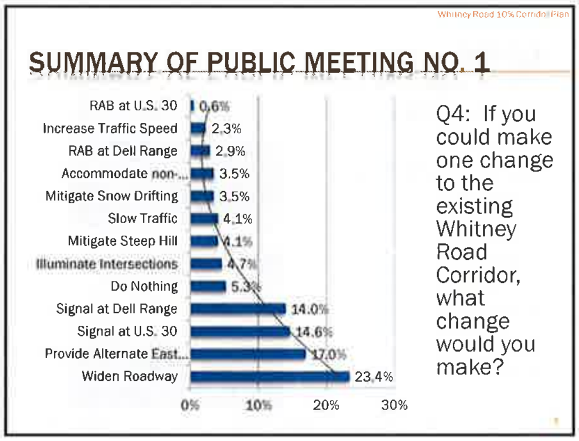
5

SUMMARY OF PUBLIC MEETING NO. 1

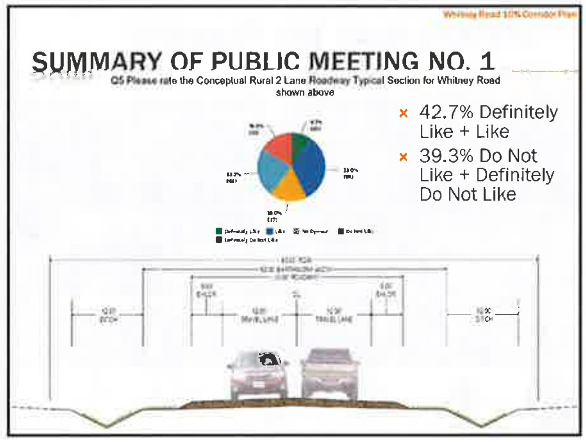
Q3 Please rate the importance of the following transportation users and issues based on what you consider to be the most important design consideration for Whitney Road?



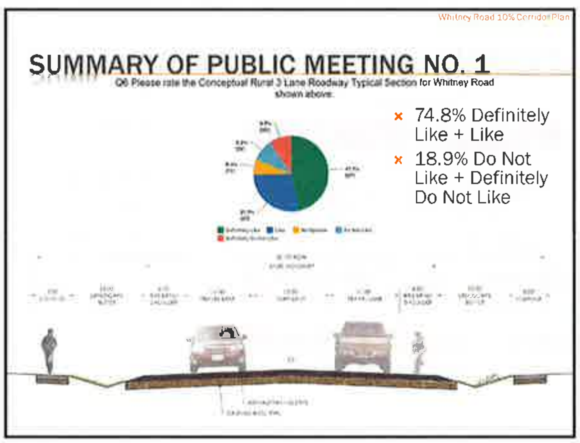
6


Whitney Road 10% Corridor Plan
SUMMARY OF PUBLIC MEETING NO. 1
RAB at U.S. 30 0.6%
Increase Traffic Speed 2.3%
RAB at Dell Range 2.9%
Accommodate non-... 3.5%
Mitigate Snow Drifting 3.5%
Slow Traffic 4.1%
Mitigate Steep Hill 4.1%
Illuminate Intersections 4.7%
Do Nothing 5.3%
Signal at Dell Range 14.0%
Signal at U.S. 30 14.6%
Provide Alternate East... 17.0%
Widen Roadway 23.4%
0% 10% 20% 30%
Q4: If you could make one change to the existing Whitney Road Corridor, what change would you make?

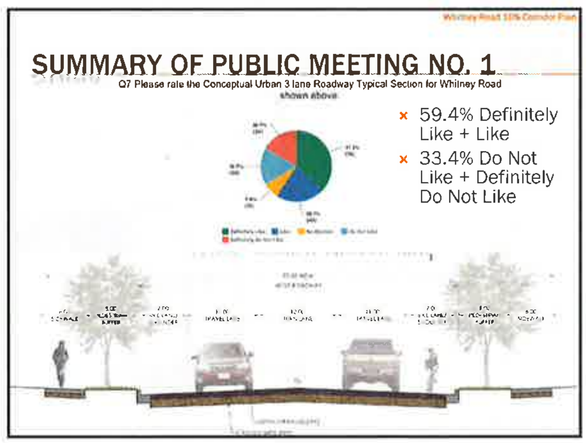
7


Whitney Road 10% Corridor Plan
SUMMARY OF PUBLIC MEETING NO. 1
Q5 Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above
42.7% Definitely Like + Like
39.3% Do Not Like + Definitely Do Not Like

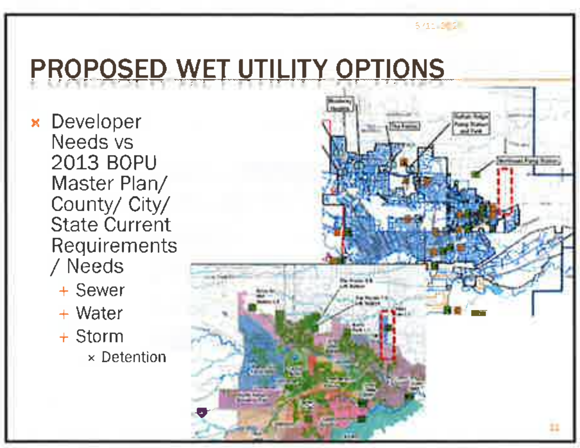
8


Whitney Road 10% Corridor Plan
SUMMARY OF PUBLIC MEETING NO. 1
Q6 Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above
74.8% Definitely Like + Like
18.9% Do Not Like + Definitely Do Not Like

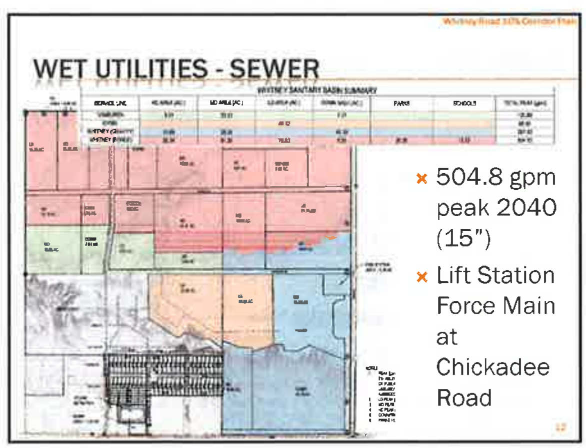
9


Whitney Road 10% Corridor Plan
SUMMARY OF PUBLIC MEETING NO. 1
Q7 Please rate the Conceptual Urban 3 lane Roadway Typical Section for Whitney Road shown above
59.4% Definitely Like + Like
33.4% Do Not Like + Definitely Do Not Like

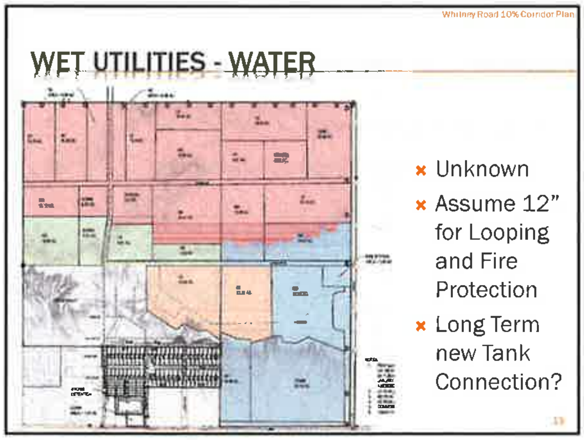
10


PROPOSED WET UTILITY OPTIONS
Developer Needs vs 2013 BOPU Master Plan/ County/ City/ State Current Requirements / Needs
Sewer
Water
Storm
Detention

11


Whitney Road 10% Corridor Plan
WET UTILITIES - SEWER
WHITNEY SANITARY BASIN SUMMARY
504.8 gpm peak 2040 (15")
Lift Station Force Main at Chickadee Road

12



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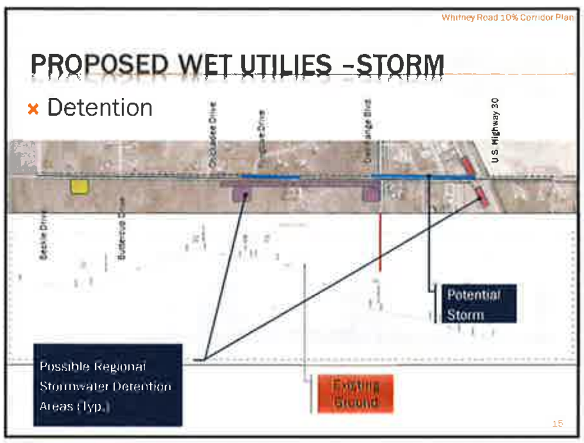

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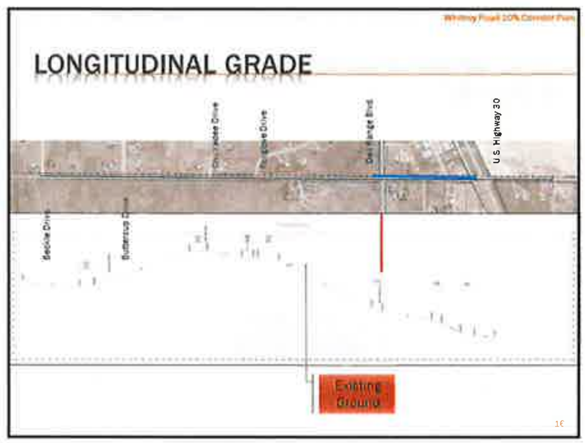

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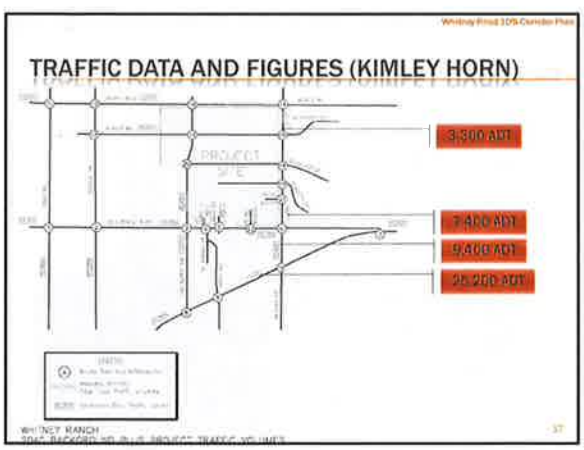

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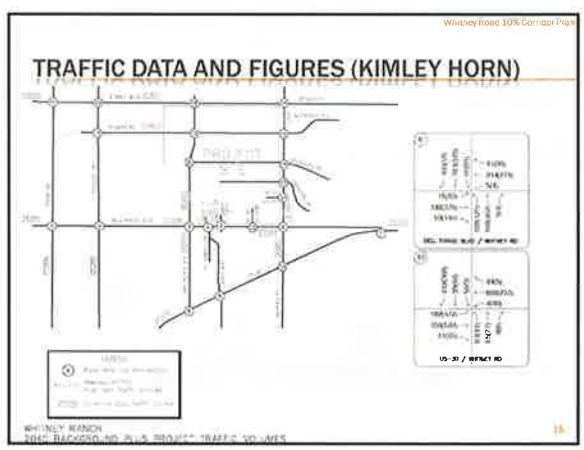

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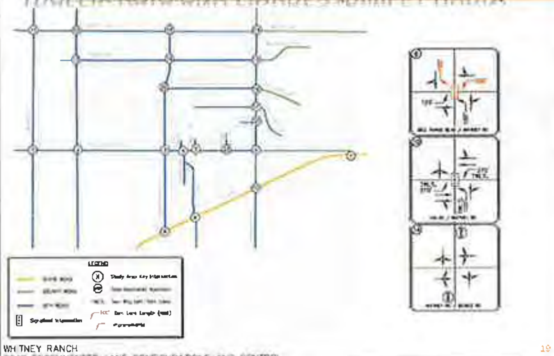
Whitney Road 10% Corridor Plan

TRAFFIC DATA AND FIGURES (KIMLEY HORN)



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Whitney Road 10% Corridor Plan

ADDITIONAL NEEDS (STS)

- Lane Configuration(s)
- Queuing Analysis Recommendations
- Other?

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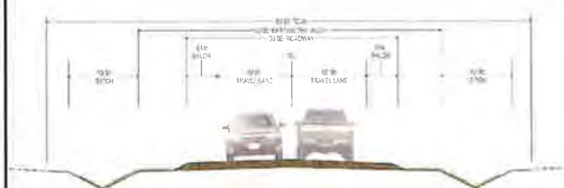
PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Beckel to Dell Range
  - Interim Rural 2 – Lane Roadway Typical Section



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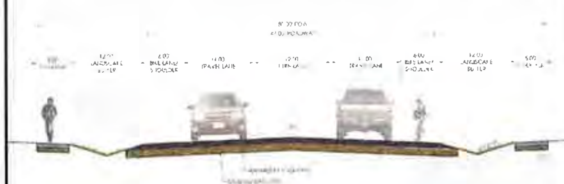
PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Beckel to Dell Range
  - Ultimate Rural 3 – Lane Roadway Typical Section



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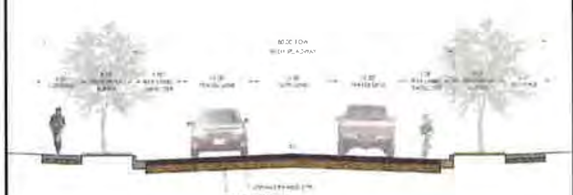
PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Dell Range to U.S. 30
  - Urban 3 – Lane Roadway Typical Section



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PEDESTRIAN AND BIKE OPTIONS

- Cheyenne On-street Bicycle Plan and Greenway Update, 2012
- Cheyenne Metropolitan Area Pedestrian Plan, 2010
- Other Options
  - On-street Bike/ Lane Shoulder
  - Trail or Additional Trail
  - Multi-use Path
  - Sidewalk

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Whitney Road 10% Corridor Plan

PEDESTRIAN AND BIKE OPTIONS

- Other Options
  - On-street Bike/ Lane Shoulder
  - Trail or Additional Trail
  - Multi-use Path
  - Sidewalk

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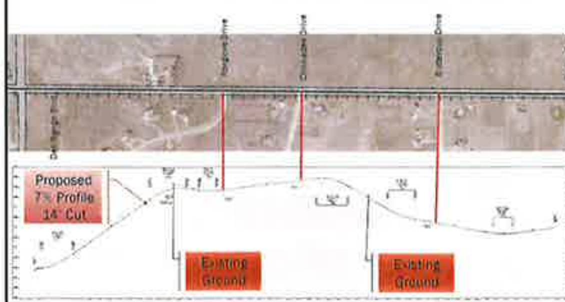
Whitney Road 10% Corridor Plan

PROFILE REVIEW



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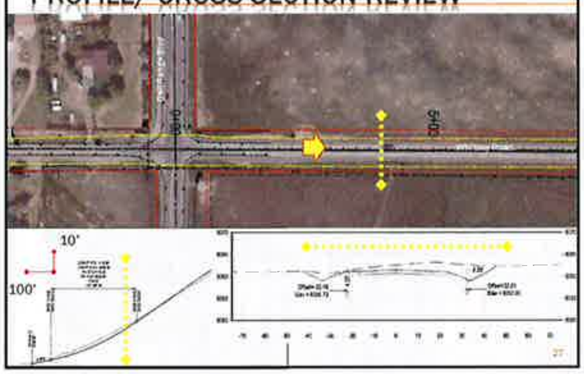
Whitney Road 10% Corridor Plan

PROFILE/ CROSS SECTION REVIEW



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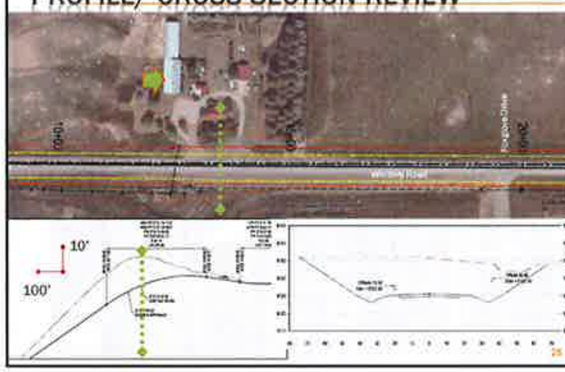
Whitney Road 10% Corridor Plan

PROFILE/ CROSS SECTION REVIEW



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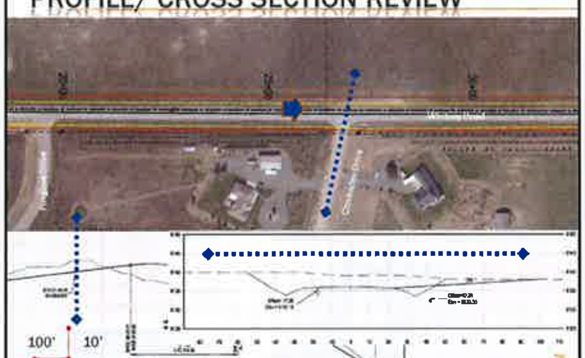
Whitney Road 10% Corridor Plan

PROFILE/ CROSS SECTION REVIEW



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Whitney Road 10% Corridor Plan

ROADWAY/ INTERSECTION CONCEPTS

- Signal Warrants
  - Dell Range Boulevard
    - Warranted by Year 2040 (based on Kimley Horn Study)
  - US 30
    - Signalize by Year 2022 (Signal warrant analysis not included in Kimley Horn Study)

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Whitney Road 10% Corridor Plan

CRASH DATA

- Intersection Crash Data (January, 2014 to September, 2017)

Whitney Road / U.S. 30		Whitney Road / Dell Range Boulevard		Whitney Road / [illegible]	
Type	Number	Type	Number	Type	Number
Angle	5	Angle	5	Angle	0
Rear End	3	Rear End	0	Rear End	1
Fixed Object	3	Fixed Object	0	Fixed Object	0
Total	11	Total	5	Total	1
Rate	[illegible]	Rate	[illegible]	Rate	[illegible]

Crash rates are expressed in crashes per million entering vehicles

Severity

Property Damage	9	Property Damage	4	Property Damage	1
Injury	2	Injury	0	Injury	0
Fatality	0	Fatality	1	Fatality	0
Total	11	Total	5	Total	1

Cause

Failure to Yield ROW	5	Failure to Yield ROW	5	Failure to Yield ROW	0
Following too Closely	2	Following too Closely	0	Following too Closely	1
Speeding	1	Speeding	0	Speeding	0
Drove too Fast for Conditions	3	Drove too Fast for Conditions	0	Drove too Fast for Conditions	0
Total	11	Total	5	Total	1

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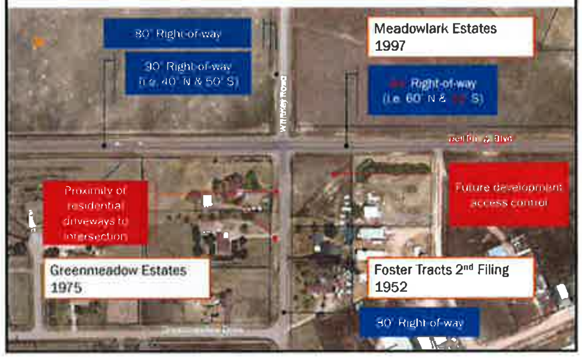
Whitney Road 10% Corridor Plan

INTERSECTION WHITNEY AT DELL RANGE BLVD.



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Whitney Road 10% Corridor Plan

OPTION 1 – SINGLE LANE RAB

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Whitney Road 10% Corridor Plan

OPTION 2 – STANDARD SIGNALIZED

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Whitney Road 10% Corridor Plan

INTERIM OPTIONS - PHASING

- Transverse Rumble Strips – Northbound and Southbound
- Wide Transverse Pavement Markings
  - Thermoplastic Pavement Markings or conventional painting
- Flashing Beacon – Stop Control
- Intersection Down Lighting on Existing Power Poles or Independent Pole

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Whitney Road 10% Corridor Plan

WHITNEY ROAD AT U.S. 30

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Whitney Road 10% Corridor Plan

OPTION 1 – REALIGN SKEWED INTERSECTION SIGNALIZATION

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Whitney Road 10% Corridor Plan

OPTION 2 – ULTIMATE WIDENING SIGNALIZATION

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Whitney Road 10% Corridor Plan

INTERIM OPTIONS - PHASING

- Signalization w/ Future Arm Lengths and Locations
- Channelized Islands
- Eliminate Service Road Connection
- Regional Stormwater Detention Ponds

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STEERING COMMITTE MEETING NO. 1
WHITNEY ROAD CORRIDOR STUDY

May 9, 2017@ 2:00 P.M.

•LIST OF ATTENDEES •

Please Initial To Record Attendance	NAME	COMPANY	EMAIL	CELL/ PHONE
BH	Bruce Hattig	BOPU	bhattig@cheyennebopu.org	(307)637-6416
CMP	Cassie Pickett	AVI	cpeterman@avipc.com	(307)637-6017
	Daryl Johnson	AVI	djohnson@avipc.com	(307)631-7891 (307)637-6017
	Jef McMann	Black Hills Corp	Jef.Mcmann@blackhillscorp.com	(307)778-2144
	Jeffery Mellor	WYDOT	Jeffery.mellor@wyo.gov	(307)777-4164
LS	Lloyd Sisson	High West Energy	lsisson@highwestenergy.com	(307)245-4302
NAO	Nancy Olson	MPO	nolson@cheyennempo.org	(307)638-4366
	Nathan Beauheim	City of Cheyenne	nbeauheim@cheyennecity.org	(307)638-4315
RG	Randy Griesbach	WYDOT	randy.griesbach@wyo.gov	(307)745-2100
RG	Rob Geringer	Laramie County	rgeringer@laramiecounty.com	(307)633-4618
SC	Sreyoshi Chakraborty	MPO	schakraborty@cheyennempo.org	(307)638-4384
	Susana Montana	City of Cheyenne	smontana@cheyennecity.com	(307)637-6528
	Timothy Morton	WYDOT	timothy.morton@wyo.gov	
TDC	Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
TM	Tom Mason	MPO	tmason@cheyennempo.org	(307)637-6299
VIAPX	Joe Henderson	STS	joe@sustaibabletrafficsolutions.com	(303)589.6875

DRAFT MEETING MINUTES

Subject:	Steering Committee Meeting #1		
Client:	Cheyenne MPO		
Project:	Whitney Road Corridor Study	Project No:	2-3987.17
Meeting Date:	5/09/2017 @ 2:00 PM – 3:30PM	Meeting Location:	AVI: 1103 Old Town Ln Suite 101 Cheyenne, WY 82009

Minutes compiled by: C. Pickett, EIT and T. Cobb, PE, AVI, P.C. 5/10/2017.

Minutes are in plain type. **Action items are in bold type.**

ATTENDEES: See attached Sign In Sheet attached.

TOPICS FOR DISCUSSION:

I. INTRODUCTIONS

II. OVERVIEW:

- Steering Committee Meeting #1 will be the first of three Steering Committee Meeting to discuss the Whitney Road 10% Corridor Plan.
- The purpose of the meeting was to discuss the preliminary aspects of the Whitney Road 10% Corridor Plan. These aspects include existing conditions, utilities, public involvement, and initial design concepts.
- Reference the Whitney Road 10% Corridor Plan Steering Committee #1 PowerPoint for meeting presentation.

III. MEETING COMMENTS

- BOPU:
  - BOPU noted that it might be beneficial to install sleeves under Dell Range in order to ease construction for future waterlines.
- WYDOT:
  - A presentation to Ralph Tarango, WYDOT Maintenance Foreman regarding detention facilities along USHWY 30 would begin the process for pursuing possible approval.
  - Randy indicated the agreement that a cul-de-sac may be an acceptable solution to terminating the service road along HWY 230 connecting to Whitney Road.
  - WYDOT plans to leave the four (4) lanes where existing and expanding the three (3) lanes of USHWY 30 to five (5) lanes. The alignment is planned to stay centered, not shifted north. This is only a preliminary plan.
  - WYDOT has volumes from planning as follows, an increase from Pershing to Van Buren of 92.5%, Van Buren to Dell Range an increase volume of 106%, Dell Range

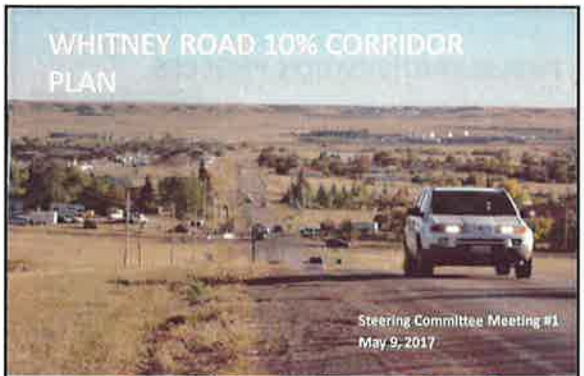
to Westedt Road an increase of 37%, and Westedt Road to Archer an increase of 2.5%. These increases are represented projected twenty (20) years (2036)

- MPO:
  - **The MPO will be review projected volumes in the Plan Cheyenne and Christensen Road Corridor Plan to compare with WYDOT data**
  - MPO will be meeting with Tom and Cassie to discuss a plan for Public Involvement
- Suncor Energy
  - On May 10th, 2017 a meeting is planned to be held with Suncor Energy to discuss options for design with respect to the horizontal and vertical location of the Suncor Pipeline
- High West Energy:
  - **Lloyd will send a map indicating High West underground and overhead utilities to assist in the design**

IV. ACTION ITEMS

- AVI
  - **Setup Meeting with Ralph Tarango, WYDOT maintenance to begin conversation about WYDOT right-of-way use for storm water detention facilities.**
  - **Meeting Minutes and presentation to steering committee.**
  - **Schedule follow-up meeting with MPO regarding social media and block meetings.**
  - **Complete meeting minutes for this meeting and forward with presentation to MPO and Steering Committee for review and record.**

WHITNEY ROAD 10% CORRIDOR PLAN



Steering Committee Meeting #1
May 9, 2017

1

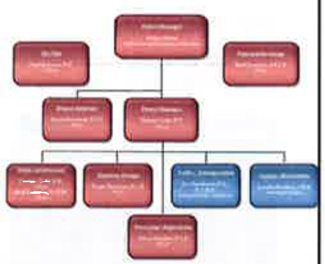
AGENDA

- Introductions
- Purpose and goals Steering Committee
- What to expect?
- Overall project approach
- Public participation process
- Discussion
  - Project constraints and opportunities
  - Goals
  - Initial concepts
- Other
  - Block Meeting Concept

2

INTRODUCTIONS

- Tom Cobb, PE
  - Project Manager/Public Involvement
- Cassie Pickett, EIT
  - Project Assistant/Road Design/Social Media
- Joe Henderson, PE
  - Traffic Engineer



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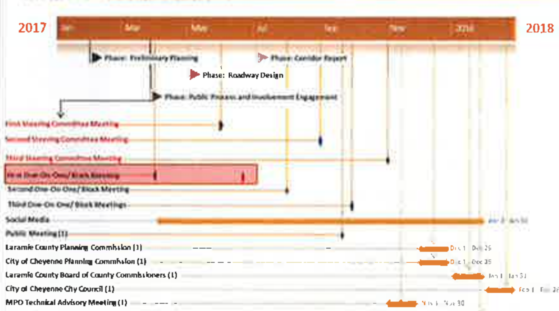
PURPOSE & GOALS

- Purpose of Steering Committee
  - Assists in steering the project from inception to completion.
  - Provides advice, input, and guidance during the development of the plan.
  - Provides Recommendations.
- Goals of Today's Meeting
  - Formal kick-off the steering committee and project process.
  - Update on surrounding development status.
  - Review known project constraints.
  - Input from committee on purpose and goals of the project from the Steering Committee.
  - Input on initial conceptual typical section and U.S. Concept.
  - Input on proposed Block Meeting Agenda.

4

WHAT TO EXPECT



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WHAT TO EXPECT?

PROJECT MILESTONES	MILESTONE DATES
Notice to Proceed	March 1, 2017
Initial Kickoff Meeting MPO	March 22, 2017 @2:00
Traffic Counts	April 4, 2017
Steering Committee Meetings	May 9, 2017: August/ September, October, 2017
Neighborhood Block Meeting #1, #2, and #3	June, July, and August, 2017
Open House/Public Meeting	September, 2017
Draft Plan	October, 2017
Submit to MPO for Final Adoption	November, 2017
Presentation to the Governing Body	January/ February, 2018

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WHAT TO EXPECT – OVERALL APPROACH

Planning
- Existing Conditions
  - Topography
  - Utilities
  - Drainage
  - Environmental
  - Historical
- Accurate Traffic Data Collection
- Accurate Traffic Projections
- Regulatory Design Policies
  - UDC
  - Laramie County Land Use Regulations

Public Involvement
- Steering Committee
- Jurisdictional Meetings
- MPO Committees
- Public Open House
- One-on-One Block Meetings
- Social Media
  - Blog
  - Facebook, Twitter
  - Email Notifications

Design
- Alternative Development
- Alternative Analysis

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PUBLIC PARTICIPATION PROCESS

- WHITNEY DYSEL DEVELOPERS
- WOODS LANDING ESTATES
- CHEYENNE HILLS CHURCH
- FOSTER TRACTS
- GREENMEADOW ESTATES
- JOLLY ROGER
- U.S. 30 BUSINESS PLAZA
- SADDLE RIDGE

- PRESENT CONCEPTS

- STEERING COMMITTEE (3)
- JURISDICATIONAL MEETINGS (4)
  - Laramie County Planning Commission
  - City of Cheyenne Planning Commission
  - Laramie County Board of County Commissioners
  - City of Cheyenne City Council
- MPO COMMITTEES
  - TAC (2)
  - Policy

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CONSTRAINTS AND OPPORTUNITIES

- Utilities
  - Blackhills Energy
  - High West Energy
  - Suncor Energy
  - Plains All American Pipeline System, LLC
  - Qwest
  - BOPU

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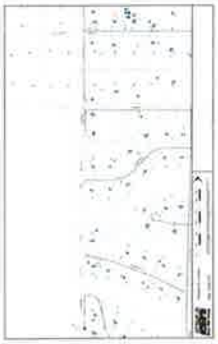
CONSTRAINTS AND OPPORTUNITIES

- Blackhills Energy
  - Underground natural gas feeding rural subdivisions



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CONSTRAINTS AND OPPORTUNITIES

- High West Energy
  - Overhead Electric

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CONSTRAINTS AND OPPORTUNITIES

- Suncor Energy
  - 12.75" Steel Crude Line
  - 1,440 psi
  - 2' to 5' deep (East Side)
  - Dillon R. Ohrt, SR/WA
    - Right of Way and Public Awareness Coordinator
    - Suncor Energy (U.S.A.) Pipeline Company
  - Meeting scheduled 5/10/17 at Suncor Office

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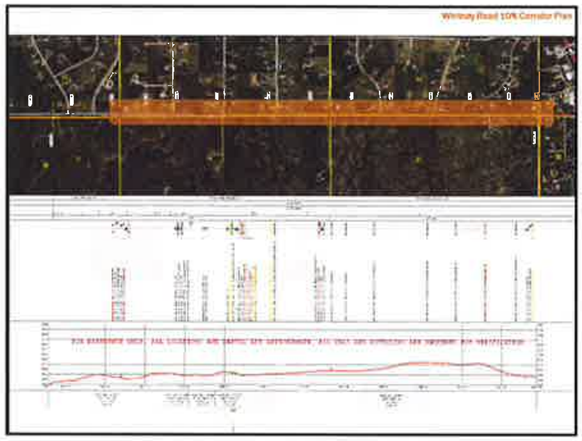

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Whitney Road 10% Corridor Plan

CONSTRAINTS AND OPPORTUNITIES

- Plains All American Pipeline System, LLC
  - 16" Steel Crude
  - 4'-3" to 14'-5" (West Side)
  - Gregg Werger
    - Plains All American Pipeline
    - Manager-Pipeline Commercial Operations
    - In process of setting up meeting

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Whitney Road 10% Corridor Plan

CONSTRAINTS AND OPPORTUNITIES

- Agenda Pipeline Companies
  - Introductions
  - Additional available pipeline details
  - Ability to isolated relocate/ realign
    - Procedure
    - Constraints
    - Typical Costs
    - Timing

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Whitney Road 10% Corridor Plan

CONSTRAINTS AND OPPORTUNITIES

- Existing Zoning
  - AR – Agricultural Residential
  - A2 – Agricultural
  - A1 – Agriculture and Rural Residential
  - CB – Community Business
  - MU – Mixed Use
  - HR-2 (City of Cheyenne)High Density Residential Developing

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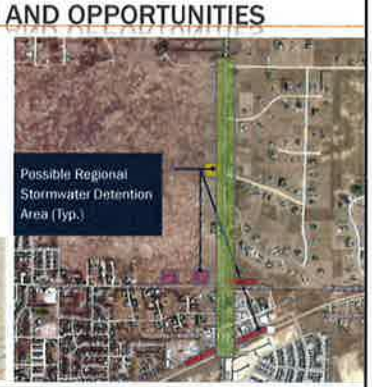
Whitney Road 10% Corridor Plan

CONSTRAINTS AND OPPORTUNITIES

- Drainage



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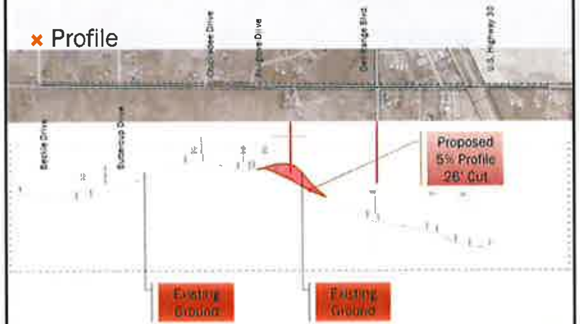
CONSTRAINTS AND OPPORTUNITIES

- Profile



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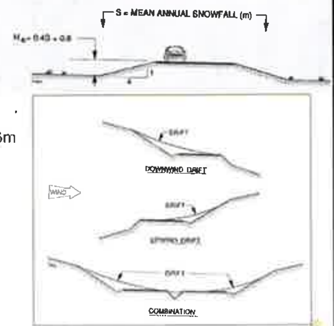
CONSTRAINTS AND OPPORTUNITIES

- Snow Transport
  - Fill Sections
    - Minimum Height
      He = 0.4S + 0.6
      He = 0.4(1.53m)+0.6m
      He = 1.21 m (4')
  - Cut Sections



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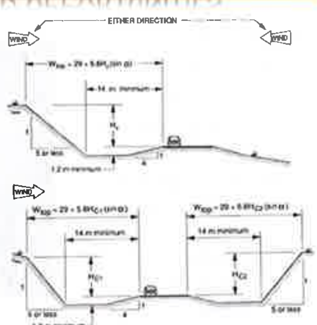
CONSTRAINTS AND OPPORTUNITIES

- Snow Transport
  - Cut Sections



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CONSTRAINTS AND OPPORTUNITIES

22

CONSTRAINTS AND OPPORTUNITIES

23

CONSTRAINTS AND OPPORTUNITIES

- Intersections
  - Dell Range Boulevard
    - 11 crashes during the last six years
    - All were angle crashes
  - US 30
    - Ten (10) crashes during the last four years
    - Five (5) were angle crashes
  - Beckle Road

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Whitney Road 10% Corridor Plan

CONSTRAINTS AND OPPORTUNITIES

- Roadway Concepts
  - What are the adjacent conditions and uses?
  - How does the edge affect the streetscape?
  - What variations can be made to create a more user-friendly corridor?
  - What movement and interaction will take place in this corridor?

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Whitney Road 10% Corridor Plan

ROADWAY/ INTERSECTION CONCEPTS

- Signal Warrants
  - Dell Range Boulevard
    - Not close to warranting signalization
    - January 2016 counts
  - US 30
    - Close to warranting signalization
    - March 2015 counts

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PURPOSE, OBJECTIVES, AND GOALS

- Purpose
  - Create a comprehensive planning document that will optimize safety, growth and fiscal responsibility.
- Objective
  - Development of a 10% conceptual design for Whitney Road between U.S. 30 and Beckle Road/ Storey Blvd.
- Goals:
  - Improve intersection and roadway design.
  - Address considerations such as drainage and snow drifting
  - Follow a comprehensive planning and public involvement process strategy.

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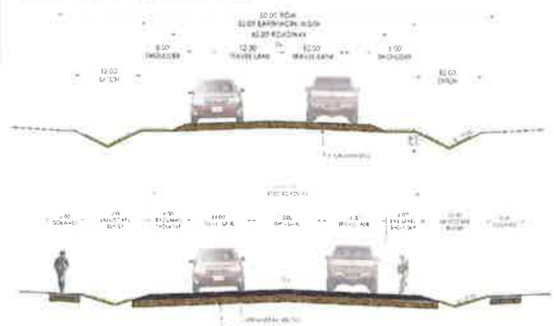
Whitney Road 10% Corridor Plan

INITIAL CONCEPTS



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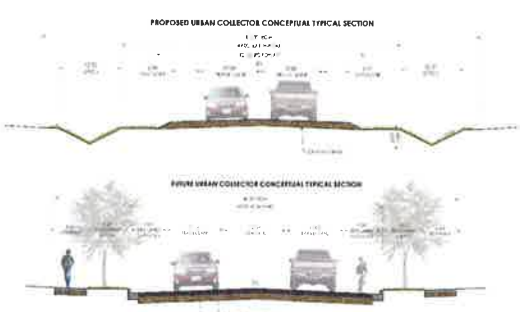
Whitney Road 10% Corridor Plan

INITIAL CONCEPTS



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Whitney Road 10% Corridor Plan

INITIAL CONCEPTS

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OTHER

- Block Meeting Concept
  - Logistics
    - Post Card Mailings
      - Introduce Block Meeting Concept
      - Roll-out social media availability
        - Compile Email/ Contact Information
  - Format
    - Introduce project and why?
    - Listen concerns and ideas
    - What is their vision of the corridor?

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STEERING COMMITTE MEETING NO. ~~1~~ 2
WHITNEY ROAD CORRIDOR STUDY
February 23, 2018 @ 1:30 P.M.
•LIST OF ATTENDEES•

Please Initial To Record Attendance	NAME	COMPANY	EMAIL	CELL PHONE
BG	Bruce Hattig	BOPU	bhattig@cheyennebopu.org	(307)637-6416
	Daryl Johnson	AVI	djohnson@avipc.com	(307)631-7891 (307)637-6017
JM	Jef McMann	Black Hills Corp	Jef.Mcmann@blackhillscorp.com	(307)778-2144
JM	Jeffery Mellor	WYDOT	jeffery.mellor@wyo.gov	(307)777-4164
LS	Lloyd Sisson	High West Energy	lsisson@highwestenergy.com	(307)245-4302
NAO	Nancy Olson	MPO	nolson@cheyennempo.org	(307)638-~~4366~~
NB	Nathan Beauheim	City of Cheyenne	nbeauheim@cheyennecity.org	(307)638-4315
RG	Randy Griesbach	WYDOT	randy.griesbach@wyo.gov	(307)745-2100
RG	Rob Geringer	Laramie County	rgeringer@laramiecounty.com	(307)633-4618
	~~Sreyoshi Chakraborty~~	MPO	schakraborty@cheyennempo.org	(307)638-4384
	Susana Montana	City of Cheyenne	smontana@cheyennecity.com	(307)637-6528
	Timothy Morton	WYDOT	timothy.morton@wyo.gov	
TDC	Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
TM	Tom Mason	MPO	tmason@cheyennempo.org	(307)637-6299
VIAPX	Joe Henderson	STS	joe@sustaibabletrafficsolutions.com	(303)589.6875

Whitney Road Corridor Study
Steering Committee Meeting #2
January 23, 2018

I. Introduction and Sign In

II. Power Point Discussion
a. Study Area
b. Objectives
c. Objectives of Steering Committee
  ✓ Comments or Additional Ideas for Intersection options
  ✓ Comments or Additional Ideas for Conceptual Typical Section(s)

d. Overview of Activities to Date
e. Summary of Public Comments
f. Whitney Ranch Masterplan Updates
g. Proposed Wet Utility Upgrades/ Options
  ✓ Water
  ✓ Sewer
  ✓ Storm
  ✓ Detention
h. Traffic data and figures (Kimley Horn Whitney Ranch)
i. Typical Section Alternatives
  ✓ Rural
  ✓ Urban
  ✓ Pedestrian Options: Trail, Multi-use Path, Sidewalk
j. Profile Review
k. Intersection Alternatives
  ✓ Whitney and Dell Range
    1. Standard Intersection
    2. Free RT SB To EB
  ✓ Roundabout Option

l. Whitney and U.S. 30
  ✓ Realign to eliminate skew
    1. Signalize Intersection warranted
  ✓ Lane configuration/ widening
    1. Signalization

III. Other items

RALPH TARANGO -

(303) 589.6875
(307) 745.2111

MIKE MENGHINI

2036 23,500 ADT

SLAB SECTION TO VALID
BACKGROUND CHECK T. MASON REVIEW

IRON MOUNTAIN PAVED THIS SUMMER
8' SHOULDER, PAVED,

JASON W/ BECKWITH)

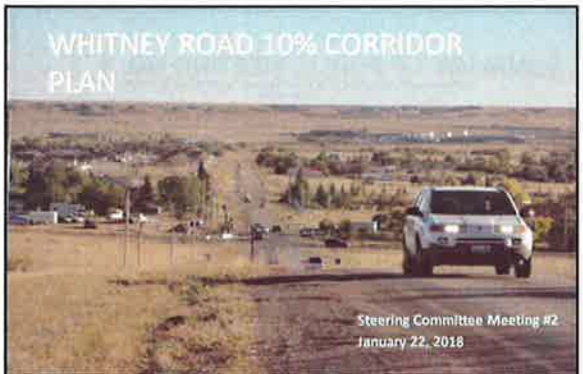
(EBA)

FLASHING AT NIGHT

EB TO NB

* REALIGN — TO WHITNEY RANCH

WHITNEY ROAD 10% CORRIDOR PLAN



Steering Committee Meeting #2
January 22, 2018

1

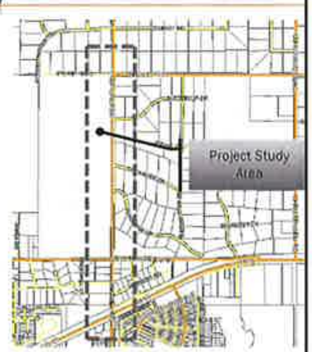
AGENDA

- Sign In Sheet
- Project Overview
- Objectives of this Meeting
- Overview of Activities To Date
- Summary of Public Meeting No. 1
- Whitney Ranch Master Plan Updates
- Proposed Wet Utility Upgrades/ Options
- Profile Review
- Intersection Alternatives
- Other Items

2

PROJECT OVERVIEW

- Limits
  - Northern Limit – Storey Blvd / Beckle Road
  - Southern Limit – U.S. 30
- Objective
  - Create a comprehensive plan which strives to optimize safety, growth, and fiscal responsibility
- Goals
  - Understand the community and neighborhood vision for the roadway
  - Improve roadway and intersection safety and function
  - Address drainage and snow drifting



3

OBJECTIVES OF TODAY'S MEETING

- Comments or Additional Ideas for Intersection Options
- Input on Preliminary Recommended Typical Sections
- Input on Pedestrian, Trial, and Bike Options
- Other Items
  - Profile Input
  - Petroleum Line Realignment/ Options

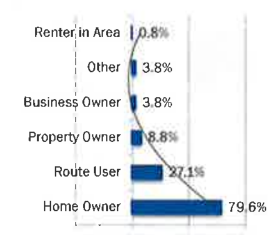
4

OVERVIEW OF ACTIVITIES TODATE?

PROJECT MILESTONES	MILESTONE DATES
Notice to Proceed	March 1, 2017
Initial Kickoff Meeting MPO	March 22, 2017
Traffic Counts	April 4, 2017
Steering Committee Meetings	May 9, 2017; January 23, 2018
Open House/ Public Meeting #1	November 8, 2017
Draft Plan	November 2017 – February, 2018
Neighborhood Meeting #2	January, 2018?
Submit DRAFT Plan to MPO	January, 2018
Presentation to the Governing Body	March, 2018

5

SUMMARY OF PUBLIC MEETING NO. 1



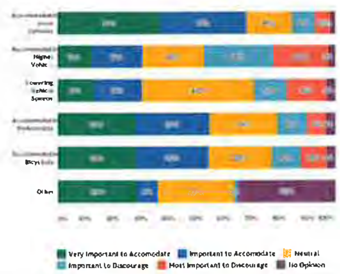
- Who attended?
  - 120 People Sign-in
  - 150 Estimated Attendance
  - 240 Responses (1/10/18)

- Other: Real Estate Broker (2), Cheyenne Resident thinking of moving over there (2), Friend of homeowner in area, Homeowner in Cheyenne (1), MPO CAC Member.

6

SUMMARY OF PUBLIC MEETING NO. 1

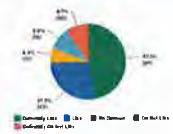
Q3 Please rate the importance of the following transportation users and issues based on what you consider to be the most important design consideration for Whitney Road?



7

SUMMARY OF PUBLIC MEETING NO. 1

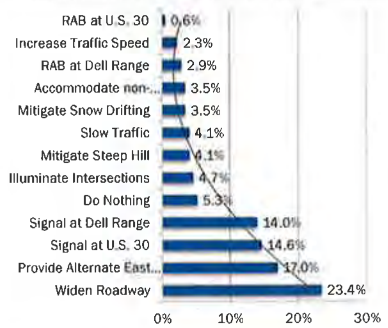
Q6 Please rate the Conceptual Rural 3 Lane Roadway Typical Section for Whitney Road shown above



- 74.8% Definitely Like + Like
- 18.9% Do Not Like + Definitely Do Not Like

10

SUMMARY OF PUBLIC MEETING NO. 1

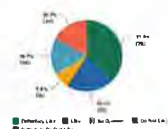


Q4: If you could make one change to the existing Whitney Road Corridor, what change would you make?

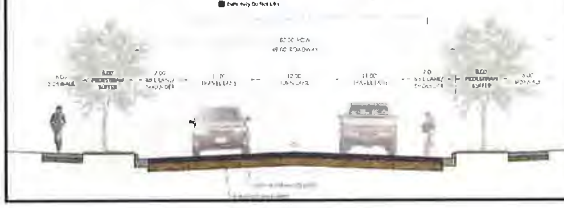
8

SUMMARY OF PUBLIC MEETING NO. 1

Q7 Please rate the Conceptual Urban 3 lane Roadway Typical Section for Whitney Road shown above



- 59.4% Definitely Like + Like
- 33.4% Do Not Like + Definitely Do Not Like



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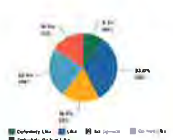
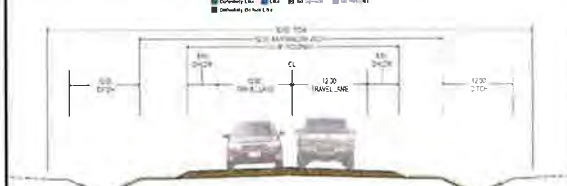
SUMMARY OF PUBLIC MEETING NO. 1

Q5 Please rate the Conceptual Rural 2 Lane Roadway Typical Section for Whitney Road shown above



- 42.7% Definitely Like + Like
- 39.3% Do Not Like + Definitely Do Not Like



9

SUMMARY OF PUBLIC MEETING NO. 1

- Q8: Do you have any additional ideas, information, or other comments that you would like to provide at this time?
  - Connecting Storey to Summit would pull so much traffic from Del Range. It would be environmentally friendly as it would reduce miles for 100's if not 1,000s everyday. It would make Del Range safer by reducing many, many Vehicles. Please leave Whitney Rd. alone and make some connections in east Cheyenne.
  - Please review safety of Saykally and other intersections. The hills restrict vision of oncoming traffic when we pull out onto Whitney and people drive very fast. It is a disaster waiting to happen. I'm nervous for my kids to become teens driving on this unsafe intersection! It may be good to reduce speeds on Whitney to 40. Reduce speed on hwy 30 in this are too? If Storey blvd will connect to Whitney, make sure Whitney can safely handle that much more traffic being diverted north through our neighborhood . People other than this neighborhood will use it and our traffic could be increased significantly. Thank you for the public survey and meeting at Dildine.

12

SUMMARY OF PUBLIC MEETING NO. 1

+ Winter driving on this road is treacherous. There needs to be a flashing red light at the crossroads of Whitney and Dell Range.
+ Paving Iron Mountain Road is the best first move to make. Then looking at adding shoulders to Whitney Road to allow for slightly higher speed limit.
+ Plan for multi-use alongside the road such as horses along with bicyclists and pedestrians.
+ If I could emphasize anything, it would be the necessity of a stoplight at Whitney and Del Range. It can be, and has been before, extremely dangerous as it is.
+ Must provide other paved routes other than Whitney, e.g. Storey Blvd., Four Mile Rd, East Riding Club and/or Iron Mountain Rd.

13

SUMMARY OF PUBLIC MEETING NO. 1

+ Whitney Road planning must include non-vehicular transportation modes and must anticipate a future school(s) in this area. Whitney/Del Range intersection requires careful evaluation and redesign. Please look for below grade crossing opportunities for pedestrians and bicyclists. Is there an opportunity to extend s future spur of the Greenway north along Whitney?
+ Leave Summit as it is and extend a different road. If the extension is inevitable, intersection lights at College and Ridge Road are imperative.

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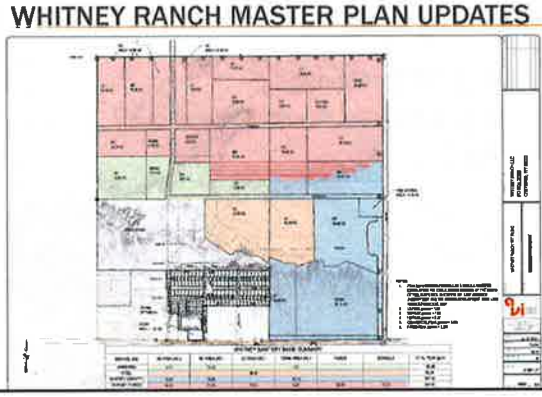
WHITNEY RANCH MASTER PLAN UPDATES



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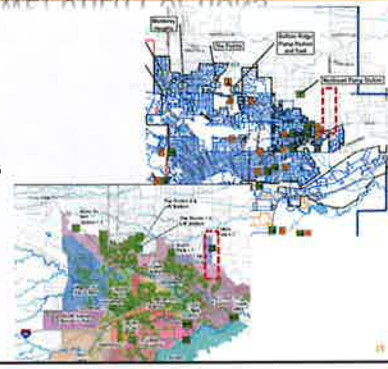
PROPOSED WET UTILITY OPTIONS

- Developer Needs vs 2013 BOPU Master Plan/ County/ City/ State Current Requirements / Needs
  + Sewer
  + Water
  + Storm
    - Detention



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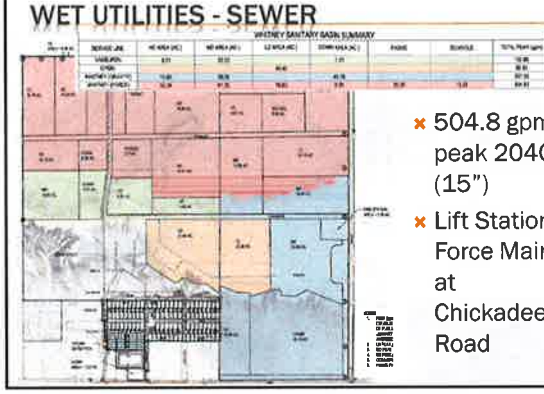
WET UTILITIES - SEWER



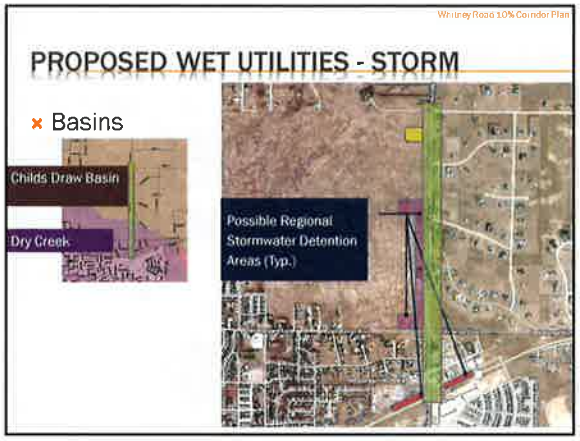
- 504.8 gpm peak 2040 (15")
- Lift Station Force Main at Chickadee Road

17

WET UTILITIES - WATER

- Unknown
- Assume 12" for Looping and Fire Protection
- Long Term new Tank Connection?

18



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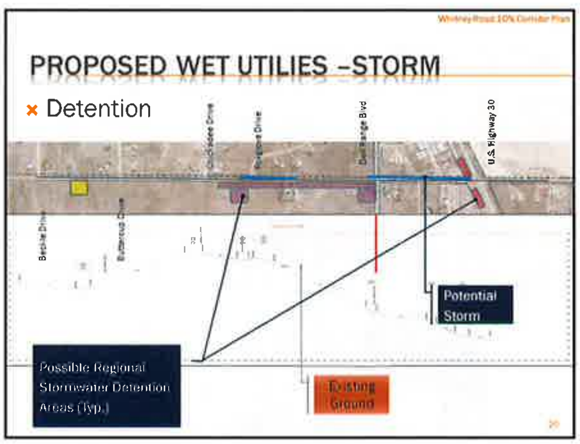

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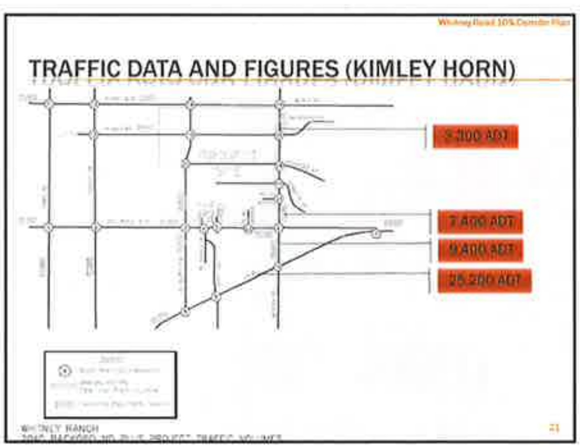

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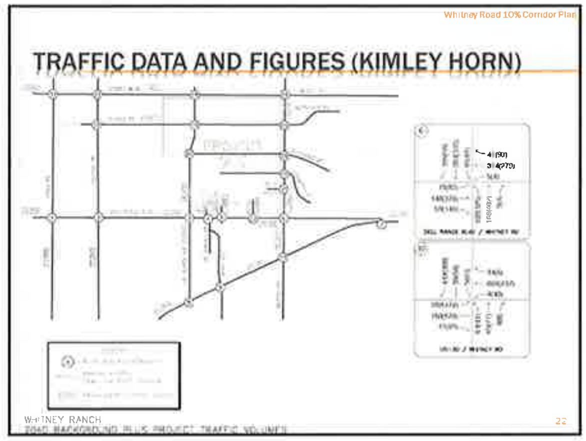

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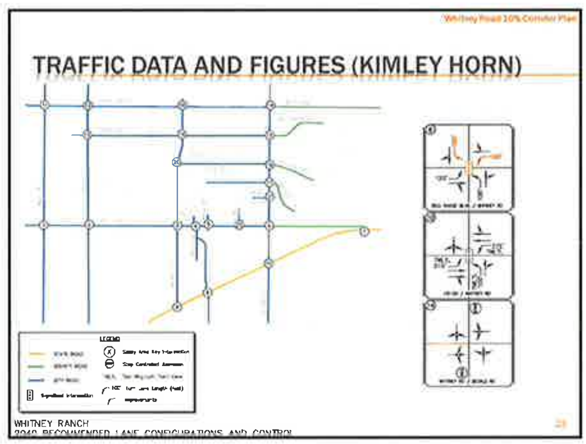

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Whitney Road 10% Corridor Plan

ADDITIONAL NEEDS (STS)

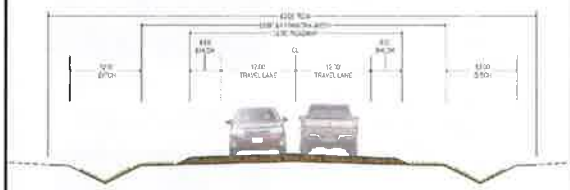
- Lane Configuration(s)
- Queuing Analysis Recommendations
- Other?

24

24

PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Beckel to Dell Range
  - Interim Rural 2 – Lane Roadway Typical Section



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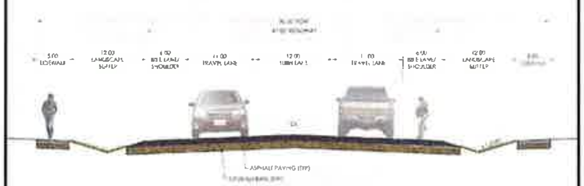
PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Beckel to Dell Range
  - Ultimate Rural 3 – Lane Roadway Typical Section



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PRELIMINARY RECOMMENDED TYPICAL SECTIONS

- Dell Range to U.S. 30
  - Urban 3 – Lane Roadway Typical Section

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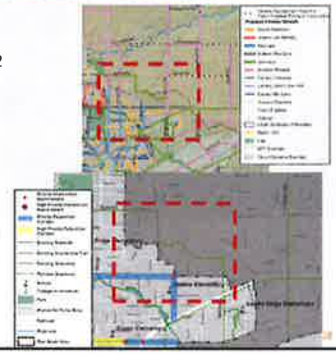
PEDESTRIAN AND BIKE OPTIONS

- Cheyenne On-street Bicycle Plan and Greenway Update, 2012
- Cheyenne Metropolitan Area Pedestrian Plan, 2010
- Other Options
  - On-street Bike/ Lane Shoulder
  - Trail or Additional Trail
  - Multi-use Path
  - Sidewalk



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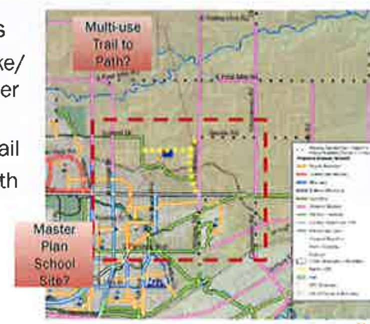
PEDESTRIAN AND BIKE OPTIONS

- Other Options
  - On-street Bike/ Lane Shoulder
  - Trail or Additional Trail
  - Multi-use Path
  - Sidewalk



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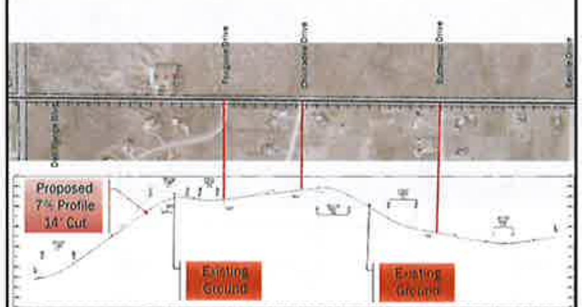
PROFILE REVIEW



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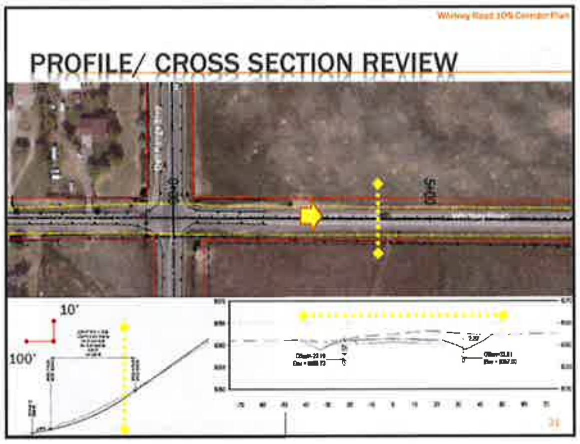

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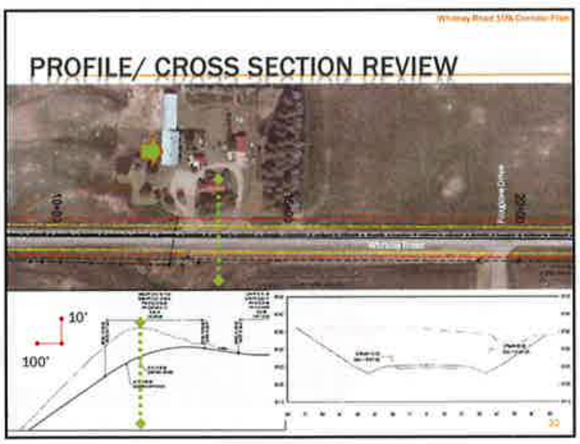

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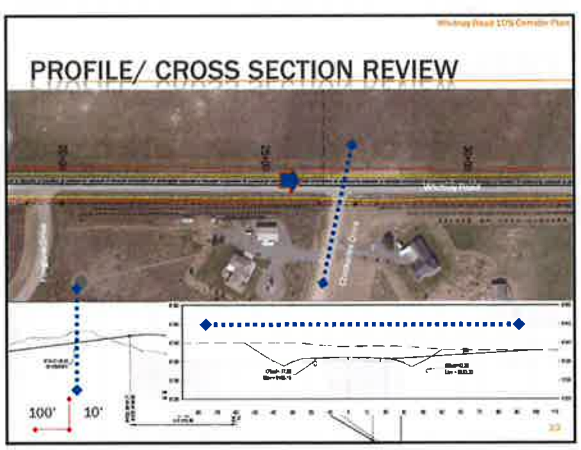

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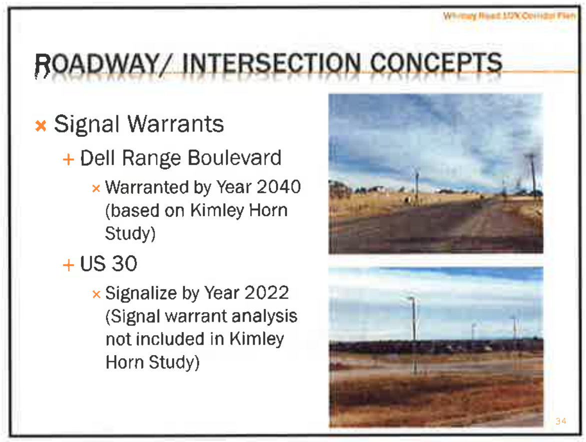

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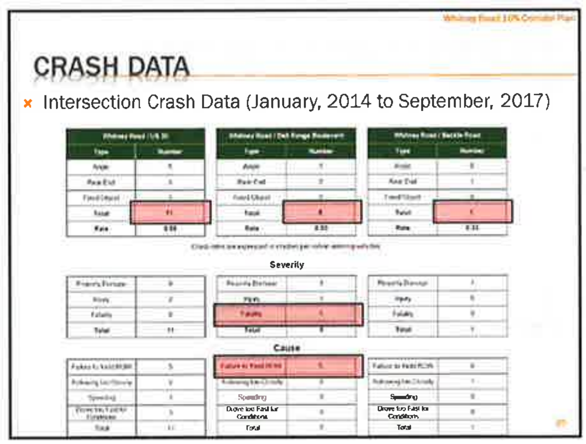

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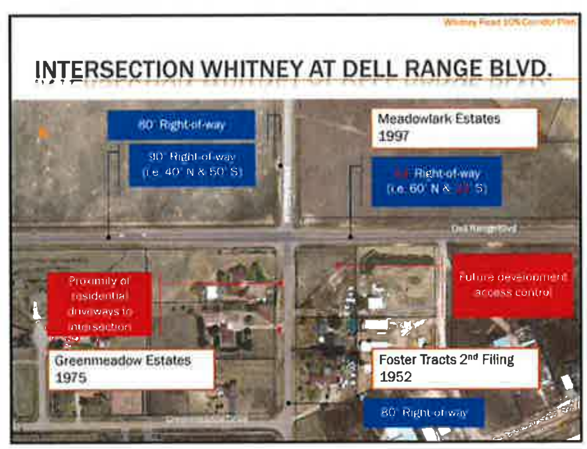

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OPTION 1 – SINGLE LANE RAB

37

WHITNEY ROAD AT U.S. 30

40

OPTION 2 – STANDARD SIGNALIZED

38

OPTION 1 – REALIGN SKEWED INTERSECTION SIGNALIZATION

41

INTERIM OPTIONS - PHASING

- Transverse Rumble Strips – Northbound and Southbound
- Wide Transverse Pavement Markings
  - Thermoplastic Pavement Markings or conventional painting
- Flashing Beacon – Stop Control
- Intersection Down Lighting on Existing Power Poles or Independent Pole

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OPTION 2 – ULTIMATE WIDENING SIGNALIZATION

42

Whitney Road 10% Corridor Plan

INTERIM OPTIONS - PHASING

- Signalization w/ Future Arm Lengths and Locations
- Channelized Islands
- Eliminate Service Road Connection
- Regional Stormwater Detention Ponds

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Traffic Impact Study

Whitney Ranch
Cheyenne, Wyoming

Prepared for:

AVI, PC

Kimley»Horn

TRAFFIC IMPACT STUDY

Whitney Ranch

Cheyenne, Wyoming

Prepared for
AVI, PC
1103 Old Town Lane
Suite 101
Cheyenne, Wyoming, 82009

Prepared by
Kimley-Horn and Associates, Inc.
4582 South Ulster Street
Suite 1500
Denver, Colorado 80237
(303) 228-2300

Professional Engineer (Civil)
CURTIS D. ROWE
9655
Date
WYOMING
12/14/17

December 2017

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1.0 EXECUTIVE SUMMARY

Whitney Ranch, a new residential community with supporting neighborhood retail, is proposed to be located on the northwest corner of the Whitney Road and Dell Range Boulevard intersection in Cheyenne, Wyoming. At full build out, the project is proposed to include approximately 1,293 single-family detached homes, 913 condominiums/townhouses, two elementary schools, and 567,325 square feet of retail use. It is expected that construction of Whitney Ranch will be developed in phases with the first phase, as studied herein to be Filings 1 and 2, being completed in 2022. The remainder of the project will develop in approximately twenty years. The first phase is expected to include 232 single-family detached homes and 24 condominiums/townhomes. Analysis was therefore conducted for the 2022 short term horizon, as well as the 2040 long-term twenty-year planning horizon.

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections, labeled intersection number 1-22 to correspond with the figures, were incorporated into this traffic study in accordance with the City of Cheyenne standards and Wyoming Department of Transportation (WYDOT) requirements:

1. Dell Range Boulevard and Ridge Road
2. Dell Range Boulevard and College Drive
3. Dell Range Boulevard and Van Buren Avenue
4. Dell Range Boulevard and El Camino/Gysel Place
5. Dell Range Boulevard and James Drive
6. Dell Range Boulevard and Whitney Road
7. Dell Range Boulevard and US-30
8. US-30 and Van Buren Avenue
9. US-30 and Hayes Avenue
10. US-30 and Whitney Road
11. Storey Boulevard and Ridge Road
12. Storey Boulevard and College Drive
13. College Drive and Thomas Road
14. Whitney Road and Beckle Road

15. Whitney Road and Buttercup Drive
16. Whitney Road and Chickadee Drive
17. Whitney Road and Foxglove Drive
18. Storey Boulevard and Van Buren Avenue (Future)
19. Van Buren Avenue and Thomas Road (Future)
20. Van Buren Avenue and Chickadee Drive (Future)
21. Whitney Road Commercial Access (Future)
22. Dell Range Boulevard Commercial Access (Future)

Regional access will be provided by Interstate 25 (I-25), Interstate 80 (I-80), and US-85. Primary access to the site will be provided by Whitney Road, Dell Range Boulevard, Storey Boulevard, and Van Buren Avenue. Direct access to proposed development will be provided by accesses along Dell Range Boulevard including Gysel Place, James Drive, and Commercial Access while access will also be provided along Whitney Road with Buttercup Drive/Thomas Road, Chickadee Drive, Foxglove Drive, and Commercial Access. Internal future access will also be provided along Van Buren Avenue with Chickadee Drive as well as Thomas Road.

Whitney Ranch at full buildout is anticipated to generate approximately 26,869 weekday daily trips with 1,983 of these trips occurring during the morning peak hour and 3,444 trips occurring during the afternoon peak hour. During the first phase, which is anticipated to include Filings 1 and 2, the project is expected to generate approximately 2,464 daily trips with 188 trips occurring during the AM peak hour and 243 trips occurring during PM peak hour.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Whitney Ranch development will be successfully incorporated into the existing and future roadway network. The existing traffic volume analysis, proposed project development, and expected future traffic volumes resulted in the following conclusions and recommendations:

2022 Phase 1 Traffic Condition Improvements

- The intersection of Dell Range Boulevard and College Drive (#2) should be improved to provide two eastbound through lanes. The existing pork chop raised island could be reconstructed to allow for the second through lane through the signalized intersection to then taper to a single eastbound through lane further east using the existing transition.

- The Dell Range Boulevard and Van Buren Avenue intersection (#3) should be signalized, and the northbound and southbound approaches should be designated to provide separate 100-foot left turn lanes

- The northbound approach to the intersection of Dell Range Boulevard and Whitney Road (#6) should be improved to provide a 100-foot separate left turn lane.

- Gysel Place is recommended to be a paved roadway from the intersection with Dell Range Boulevard to provide paved access to the project site upon completion of the first phase of development.

- It is understood that WYDOT is improving US-30 to include two through lanes in each direction throughout the study area. Likewise, the US-30 intersections with Dell Range Boulevard, Van Buren Avenue, Hayes Avenue, and Whitney Road are anticipated to be signalized.

2040 Long-Term Horizon Traffic Condition Improvements

- It is recommended that Dell Range Boulevard be improved to be a five-lane roadway providing two through lanes in each direction between and through the intersections of College Drive to Van Buren Avenue. The five-lane roadway is recommended to transition to one through lane in each direction east of the Van Buren Avenue intersection. A continuous two-way left turn lane should remain through the five-lane section.

- It is recommended that Dell Range Boulevard be improved to be a three-lane roadway with a continuous two way left turn lane between James Drive and Whitney Road.

- It is recommended that the northbound right turn lane at the Dell Range Boulevard and Ridge Road intersection (#1) be restriped to show an extension from the existing 125 feet to 200 feet. Additionally, this intersection may require a second northbound through lane and a 100-foot westbound right turn lane by the long-term horizon.

- The intersection of Dell Range Boulevard and College Drive (#2) may need 225-foot northbound dual left turn lanes, a 250-foot northbound right turn lane, a 100-foot westbound right turn lane, and a 100-foot southbound right turn lane by 2040.

- The intersection of Dell Range Boulevard and James Drive (#5) should be improved to provide a center two-way left-turn lane along Dell Range Boulevard.

- The intersection of Dell Range Boulevard and Whitney Road (#6) should be signalized, and the westbound and southbound approaches should provide separate 100-foot left turn lanes so that all approaches include left turn lanes.

- The eastbound left turn lane at the US-30 and Van Buren Avenue intersection (#8) should be extended to a length of 250 feet to accommodate projected queues.

- A westbound left turn lane at the US-30 and Hayes Avenue intersection (#9) is recommended to be 100-foot long to accommodate projected queues.

- The Storey Boulevard and Ridge Road intersection (#11) should be signalized.

- It is recommended that the eastbound right turn lane at the Storey Boulevard and College Drive intersection (#12) be extended from 100 feet to 175 feet. This intersection should also be considered for signalization and provide a separate 100-foot westbound left turn lane.

- The intersection of College Drive and Thomas Road (#13) may warrant signalization upon buildout of the proposed Whitney Ranch development. The eastbound and

westbound approaches of this intersection should provide separate left turn lanes of 100 feet and 275 feet, respectively.

- The future intersection of Storey Boulevard and Van Buren Avenue (#18) should operate with stop control along Van Buren Avenue or be constructed as a single lane roundabout to accommodate future traffic volumes.

- The future intersection of Thomas Road and Van Buren Avenue (#19) should operate with all-way stop control or be constructed as a single lane roundabout to accommodate future traffic volumes.

- At the full movement access intersections along Dell Range Boulevard (#22) and Whitney Road (#21) for the commercial parcel on the northwest corner of this intersection, it is recommended that the driveway approaches to the public street have separate left turn and right turn lanes and operate with stop control. Likewise, 100-foot left turn lanes for entering traffic movements are also recommended along the public street.

General Recommendations

All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings, and conform to City of Cheyenne and/or Wyoming Department of Transportation standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with the proposed Whitney Ranch project to be located on the northwest corner of the Whitney Road and Dell Range Boulevard intersection in Cheyenne, Wyoming. A vicinity map illustrating the project location is shown in **Figure 1**.

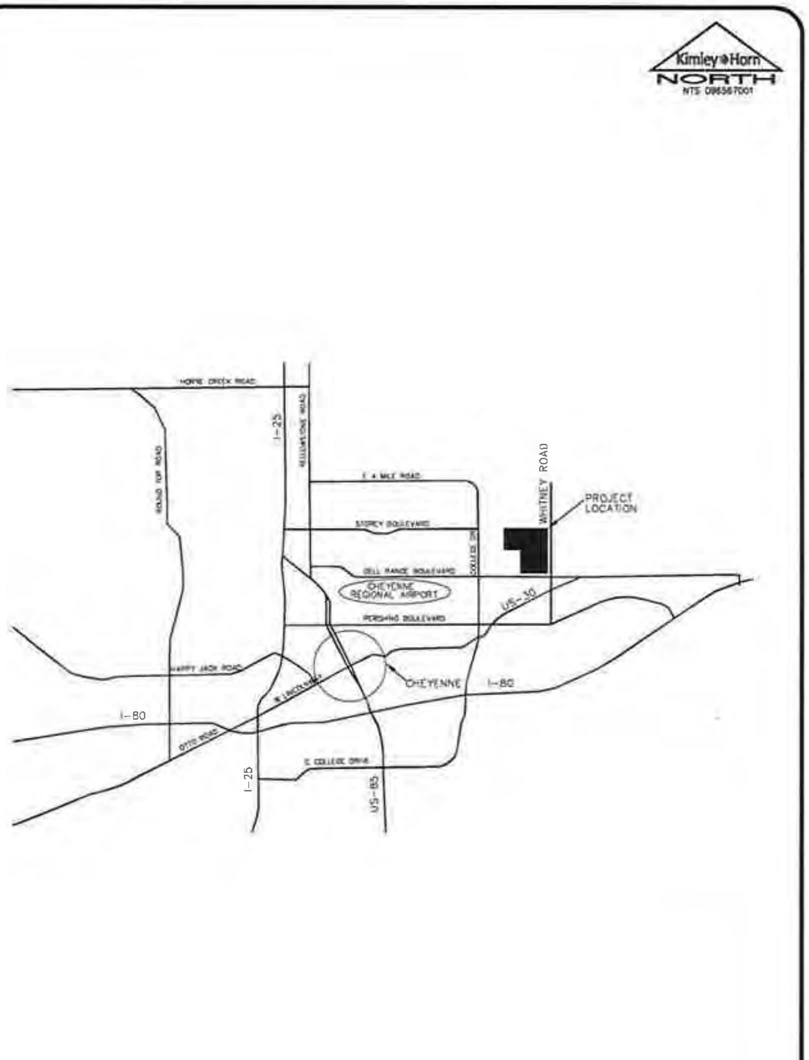
At full build out, Whitney Ranch is proposed to include approximately 1,293 single-family detached homes, 913 condominiums/townhouses, two elementary schools, and 567,325 square feet of retail use. A conceptual land use site plan illustrating the development and access is shown in **Appendix F**. It is expected that construction of Whitney Ranch will be developed in phases with the first phase, as studied herein as Filings 1 and 2, being completed in 2022. The remainder of the project will be developed in approximately twenty years. The first phase will consist of filings one and two and is expected to include 232 single-family detached homes and 24 condominiums/townhomes. Analysis was therefore conducted for the 2022 short term horizon, as well as the 2040 long-term twenty-year planning horizon

The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections, labeled intersection number 1-22 to correspond with the figures, were incorporated into this traffic study in accordance with the City of Cheyenne standards and requirements:

1. Dell Range Boulevard and Ridge Road
2. Dell Range Boulevard and College Drive
3. Dell Range Boulevard and Van Buren Avenue
4. Dell Range Boulevard and El Camino/Gysel Place
5. Dell Range Boulevard and James Drive
6. Dell Range Boulevard and Whitney Road
7. Dell Range Boulevard and US-30
8. US-30 and Van Buren Avenue
9. US-30 and Hayes Avenue
10. US-30 and Whitney Road

11. Storey Boulevard and Ridge Road
12. Storey Boulevard and College Drive
13. College Drive and Thomas Road
14. Whitney Road and Beckle Road
15. Whitney Road and Buttercup Drive
16. Whitney Road and Chickadee Drive
17. Whitney Road and Foxglove Drive
18. Storey Boulevard and Van Buren Avenue (Future)
19. Van Buren Avenue and Thomas Road (Future)
20. Van Buren Avenue and Chickadee Drive (Future)
21. Whitney Road Commercial Access (Future)
22. Dell Range Boulevard Commercial Access (Future)

Regional access will be provided by Interstate 25 (I-25), Interstate 80 (I-80), and US-85. Primary access to the site will be provided by Whitney Road, Dell Range Boulevard, Storey Boulevard, and Van Buren Avenue. Direct access to proposed development will be provided by accesses along Dell Range Boulevard including Gysel Place, James Drive, and Commercial Access while access will also be provided along Whitney Road with Buttercup Drive/Thomas Road, Chickadee Drive, Foxglove Drive, and Commercial Access. Internal future access will also be provided along Van Buren Avenue with Chickadee Drive as well as Thomas Road.



WHITNEY RANCH
VICINITY MAP

FIGURE 1

Kimley»Horn

3.0 EXISTING AND FUTURE CONDITIONS

3.1 Existing Roadway Network

Roadway Descriptions

Whitney Road extends north-south with one through lane in each direction with posted speed limits ranging from 30 miles per hour to 40 miles per hour. It is presently a County roadway. Whitney Road does not widen at intersections for auxiliary turn lanes with the exception of the northbound approach at U-30. Dell Range Boulevard is an east-west roadway that provides two through lanes in each direction west of College Drive and one through lane in each direction east of College Drive. The posted speed limit along Dell Range Boulevard is 40 miles per hour west of College Drive and 35 miles per east of College Drive. Van Buren Avenue extends north-south with one through lane in direction with a posted speed limit of 30 miles per hour south of Dell Range Boulevard and 25 miles per hour north of Dell Range Boulevard.

Storey Boulevard is an east-west roadway that provides one through lane in each direction with a posted speed limit ranging from 30 miles per hour to 35 miles per hour within the study area. The Storey Boulevard alignment changes names to Summit Drive east of Ridge Road and to Beckle Road east of Whitney Road. Storey Boulevard is an unpaved gravel road east of College Drive and terminates at Highland Road to the east. Ridge Road extends north-south with one through lane in each direction with a center two-way left turn lane with a posted speed limit of 35 miles per hour. College Drive is a north-south roadway that provides one through lane in each direction with a posted speed limit of 40 miles per hour. Thomas Road extends east-west with one through lane in direction. Thomas Road is a gravel road to the east of College Drive. US-30 is an east-west roadway with a span that extends northeast and southwest within the study area. US-30 provides two through lanes in each direction with a landscaped median west of Hayes Avenue while providing one through lane in each direction with a center two-way left-turn lane east of Hayes Avenue. US-30 carries a speed limit of 45 miles per hour west of Dell Range Boulevard and 55 miles per hour east of Dell Range Boulevard.

El Camino Drive and Gysel Place are north-south roadways offset by approximately 130 feet and are located between Van Buren Avenue and Whitney Road. Gysel Place is a gravel road extending north of Dell Range Boulevard. El Camino Drive extends south of Dell Range Boulevard with one through lane in each direction. Hayes Avenue extends north-south with one through lane in each direction with a posted speed limit of 25 miles per hour. James Drive alignment is currently a gravel driveway within the County, extending north of Dell Range Boulevard. Buttercup Drive is a County gravel roadway extending east of Whitney Road with a posted speed limit of 30 miles per hour. Chickadee Drive, a gravel County road, extends east of Whitney Road. Foxglove Drive extends east of Whitney Road with one through lane in each direction with a posted speed limit of 30 miles per hour. Foxglove Drive is a County roadway that transitions to a southeast and northwest alignment roadway where it also extends north from Dell Range Boulevard.

Intersection Descriptions

The intersection of Dell Range Boulevard and Ridge Road (Intersection Number 1 in the list and figures) is signalized with protected/permitted left turn phasing on all four approaches. The eastbound approach of this intersection provides a left turn lane, two through lanes and a right turn lane while the westbound approach has a left turn lane and two through lanes with the outermost lane being a shared through/right turn lane. The northbound and southbound approaches include a left turn lane, one through lane, and a right turn lane.

The intersection of Dell Range Boulevard and College Drive (#2) is signalized with protected/permitted left turn phasing on all four approaches. The eastbound approach of this intersection provides a left turn lane, one through lane, and a right turn lane. The westbound, northbound, and southbound approaches all provide a left turn lane and two through lanes with the outermost lane being a shared through/right turn lane.

The intersection of Dell Range Boulevard and Van Buren Avenue (#3) operates with stop control on the northbound and southbound approaches of Van Buren Avenue. The eastbound and westbound approaches of this intersection provide a left turn lane and shared through/right turn lane. The northbound and southbound approaches provide a single shared all movement lane.

The existing intersection of Dell Range Boulevard and El Camino Drive/Gysel Place (#4) operates with stop control along the northbound and southbound approaches. The north and south legs of this intersection are offset by approximately 130 feet, but is analyzed as a four-leg intersection instead of two T-intersections. The eastbound and westbound approaches of this

intersection provide a left turn lane and shared through/right turn lane. The northbound and southbound approaches provide a single shared all movement lane.

The intersection of Dell Range Boulevard and James Drive (#5) operates with stop control along the northbound and southbound approaches. The south leg of this intersection is a driveway providing access to a single-family residence. All four approaches to this intersection provide a single shared all movement lane.

The Dell Range Boulevard and Whitney Road intersection (#6) operates with stop control along the northbound and southbound approaches of Whitney Road. The eastbound approach of this intersection provides a left turn lane and a shared through/right turn lane. The westbound, northbound, and southbound approaches provide single shared movement lanes.

The intersection of Dell Range Boulevard and US-30 (#7) provides stop control along the northbound and southbound approaches. The eastbound approach of this intersection provides a left turn lane and a shared through/right turn lane. The westbound approach includes a left turn lane, one through lane, and a channelized right turn lane. The northbound and southbound approaches provide a single shared all movement lane.

The T-intersection of US-30 and Van Buren Avenue (#8) operates with stop control on the southbound Van Buren Avenue approach. The eastbound approach of this intersection provides a left turn lane and two through lanes while the westbound approach includes two through lanes with the outermost lane being a shared through/right turn lane. The southbound approach provides a shared left turn/right turn lane.

The US-30 and Hayes Avenue intersection (#9) provides stop control along the northbound and southbound approaches. The eastbound approach of this intersection provides a left turn lane, two through lanes and a right turn lane while the westbound approach provides a short left turn lane and two through lanes with the outermost lane being a shared through/right turn lane. The northbound and southbound approaches provide a single shared all movement lane.

The intersection of US-30 and Whitney Road (#10) operates with stop control along the northbound and southbound approaches. The eastbound and westbound approaches of this intersection provide a left turn lane, one through lane, and a right turn lane. The northbound approach includes a left turn lane and a shared through/right turn lane. The southbound approach provides a single shared all movement lane.

The Storey Boulevard and Ridge Road intersection (#11) operates with stop control along eastbound and westbound Storey Boulevard approaches. The eastbound and westbound approaches of this intersection provide a left turn lane, one through lane, and a right turn lane. The northbound and southbound approaches include a left turn lane and a shared through/right turn lane.

The Storey Boulevard and College Drive intersection (#12) operates with stop control along eastbound and westbound Storey Boulevard approaches. The eastbound approach of this intersection provides a left turn lane, one through lane, and a right turn lane, while the westbound approach provides a single shared movement lane. The northbound and southbound approaches provide a left turn lane and a shared through/right turn lane.

The intersection of College Drive and Thomas Road (#13) operates with stop control along eastbound and westbound approaches. The eastbound and westbound approaches of this intersection provide a shared movement lane. The northbound and southbound approaches include a left turn lane and a shared through/right turn lane.

The Whitney Road and Beckle Road intersection (#14) operates with stop control along the eastbound and westbound approaches. All four approaches to this intersection provide a single shared movement lane.

The T-intersection of Whitney Road and Buttercup Drive (#15) operates with stop control along the westbound Buttercup Drive approach. The westbound approach of this intersection provides a shared left turn/right turn lane. The northbound approach provides a shared through/right turn lane while the southbound approach provides a shared left turn/through lane.

The T-intersection of Whitney Road and Chickadee Drive (#16) operates with stop control along the westbound Chickadee Drive approach. The westbound approach of this intersection

provides a shared left turn/right turn lane. The northbound approach provides a shared through/right turn lane while the southbound approach includes a shared left turn/through lane.

The T-intersection of Whitney Road and Foxglove Drive (#17) operates with stop control along the westbound Foxglove Drive approach. The westbound approach of this intersection provides a shared left turn/right turn lane. The northbound approach provides a shared through/right turn lane while the southbound approach provides a shared left turn/through lane.

The intersection lane configuration and control for the study area key intersections are shown in **Figure 2**.

3.2 Future Roadway Network

It is understood that WYDOT is improving US-30 to include two through lanes in each direction throughout the study area. Likewise, the US-30 intersections with Dell Range Boulevard, Van Buren Avenue, Hayes Avenue, and Whitney Road are anticipated to be signalized.

Development of Whitney Ranch will create additional roadways and extensions of existing roadways. Storey Boulevard transitions to Summit Drive east of Ridge Road. Summit Drive extends from Ridge Road to the west and Highland Road to east. Summit Drive is a gravel roadway between College Drive and Highland Road. As Whitney Ranch develops, the existing Summit Drive segment extending from Ridge Road to Highland Road will be named Storey Boulevard. Storey Boulevard currently terminates to east at Highland Road and will be constructed to extend east from Highland Road approximately 5,330 feet to align with Beckle Road at Whitney Road. The gravel segment of Storey Boulevard between College Drive and Highland Road will be paved with development of Whitney Ranch. Van Buren Avenue currently extends approximately 1,000 feet north of Dell Range Boulevard and will be constructed to extend north from Opal Drive approximately 4,300 feet to connect with the existing Van Buren Avenue alignment at Storey Boulevard. The extension of Van Buren Avenue will create three future major intersections that are analyzed in this study. The three future intersections along Van Buren Avenue consist of Van Buren Avenue/Storey Boulevard (#18), Van Buren Avenue/Thomas Road (#19), and Van Buren Avenue/Chickadee Drive (#20). Additionally, two commercial accesses within the retail parcel proposed to be located on the northwest corner of the Dell Range Boulevard and Whitney Road intersection were analyzed in this study. One access is proposed as a full movement access along Whitney Road (#21) while the other is a proposed full movement access along Dell Range Boulevard (#22).

3.3 Existing Study Area

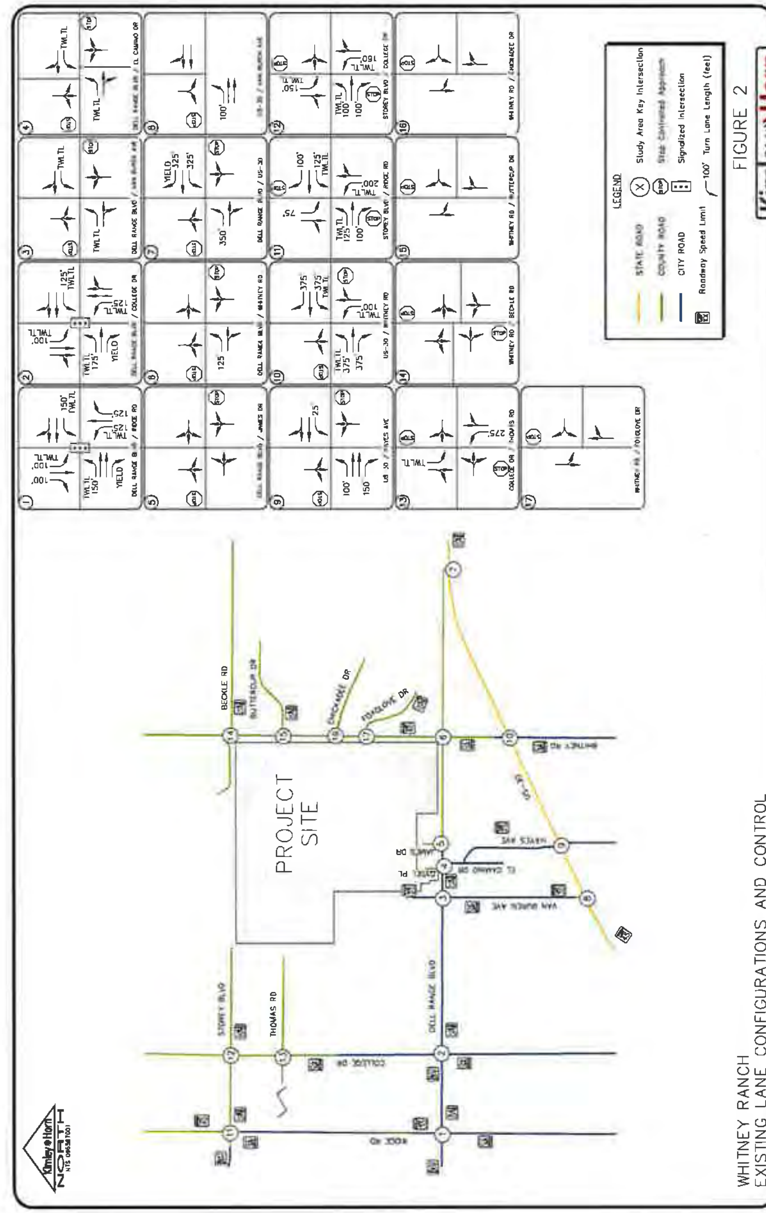
The existing site is comprised of vacant land. The surrounding area contains a mix of uses, but it is primarily residential communities consisting of single-family detached homes. Commercial uses exist to the west of the site and downtown Cheyenne is located several miles southwest of the project site.

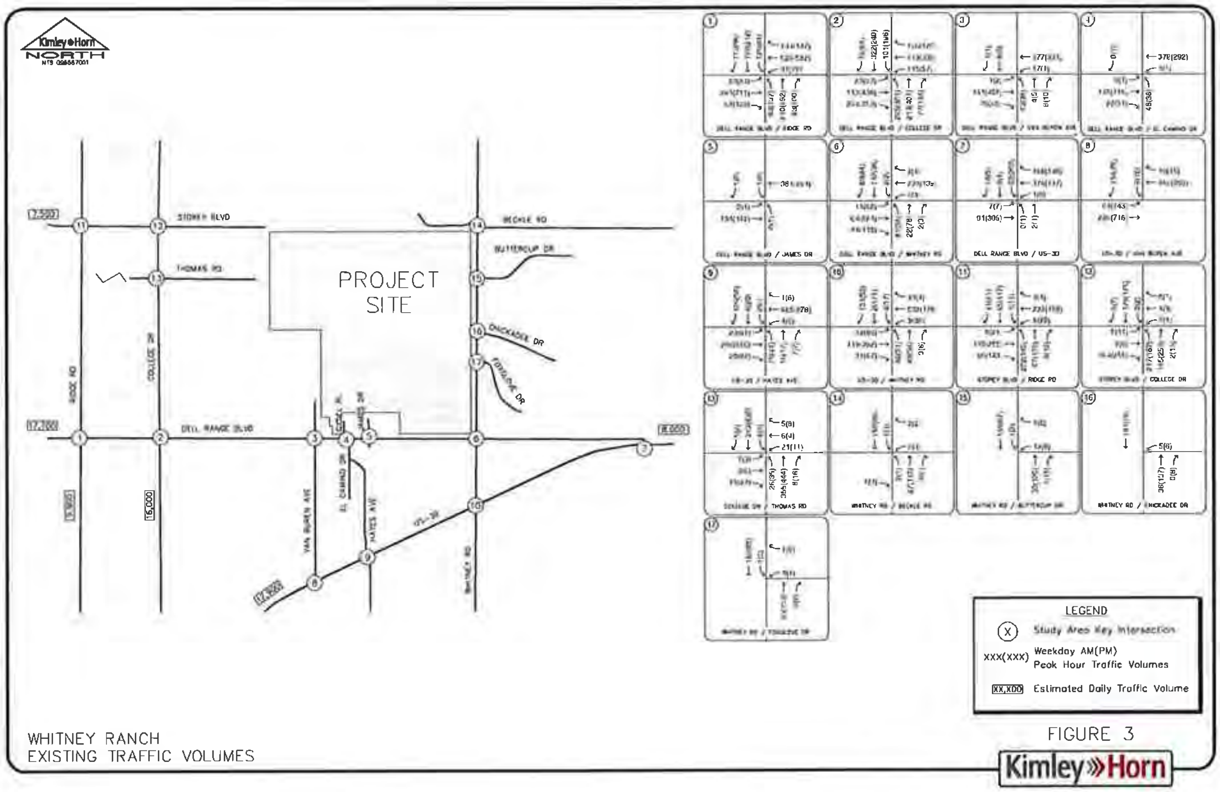
3.4 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the study area intersections on Wednesday, September 6, 2017. The counts were conducted in 15-minute intervals during the morning and afternoon peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. Existing turning movement counts are shown in **Figure 3** with count sheets provided in **Appendix A**.

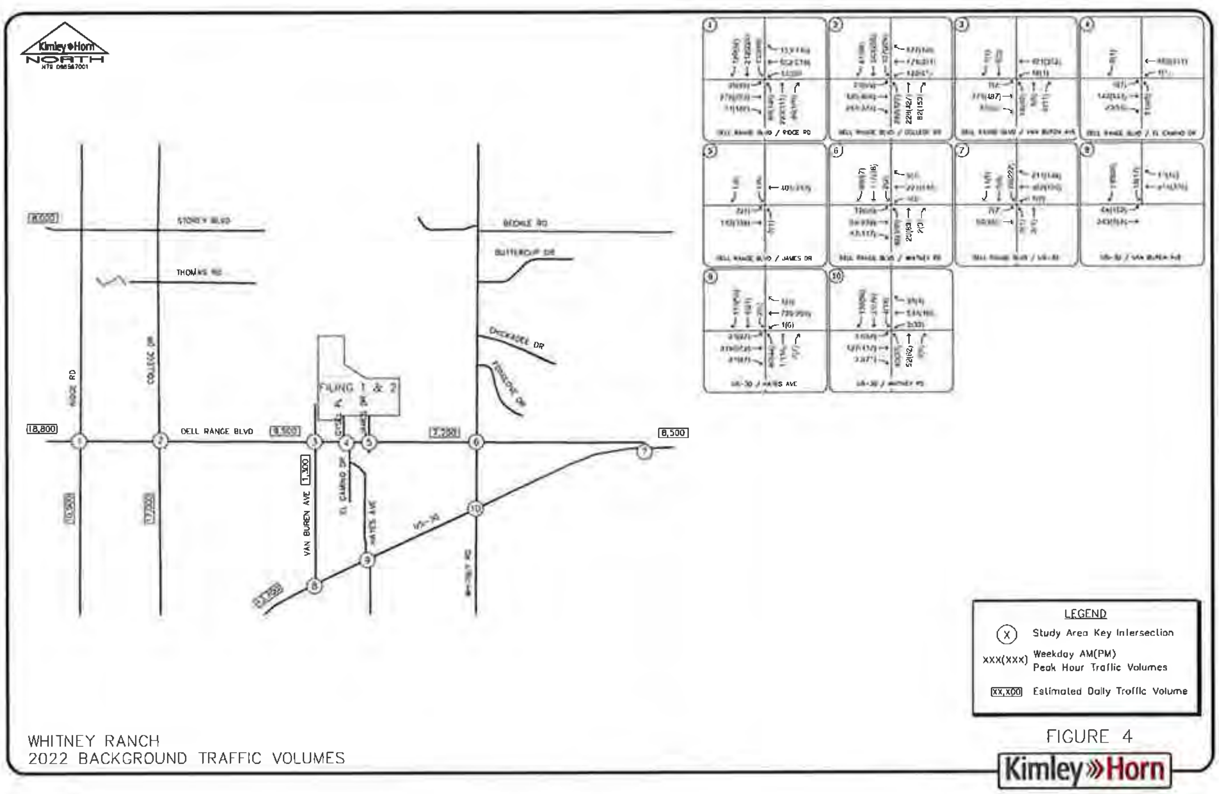
3.5 Unspecified Development Traffic Growth

The City of Cheyenne Transportation Plan identifies a growth assumption of 1.25 percent per year through year 2040. The associated growth assumption is included in **Appendix B**. Based on this, an annual growth rate of 1.25 percent was used to calculate future traffic volumes. This annual growth rate was used to estimate near term 2022 and long term 2040 traffic volume projections at the study area intersections. Background traffic volumes for 2022 and 2040 are shown in **Figures 4** and **5**, respectively.

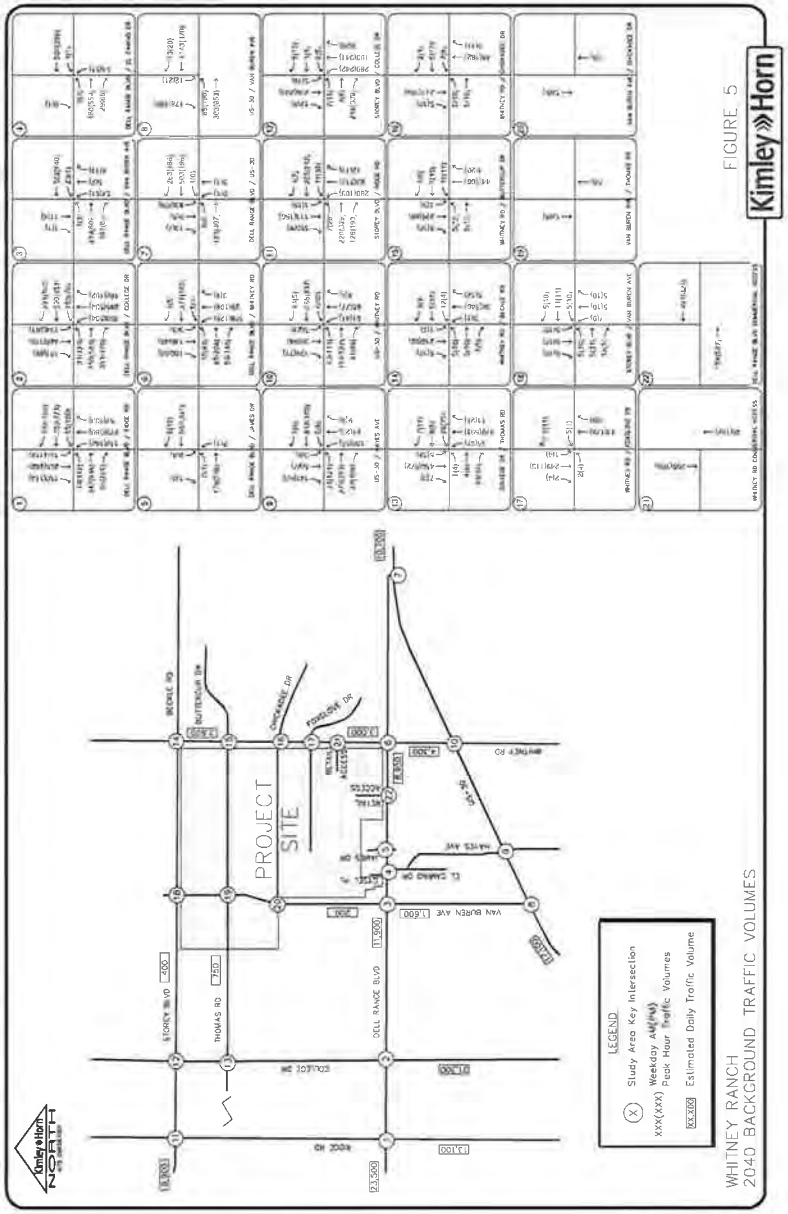




WHITNEY RANCH
EXISTING TRAFFIC VOLUMES



WHITNEY RANCH
2022 BACKGROUND TRAFFIC VOLUMES



4.0 PROJECT TRAFFIC CHARACTERISTICS

4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Report*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report regression equations that apply to Single-Family Detached Housing (ITE Code 210), Condominium/Townhouse (230), Shopping Center, and Elementary School (520) for traffic associated with the proposed Whitney Ranch Lab project.

Table 1 summarizes the estimated trip generation for phase 1 (Filing 1 and 2) for the proposed development. The trip generation worksheets are included in **Appendix C**. These calculations illustrate the equations used and directional distribution of trips.

Table 1 – Whitney Ranch Phase 1 (2022) Project Traffic Generation

Land Use	Quantity	Vehicles Trips						
		Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210)	232 Units	2,278	43	129	172	141	83	224
Condominium/Townhouse (230)	24 Units	186	3	13	16	13	6	19
Total		**2,464**	**46**	**142**	**188**	**154**	**89**	**243**

As shown in **Table 1**, the first phase of the project with development of Filings 1 and 2 is expected to generate approximately 2,464 daily weekday trips with 188 of these trips occurring during the morning peak hour and 243 trips occurring during the afternoon peak hour.

Table 2 summarizes the estimated trip generation for buildout of the Whitney Ranch project.

[1] Institute of Transportation Engineers, *Trip Generation: An Information Report*, Ninth Edition, Washington DC, 2012.

Table 2 – Whitney Ranch Buildout Project Traffic Generation

Land Use	Quantity	Daily	Vehicles Trips					
			AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210)	1,293 Units	11,066	229	686	915	663	389	1,052
Condominium/Townhouse (230)	913 Units	4,406	52	251	303	247	122	369
Shopping Center (820)	567,325 SF	10,493	278	171	449	920	997	1,917
Elementary School (520)	700 Students	904	174	142	316	53	53	106
Total		**26,869**	**733**	**1,250**	**1,983**	**1,883**	**1,561**	**3,444**

At buildout, the proposed development is anticipated to generate approximately 26,869 weekday daily trips with 1,983 of these trips occurring during the morning peak hour and 3,444 trips occurring during the afternoon peak hour.

4.2 Trip Distribution

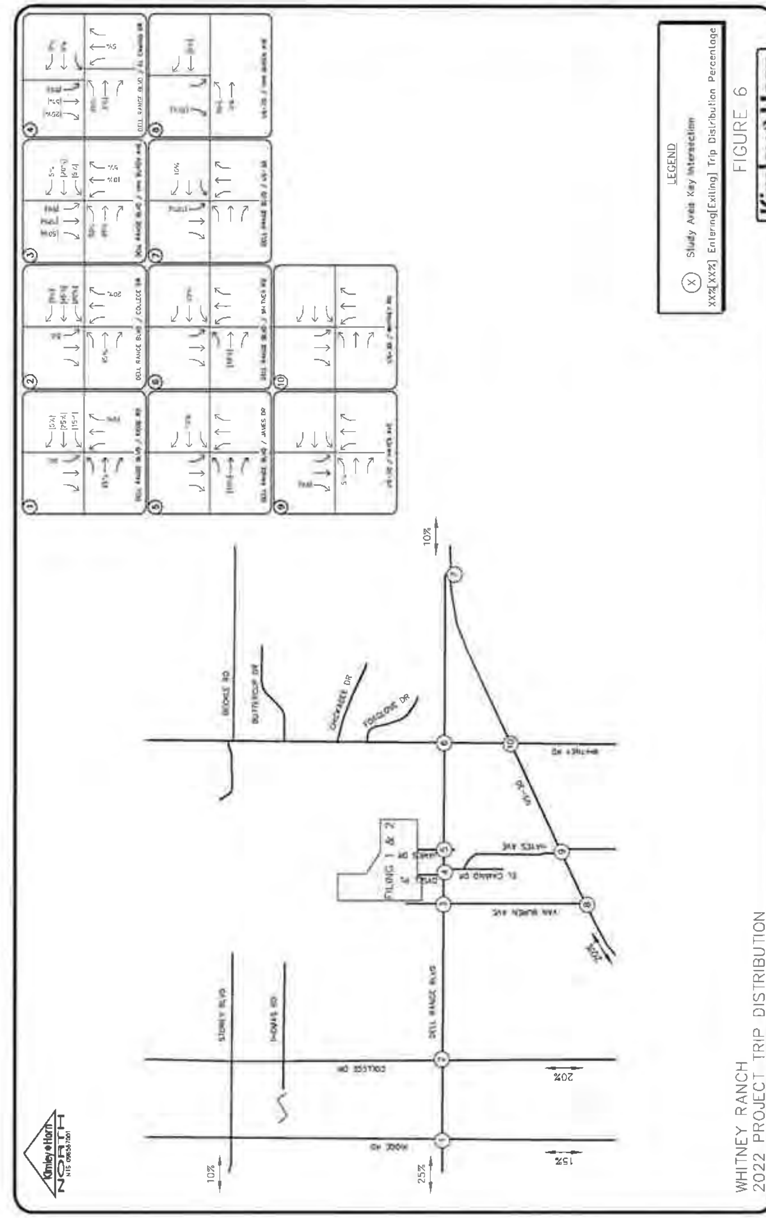
Distribution of Whitney Ranch traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding development areas and type, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The first phase 2022 and buildout 2040 trip distributions for the project are illustrated in **Figures 6** and **7**, respectively.

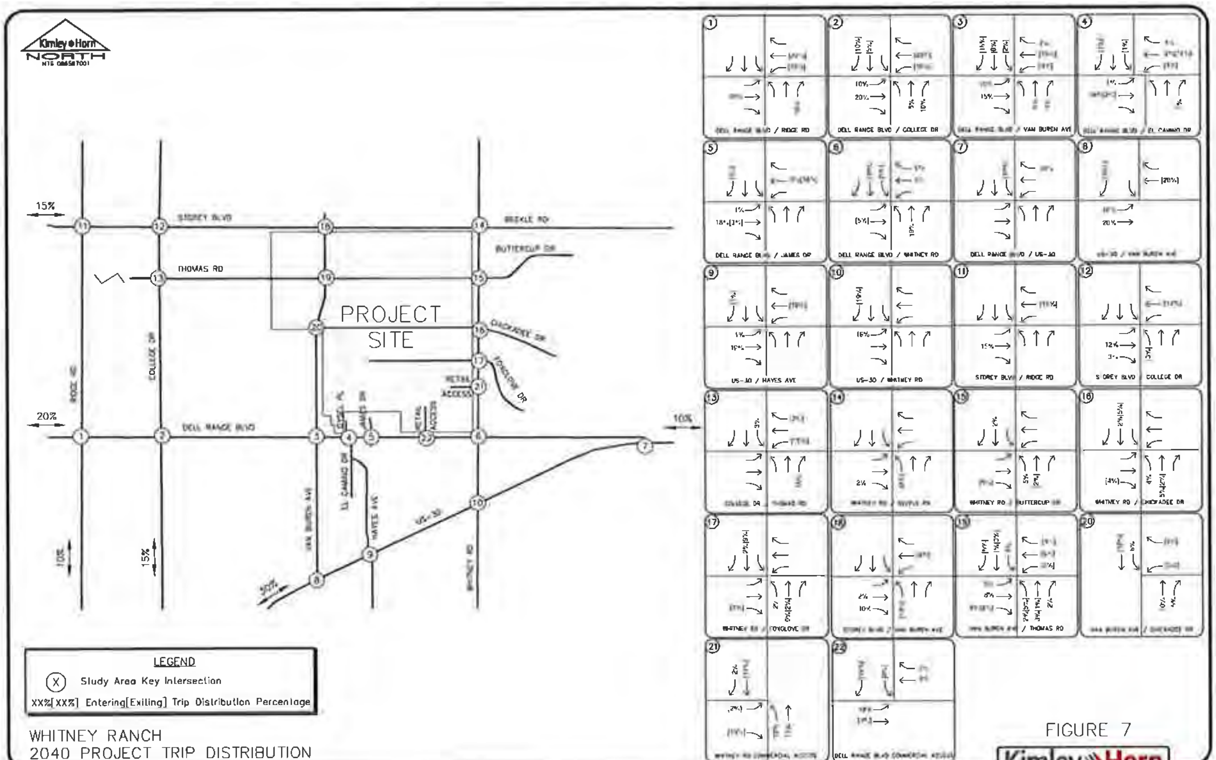
4.3 Traffic Assignment

Traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the project shown in **Table 1** for phase 1 and **Table 2** for buildout. Project traffic assignment for phase 1 and buildout of Whitney Ranch is shown in **Figure 8** and **Figure 9**, respectively.

4.4 Total (Background Plus Project) Traffic

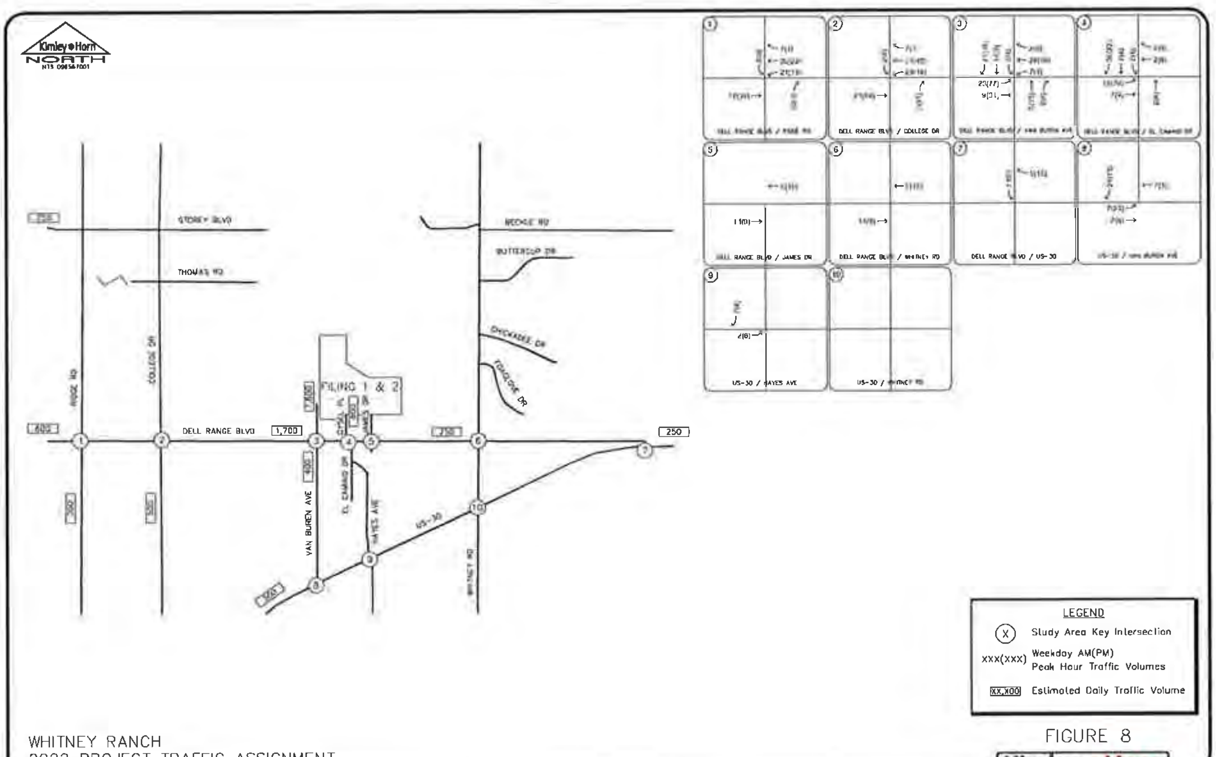
Project traffic volumes were added to the background volumes to represent estimated traffic conditions for the short term 2022 horizon and long term 2040 horizon. These total traffic volumes for the site are illustrated for the 2022 and 2040 horizon years in **Figure 10** and **Figure 11**, respectively.





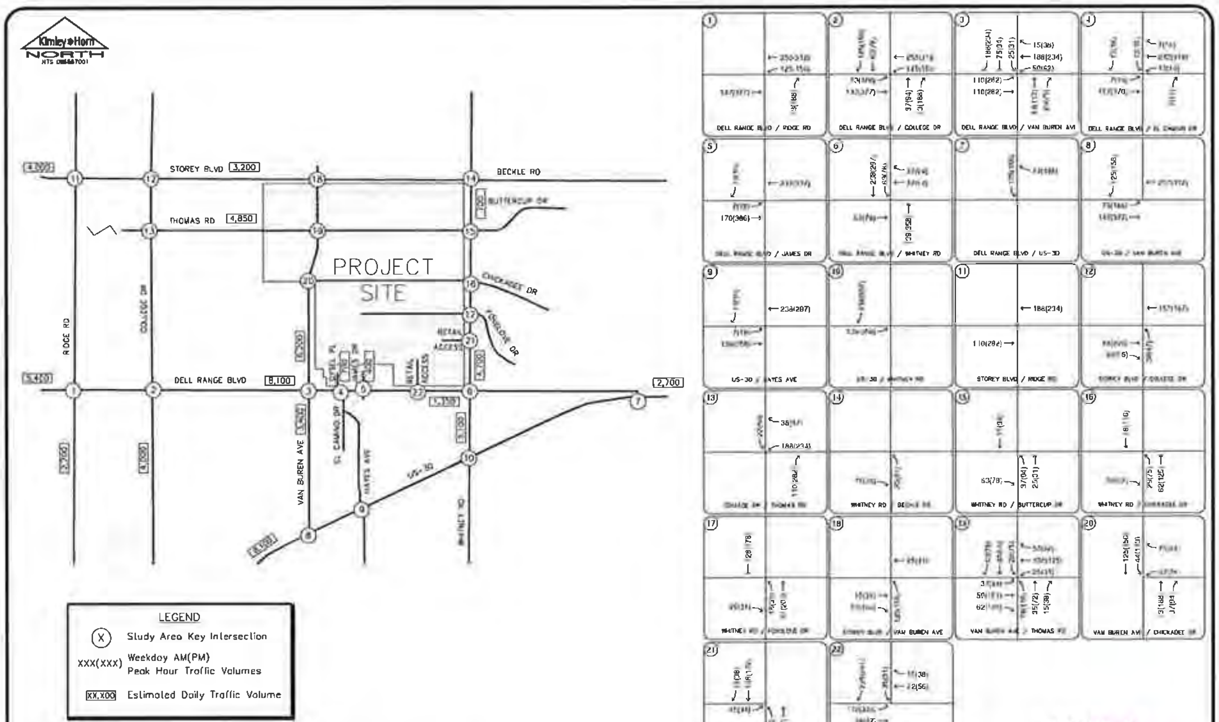
WHITNEY RANCH
2040 PROJECT TRIP DISTRIBUTION

FIGURE 7



WHITNEY RANCH
2022 PROJECT TRAFFIC ASSIGNMENT

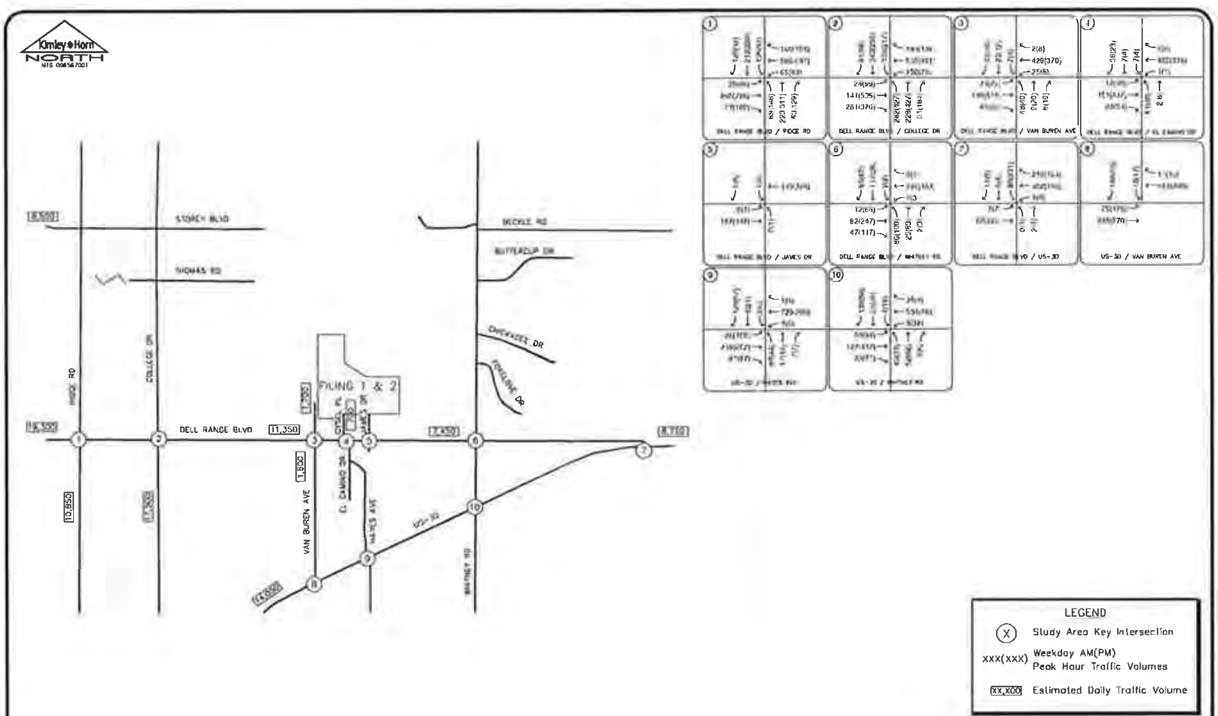
FIGURE 8



WHITNEY RANCH
2040 BUILDOUT PROJECT TRAFFIC ASSIGNMENT

FIGURE 9

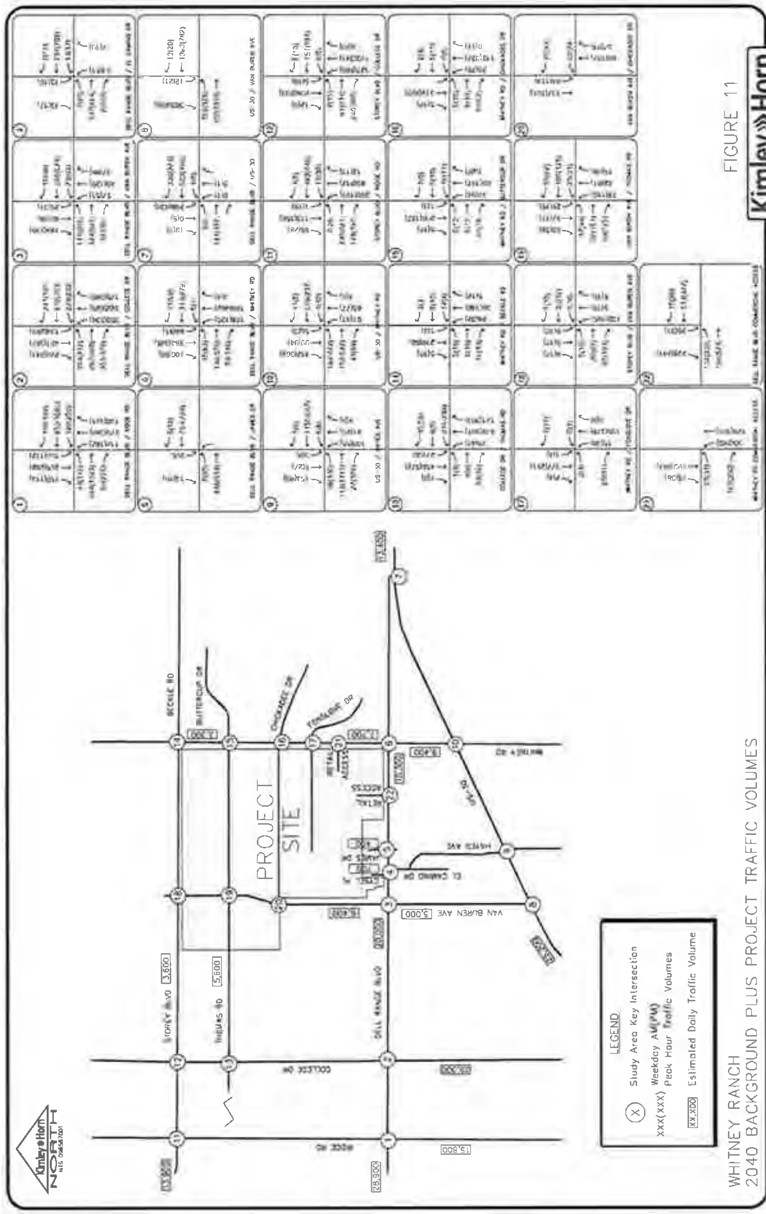
Kimley»Horn



WHITNEY RANCH
2022 BACKGROUND PLUS PROJECT TRAFFIC VOLUMES

FIGURE 10

Kimley»Horn



5.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2022 and 2040 development horizons at the identified key intersection and access driveways Intersection numbers 1-10 were analyzed in the short-term horizon analysis due to the level of development being built by 2022 and the street network expected to exist. Intersection numbers 1-17 as well as the project constructed internal intersection numbers 18-22 were analyzed in the long-term horizon analysis. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*[2]

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS) LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, typical standard traffic engineering procedure recommends overall intersection LOS D and movement/approach LOS E as the minimum threshold for acceptable operations **Table 3** shows the definition of level of service for signalized and unsignalized intersections.

Table 3 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010

[2] Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Washington DC, 2010

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the level of service (LOS) for a two-way stop controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service for a two-way stop-controlled intersection is not defined for the intersection as a whole. Level of service for a signalized and all-way stop controlled intersection is defined for each approach and for the intersection.

5.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections and project access driveways for the study area are provided in **Appendix D**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2.** The signalized intersection analysis for the Dell Range Boulevard/Ridge Road and Dell Range Boulevard/College Drive intersections utilizes the observed cycle lengths of 100 seconds with existing phasing and timing. Synchro traffic analysis software was used to analyze the study area and access roadway intersections. The Synchro Highway Capacity Manual (HCM) methodology reports were used to analyze intersection delay and level of service.

Dell Range Boulevard and Ridge Road (#1)

The Dell Range Boulevard and Ridge Road intersection currently operates under traffic signal control with protected-permitted left phasing on all four approaches. This intersection currently operates acceptably with LOS C during the peak hours. With the addition of project traffic and the existing lane configuration, the intersection is expected to continue to operate acceptably at LOS D or better during the morning and afternoon peak hours in 2022. It is anticipated that a second northbound through lane and a westbound right turn lane will be needed at this intersection by 2040 in order to achieve acceptable levels of service. With these improvements in 2040, the intersection is expected to operate acceptably with LOS C during the morning peak hour and LOS D during the afternoon peak hour. **Table 4** provides the results of the level of service at this intersection.

Table 4 – Dell Range Boulevard and Ridge Road (#1) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing	28.0	C	30.4	C
2022 Background	33.5	C	33.2	C
2022 Background Plus Project	31.7	C	36.4	D
2040 Background	32.4	C	37.3	D
2040 Background Plus Project #	33.4	C	52.5	D

= Two Northbound Through Lanes and a Westbound Right Turn Lane

Dell Range Boulevard and College Drive (#2)

The intersection of Dell Range Boulevard and College Drive currently operates under signal control with protected-permitted left turn phasing on all four approaches. With this control, this intersection currently operates acceptably with LOS C during the morning peak hour and LOS D during the afternoon peak hour. It is anticipated that two eastbound through lanes will be needed by 2022. With this improvement and the addition of project traffic, the intersection is expected to continue to operate acceptably at LOS D during the morning and afternoon peak hours in 2022.

By 2040, it is anticipated that Dell Range Boulevard will need to provide two through lanes in each direction through this intersection. In addition, northbound dual left turn lanes, a northbound right turn lane, a westbound right turn lane and a southbound right turn lane may be needed if future traffic volumes are realized. With these improvements, this intersection is anticipated to operate acceptably during the peak hours in 2040. **Table 5** provides the results of the level of service at this intersection.

Table 5 – Dell Range Boulevard and College Drive (#2) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing	28.8	C	36.8	D
2022 Background	34.7	C	42.3	D
2022 Background Plus Project #	37.2	D	40.9	D
2040 Background	46.8	D	88.1	F
2040 Background Plus Project ##	31.4	C	52.7	D

= Two Eastbound Through Lanes
= Northbound Dual Left Turn Lanes, Northbound Right Turn Lane, Westbound Right Turn Lane, and Southbound Right Turn Lane

Dell Range Boulevard and Van Buren Avenue (#3)

The intersection of Dell Range Boulevard and Van Buren Avenue currently operates with stop control along the northbound and southbound Van Buren Avenue approaches. All movements at this intersection currently operate acceptably with LOS B or better during the morning and afternoon peak hours under existing conditions. With Whitney Ranch development of filings 1 and 2 in 2022, it is anticipated that this intersection will need to be signalized. Northbound and southbound left turn lanes were also included. With this improvement, the intersection is expected to operate acceptably at LOS B during both peak hours in 2022.

By 2040, Dell Range Boulevard is anticipated to provide two through lanes in each direction between College Drive and Van Buren Avenue. With these improvements, the intersection is expected to operate acceptably with LOS D or better during the peak hours in 2040. **Table 6** provides the results of the level of service analysis for this intersection.

Table 6 – Dell Range Boulevard and Van Buren Avenue (#3) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	8.2	A	8.1	A
Westbound Left	8.1	A	8.7	A
Northbound Approach	13.8	B	14.9	B
Southbound Approach	12.8	B	12.7	B
2022 Background				
Eastbound Left	8.2	A	8.2	A
Westbound Left	8.1	A	8.8	A
Northbound Approach	14.5	B	15.6	C
Southbound Approach	13.3	B	13.0	B
2022 Background Plus Project #	23.0	C	17.0	B
2040 Background				
Eastbound Left	8.5	A	8.3	A
Westbound Left	8.0	A	9.2	A
Northbound Approach	14.6	B	17.2	C
Southbound Approach	13.6	B	14.4	B
2040 Background Plus Project ##	23.5	C	43.5	D

= Traffic Signal and Northbound and Southbound Left Turn Lanes
= Eastbound Continuous Right Turn Lane

Dell Range Boulevard and Gysel Place/El Camino Drive (#4)

The intersection of Dell Range Boulevard and Gysel Place/El Camino Dive currently operates with stop control along the northbound and southbound approaches. As mentioned previously, Gysel Place (north leg) and El Camino Drive (south leg) are offset by approximately 130 feet but this intersection is being analyzed as one four-leg intersection rather than two T-intersections. With this control and this configuration, all movements currently operate acceptably with LOS B or better during the peak hours. With the addition of project traffic and the existing lane configurations, all movements at this intersection are expected to operate acceptably during the peak hours in both 2022 and 2040. Therefore, no improvements are anticipated to be needed at this intersection. **Table 7** provides the results of the level of service analysis for this intersection.

Table 7 – Dell Range Boulevard and Gysel Place/El Camino Drive (#4) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	0.0	A	8.0	A
Westbound Left	7.6	A	8.5	A
Northbound Approach	12.2	B	13.8	B
Southbound Approach	0.0	A	10.3	B
2022 Background				
Eastbound Left	0.0	A	8.1	A
Westbound Left	7.7	A	8.6	A
Northbound Approach	12.5	B	14.4	B
Southbound Approach	0.0	A	10.5	B
2022 Background Plus Project				
Eastbound Left	8.2	A	8.6	A
Westbound Left	7.7	A	8.7	A
Northbound Approach	14.0	B	26.5	D
Southbound Approach	11.6	B	12.4	B
2040 Background				
Eastbound Left	0.0	A	8.2	A
Westbound Left	7.7	A	8.9	A
Northbound Approach	13.7	B	15.5	C
Southbound Approach	0.0	A	10.7	B
2040 Background Plus Project				
Eastbound Left	9.5	A	9.5	A
Westbound Left	8.1	A	13.2	B
Northbound Approach	19.8	C	36.6	E
Southbound Approach	16.3	C	23.3	C

Dell Range Boulevard and James Drive (#5)

The Dell Range Boulevard and James Drive intersection currently operates with stop control along the southbound James Drive approach. All movements at this intersection currently operate acceptably with LOS B or better during the peak hours under existing conditions. With the addition of project traffic and the existing lane configurations, all movements at this intersection are expected to operate acceptably during the peak hours in both 2022 and 2040. **Table 8** provides the results of the level of service analysis for this intersection.

Table 8 – Dell Range Boulevard and James Drive (#5) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Approach	0.0	A	12.6	B
Eastbound Left	0.0	A	0.1	A
Southbound Approach	10.9	B	0.0	A
2022 Background				
Northbound Approach	0.0	A	12.9	B
Eastbound Left	0.0	A	0.1	A
Southbound Approach	11.1	B	0.0	A
2022 Background Plus Project				
Northbound Approach	0.0	A	13.1	B
Eastbound Left	0.0	A	0.1	A
Southbound Approach	11.2	B	0.0	A
2040 Background				
Northbound Approach	0.0	A	13.7	B
Eastbound Left	0.0	A	0.0	A
Southbound Approach	12.2	B	13.7	B
2040 Background Plus Project				
Northbound Approach	0.0	A	22.4	C
Eastbound Left	9.5	A	9.5	A
Southbound Approach	15.2	C	16.4	C

Whitney Road and Dell Range Boulevard (#6)

The intersection of Whitney Road and Dell Range Boulevard currently operates with stop control along the northbound and southbound Whitney Road approaches. All movements at this intersection currently operate acceptably with LOS E or better during the morning and afternoon peak hours under existing conditions. Prior to the addition of project traffic, the northbound approach of this intersection is anticipated to operate at LOS F during the afternoon peak hour in 2022. It is anticipated that Dell Range Boulevard would need to be improved with a two-way left-turn lane between James Drive and through this intersection to allow for two stage left turns from Whitney Road in 2022. Additionally, a northbound left turn lane should be provided along Whitney Road in 2022. With these improvements, all movements at this intersection are expected to operate acceptably during the peak hours in 2022.

This intersection was also studied as a single lane, unsignalized roundabout in 2022 and 2040. With this control, the intersection is expected to operate acceptably with LOS A in the 2022 peak hours, and LOS E or better during the 2040 peak hours. Therefore, a traffic signal may be the preferred control type for this intersection. This intersection meets the four-hour signal warrants with projected 2040 traffic volumes. As a result, this intersection was analyzed under signal control in 2040. Westbound and southbound left turn lanes were also included in the 2040 analysis. With these improvements, the intersection is expected to operate acceptably with LOS B during morning peak hour and LOS C during the afternoon peak hour in 2040. **Table 9** provides the results of the level of service analysis for this intersection.

Table 9 – Whitney Road and Dell Range Boulevard (#6) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	7.8	A	7.7	A
Westbound Left	0.3	A	0.2	A
Northbound Approach	25.4	D	40.9	E
Southbound Approach	15.5	C	14.5	B
2022 Background				
Eastbound Left	7.8	A	7.7	A
Westbound Left	0.3	A	0.2	A
Northbound Approach	30.2	D	56.8	F
Southbound Approach	16.6	C	15.3	C
2022 Background Plus Project #				
Eastbound Left	7.8	A	7.8	A
Westbound Left	0.3	A	0.2	A
Northbound Left	20.3	C	17.2	C
Northbound Through/Right	10.9	B	14.6	B
Southbound Approach	14.0	B	12.7	B
2022 Background Plus Project (Roundabout)	7.1	A	7.3	A
2040 Background				
Eastbound Left	7.9	A	7.8	A
Westbound Left	0.2	A	0.2	A
Northbound Approach	36.1	E	124.3	F
Southbound Approach	18.1	C	17.0	C
2040 Background Plus Project ##	17.3	B	22.7	C
2040 Background Plus Project (Roundabout)	19.5	C	47.6	E

= EB and WB TWLTL, NB Left Turn Lane; ## = Signalized, WB and SB Left Turn Lanes

Dell Range Boulevard and US-30 (#7)

The Dell Range Boulevard and US-30 intersection currently operates with stop control along the northbound and southbound approaches. All movements at this intersection currently operate acceptably with LOS C or better during the morning and afternoon peak hours under existing conditions. By 2022, it is anticipated that US-30 will provide two through lanes in each direction and this intersection will have signal control. With this configuration and control, the intersection is anticipated to operate acceptably at LOS B during morning peak hour and LOS C during the afternoon peak hour in 2022. This intersection is expected to continue to operate acceptably during the peak hours in 2040. **Table 10** provides the results of the level of service analysis for this intersection.

Table 10 – Dell Range Boulevard and US-30 (#7) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Approach	14.6	B	13.4	B
Eastbound Left	8.4	A	7.6	A
Westbound Left	7.4	A	0.0	A
Southbound Approach	16.9	C	23.4	C
2022 Background #	15.0	B	21.9	C
2022 Background Plus Project #	15.4	B	22.6	C
2040 Background #	13.9	B	23.0	C
2040 Background Plus Project #	22.0	C	40.1	D

= Traffic signal control with two lanes EB and WB

US-30 and Van Buren Avenue (#8)

The existing T-intersection of US-30 and Van Buren Avenue currently operates with stop control on the southbound Van Buren Avenue approach. With this control, all movements at this intersection currently operate acceptably with LOS C or better during the peak hours under existing conditions. By 2022 it is expected that this intersection will be signalized. With the addition of project traffic and a traffic signal, the intersection is expected to operate acceptably during the peak hours in 2022 and 2040. **Table 11** provides the results of the level of service analysis for this intersection.

Table 11 – US-30 and Van Buren Avenue (#8) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	10.8	B	8.7	A
Southbound Approach	17.2	C	12.4	B
2022 Background #	8.8	A	9.0	A
2022 Background Plus Project #	7.0	A	7.1	A
2040 Background #	18.3	B	12.1	B
2040 Background Plus Project #	5.0	A	6.9	A

= Signalized

US-30 and Hayes Avenue (#9)

The intersection of US-30 and Hayes Avenue currently operates with stop control along the northbound and southbound Hayes Avenue approaches. All movements at this intersection currently operate acceptably with the exception of the northbound approach during the afternoon peak hour. It is anticipated that this intersection will have signal control by 2022. With this improvement, this intersection is anticipated to continue to operate acceptably during the peak hours throughout the 2040 horizon. **Table 12** provides the results of the level of service analysis for this intersection.

Table 12 – US-30 and Hayes Avenue (#9) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	9.5	A	8.3	A
Westbound Left	7.8	A	8.9	A
Northbound Approach	42.3	E	90.0	F
Southbound Approach	14.2	B	24.4	C
2022 Background #	16.6	B	8.6	A
2022 Background Plus Project #	16.8	B	8.8	A
2040 Background #	19.4	B	13.5	B
2040 Background Plus Project #	18.4	B	7.9	A

= Signalized

US-30 and Whitney Road (#10)

The US-30 and Whitney Road intersection currently operates with stop control along the northbound and southbound Whitney Road approaches. The northbound left turn movements and the southbound approach currently operate with unsatisfactory LOS during the afternoon peak hour. It is anticipated that this intersection will operate with signal control by 2022. With the addition of project traffic and a traffic signal, this intersection is anticipated to operate acceptably during the peak hours throughout the 2040 horizon. **Table 13** provides the results of the level of service analysis for this intersection.

Table 13 – US-30 and Whitney Road (#10) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Eastbound Left	8.8	A	7.9	A
Westbound Left	7.6	A	8.4	A
Northbound Left	57.0	F	74.7	F
Northbound Through/Right	21.8	C	32.6	C
Southbound Approach	24.3	C	64.8	F
2022 Background #	20.4	C	22.9	C
2022 Background Plus Project #	23.5	C	22.9	C
2040 Background #	23.3	C	22.1	C
2040 Background Plus Project #	32.7	C	45.0	D

= Signalized

Storey Boulevard and Ridge Road (#11)

The Storey Boulevard and Ridge Road intersection currently operates with stop control on the eastbound and westbound Storey Boulevard approaches. Movements along the eastbound and westbound approaches at this intersection currently are experiencing long delays and LOS F during the peak hours under the existing intersection configuration. As a result, a signal warrant analysis was performed and it was determined that this intersection meets the four-hour signal warrant with future projected traffic volumes. It is understood that this intersection is close to meeting signal warrants today and will be signalized by the City in the near future. Under signal control and the existing lane configurations, this intersection is expected to operate acceptably with LOS B during the peak hours in 2040. **Table 14** provides the results of the level of service analysis for this intersection.

Table 14 – Storey Boulevard and Ridge Road (#11) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Left	8.1	A	8.1	A
Eastbound Left	-	-	124.9	F
Eastbound Through	52.5	F	167.7	F
Eastbound Right	9.5	A	10.3	B
Westbound Left	64.6	F	-	-
Westbound Through	99.7	F	73.7	F
Westbound Right	8.7	A	9.5	A
Southbound Left	7.4	A	7.7	A
2040 Background				
Northbound Left	8.3	A	8.1	A
Eastbound Left	-	-	672.6	F
Eastbound Through	108.1	F	304.0	F
Eastbound Right	9.8	A	10.5	B
Westbound Left	-	-	-	-
Westbound Through	247.7	F	97.0	F
Westbound Right	8.8	A	9.5	A
Southbound Left	7.4	A	7.8	A
2040 Background Plus Project #	18.2	B	18.3	B

= Signalized

Storey Boulevard and College Drive (#12)

The Storey Boulevard and College Road intersection currently operates with stop control on the eastbound and westbound Storey Boulevard approaches. All movements at this intersection are currently operating acceptably with LOS D or better during the peak hours under existing conditions. It is anticipated that a traffic signal will be needed upon buildout of the proposed development. Under signal control and the addition of a westbound left turn lane, this intersection is expected to operate acceptably at LOS B during the morning peak hour and LOS C during the afternoon peak hour in 2040. **Table 15** provides the results of the level of service analysis for this intersection.

Table 15 – Storey Boulevard and College Drive (#12) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Left	8.3	A	8.2	A
Eastbound Left	22.3	C	24.4	C
Eastbound Through	21.4	C	22.5	C
Eastbound Right	10.8	B	11.7	B
Westbound Approach	27.5	D	28.1	D
Southbound Left	0.0	A	7.9	A
2040 Background				
Northbound Left	8.7	A	8.5	A
Eastbound Left	30.8	D	36.1	D
Eastbound Through	28.6	D	31.0	D
Eastbound Right	11.7	B	13.7	B
Westbound Approach	32.1	D	29.7	D
Southbound Left	7.7	A	8.1	A
2040 Background Plus Project #	12.6	B	22.3	C

= Signalized, WB Left Turn Lane

College Drive and Thomas Road (#13)

The College Drive and Thomas Road intersection currently operates with stop control on the eastbound and westbound Thomas Road approaches. All movements at this intersection are currently operating acceptably with LOS D or better during the peak hours under existing conditions. It is anticipated that a traffic signal will be needed upon buildout of the proposed development. Under signal control and the addition of eastbound and westbound left turn lanes, this intersection is expected to operate acceptably during the peak hours in 2040. **Table 16** provides the results of the level of service analysis for this intersection.

Table 16 – College Drive and Thomas Road (#13) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Left	8.2	A	8.6	A
Eastbound Approach	12.6	B	18.9	C
Westbound Approach	24.8	C	27.9	D
Southbound Left	8.2	A	8.4	A
2040 Background				
Northbound Left	8.5	A	9.0	A
Eastbound Approach	13.7	B	21.7	C
Westbound Approach	29.7	D	38.7	E
Southbound Left	8.5	A	9.0	A
2040 Background Plus Project #	11.5	B	36.0	D

= Signalized

Whitney Road and Beckle Road (#14)

The Whitney Road and Beckle Road intersection currently operates with stop control on the eastbound and westbound approaches. All movements at this intersection are currently operating acceptably with LOS B or better during the peak hours under existing conditions. With the addition of project traffic and the existing lane configurations, all movements at this intersection are expected to continue to operate acceptably during the morning and afternoon peak hours in 2040. **Table 17** provides the results of the level of service analysis for this intersection.

Table 17 – Whitney Road and Beckle Road (#14) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Northbound Left	7.6	A	7.4	A
Eastbound Approach	9.3	A	8.8	A
Westbound Approach	10.0	B	9.8	A
Southbound Left	7.3	A	7.6	A
2040 Background				
Northbound Left	7.7	A	7.4	A
Eastbound Approach	10.6	B	10.5	B
Westbound Approach	10.4	B	10.6	B
Southbound Left	7.3	A	7.6	A
2040 Background Plus Project				
Northbound Left	7.8	A	7.5	A
Eastbound Approach	10.3	B	10.1	B
Westbound Approach	11.1	B	11.3	B
Southbound Left	7.3	A	7.6	A

Whitney Road and Buttercup Drive (#15)

The intersection of Whitney Road and Buttercup Drive currently operates with stop control on the westbound Buttercup Drive approach. All movements at this intersection are currently operating acceptably with LOS B or better during the peak hours under existing conditions. A west leg of this intersection, Thomas Road, will be constructed with development of the project site. With the addition of project traffic and the new west leg, all movements at this intersection are expected to continue to operate acceptably with LOS C or better during the morning and afternoon peak hours in 2040. **Table 18** provides the results of the level of service analysis for this intersection.

Table 18 – Whitney Road and Buttercup Drive (#15) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Westbound Approach	10.0	B	10.1	B
Southbound Left	7.3	A	7.6	A
2040 Background				
Westbound Approach	10.2	B	10.3	B
Southbound Left	7.3	A	7.6	A
2040 Background Plus Project				
Northbound Left	7.9	A	7.7	A
Eastbound Approach	10.6	B	11.0	B
Westbound Approach	13.0	B	15.8	C
Southbound Left	7.4	A	7.7	A

Whitney Road and Chickadee Drive (#16)

The intersection of Whitney Road and Chickadee Drive currently operates with stop control on the westbound Chickadee Drive approach. All movements at this intersection are currently operating acceptably with LOS B or better during the peak hours under existing conditions. A west leg of this intersection will be constructed with development of the project site. With the addition of project traffic and the new west leg, all movements at this intersection are expected to continue to operate acceptably with LOS C or better during the morning and afternoon peak hours in 2040. **Table 19** provides the results of the level of service analysis for this intersection.

Table 19 – Whitney Road and Chickadee Drive (#16) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Westbound Approach	10.1	B	10.2	B
2040 Background				
Westbound Approach				
Southbound Left	10.0	B	10.1	B
2040 Background Plus Project				
Northbound Left	8.1	A	7.9	A
Eastbound Approach	11.3	B	12.5	B
Westbound Approach	13.4	B	17.1	C

Whitney Road and Foxglove Drive (#17)

The intersection of Whitney Road and Foxglove Drive currently operates with stop control on the westbound Foxglove Drive approach. All movements at this intersection are currently operating acceptably with LOS A during the peak hours under existing conditions. A west leg of this intersection will be constructed with development of the project site. With the addition of project traffic and the new west leg, all movements at this intersection are expected to continue to operate acceptably with LOS B or better during the morning and afternoon peak hours in 2040. **Table 20** provides the results of the level of service analysis for this intersection.

Table 20 – Whitney Road and Foxglove Drive (#17) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2017 Existing				
Westbound Approach	9.6	A	9.5	A
Southbound Left	7.3	A	7.6	A
2040 Background				
Westbound Approach	10.1	B	9.4	A
Southbound Left	7.3	A	7.6	A
2040 Background Plus Project				
Northbound Left	8.2	A	8.0	A
Eastbound Approach	11.1	B	11.3	B
Westbound Approach	13.6	B	11.5	B
Southbound Left	7.5	A	8.2	A

Storey Boulevard and Van Buren Avenue (#18)

The intersection of Storey Boulevard and Van Buren Avenue will be constructed with development of Whitney Ranch. Stop control should be provided along Van Buren Avenue and single shared all movement lanes are expected to be sufficient on all four approaches upon buildout of the project site. With this control and lane configurations, all movements are anticipated to operate acceptably during the peak hours in 2040 with the addition of project traffic. An additional analysis was performed with this intersection under roundabout control. This intersection is expected to operate acceptably with LOS A during the peak hours in 2040 under roundabout control. **Table 21** provides the results of the level of service analysis for this intersection.

Table 21 – Storey Boulevard and Van Buren Avenue (#18) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2040 Background Plus Project (TWSC)				
Northbound Approach	10.4	B	13.0	B
Eastbound Approach	7.3	A	7.3	A
Westbound Approach	7.5	A	7.8	A
Southbound Approach	9.4	A	10.5	B
2040 Background Plus Project (Roundabout)	4.4	A	5.6	A

Van Buren Avenue and Thomas Road (#19)

The Van Buren Avenue and Thomas Road intersection will be constructed with development of Whitney Ranch. This intersection can operate with all-way stop control or a single lane roundabout. With either control condition, all movements are anticipated to operate acceptably during the peak hours in 2040 with the addition of project traffic. This intersection is expected to operate acceptably with LOS A during the peak hours in 2040 under roundabout control. **Table 22** provides the results of the level of service analysis for this intersection.

Table 22 – Van Buren Avenue and Thomas Road (#19) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2040 Background Plus Project (AWSC)	9.3	A	16.2	C
2040 Background Plus Project (Roundabout)	5.6	A	8.5	A

Van Buren Avenue and Chickadee Drive (#20)

The T-intersection of Van Buren Avenue and Chickadee will be constructed with development of the project site. The westbound approach of this intersection should be stop controlled. With this control and lane configurations, all movements are anticipated to operate acceptably during the peak hours in 2040 with the addition of project traffic. An additional analysis was performed with this intersection under roundabout control. This intersection is expected to operate acceptably with LOS A during the peak hours in 2040 under roundabout control. **Table 23** provides the results of the level of service analysis for this intersection.

Table 23 – Van Buren Avenue and Chickadee Drive (#20) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2040 Background Plus Project (TWSC)				
Westbound Approach	10.9	B	15.9	C
Southbound Approach	7.6	A	8.2	A
2040 Background Plus Project (Roundabout)	4.9	A	6.6	A

Whitney Road and Commercial Access (#21)

The T-intersection Commercial Access along Whitney Road will be constructed with development of the project site. The westbound approach of this access intersection should stop controlled while providing a left turn lane and a right turn lane. The northbound approach should provide a left turn lane and one through lane while the southbound approach provides a shared through/right turn lane. With this control and lane configurations, all movements are expected to operate acceptably during the peak hours in 2040 with the addition of project traffic. **Table 24** provides the results of the level of service analysis for this intersection.

Table 24 – Whitney Road and Commercial Access (#21) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2040 Background Plus Project				
Eastbound Left	12.1	B	20.0	C
Eastbound Right	13.1	B	12.3	B
Northbound Left	8.5	A	8.8	A

Dell Range Boulevard and Commercial Access (#22)

The T-intersection Commercial Access along Dell Range Boulevard will be constructed with development of Whitney Ranch. The eastbound approach of this access intersection should provide a left turn lane and one through lane while the westbound approach provides a shared through/right turn lane. The southbound approach should be stop controlled while providing a left turn lane and a right turn lane. With this control and lane configurations, all movements are expected to operate acceptably during the peak hours in 2040 with the addition of project traffic. **Table 25** provides the results of the level of service analysis for this intersection.

Table 25 – Dell Range Boulevard and Commercial Access (#22) LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2040 Background Plus Project				
Eastbound Left	9.3	A	10.6	B
Southbound Left	14.2	B	37.2	E
Southbound Right	17.2	C	19.8	C

5.3 Queuing Analysis

Queuing analysis was conducted for the study area intersections per City of Cheyenne standards and requirements. Results were obtained from the 95th percentile queue lengths obtained from the Synchro analysis. Queue analysis worksheets at the signalized intersections are provided in **Appendix E**. Queue lengths are shown on the worksheets for the unsignalized intersections on the operational analysis sheets within **Appendix D**. Results of the queuing analysis and recommendations at the study area intersections are provided in **Table 26**.

Table 26 – Queuing Analysis Results and Recommendations

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Calculated Queue (feet)	2022 Recommended Length (feet)	2040 Calculated Queue (feet)	2040 Recommended Length (feet)
Dell Range Blvd & Ridge Road (1)					
Eastbound Left	150' T	65'	150'	60'	150'
Westbound Left	150' T	60'	150'	234'	150' T
Westbound Right	DNE	-	-	92'	**100'**
Northbound Left	125' T	108'	125'	243'	125' T
Northbound Right	125'	48'	125'	288'	**200'**
Southbound Left	100' T	110'	100'	138'	100' T
Southbound Right	100'	35'	100'	55'	100'
Dell Range Blvd & College Drive (2)					
Eastbound Left	175' T	104'	175'	217'	175' T
Westbound Left	125' T	87'	125'	248'	125' T
Westbound Right	DNE	-	-	29'	**100'**
Northbound Left	125' T	326'	125' T	214'	**225' DL**
Northbound Right	DNE	-	-	254'	**250'**
Southbound Left	100' T	190'	100' T	323'	100' T
Southbound Right	DNE	-	-	100'	**100'**
Dell Range Blvd & Van Buren Avenue (3)					
Eastbound Left	TWLTL	44'	TWLTL	222'	TWLTL
Westbound Left	TWLTL	25'	TWLTL	39'	TWLTL
Northbound Left	DNE	43'	**100'**	59'	100'
Southbound Left	DNE	25'	**100'**	49'	100'
Dell Range Blvd & Whitney Road (6)					
Eastbound Left	125'	25'	125'	55'	125'
Westbound Left	DNE	-	-	25'	**100'**
Northbound Left	DNE	36'	**100'**	88'	100'
Southbound Left	DNE	-	-	58'	**100'**
Dell Range Blvd & US-30 (7)					
Eastbound Left	350'	25'	350'	25'	350'
Westbound Left	325'	25'	325'	25'	325'
US-30 & Van Buren Ave (8)					
Eastbound Left	100'	45'	**100'**	238'	**250'**
US-30 & Hayes Ave (9)					
Eastbound Left	100'	44'	100'	41'	100'
Eastbound Right	150'	25'	150'	25'	150'
Westbound Left	25'	25'	25'	25'	**100'**
US-30 & Whitney Road (10)					
Eastbound Left	375' T	75'	375' T	408'	375' T
Westbound Left	375' T	25'	375' T	25'	375' T
Northbound Left	100' T	45'	100' T	72'	100' T
Storey Boulevard & Ridge Road (11)					
Eastbound Left	125' T	-	125'	25'	125'
Eastbound Right	100'	-	100'	28'	100'
Westbound Left	125' T	-	125'	25'	125'
Westbound Right	100'	-	100'	25'	100'
Northbound Left	200' T	-	200'	197'	200'
Southbound Left	75'	-	75'	25'	75'
Storey Boulevard & College Road (12)					
Eastbound Left	100' T	-	100'	25'	100'
Eastbound Right	100'	-	100'	126'	**175'**
Westbound Left	DNE	-	-	25'	**100'**
Northbound Left	160' T	-	160'	187'	160' T
Southbound Left	150' T	-	150'	25'	150'
College Drive & Thomas Road (13)					
Eastbound Left	DNE	-	-	25'	**100'**
Westbound Left	DNE	-	-	269'	**275'**
Northbound Left	275'	-	275'	25'	275'
Southbound Left	TWLTL	-	TWLTL	90'	TWLTL
Whitney Road Commercial Access (21)					
Eastbound Left	DNE	-	-	25'	**100'**
Northbound Left	DNE	-	-	25'	**100'**
Dell Ridge Boulevard Commercial Access (22)					
Eastbound Left	DNE	-	-	50'	**100'**
Southbound Left	DNE	-	-	25'	**100'**

DNE = Does Not Exist; DL = Dual Left Turn Lanes; TWLTL = Two Way Left Turn Lane; T = TWLTL Exists Beyond Left Turn Lane

All new access and roadway intersections should be constructed with the recommended left turn and right turn storage lengths as identified in **Table 26**. The recommended storage lengths that include a "T" indicate that existing storages are not anticipated to meet future storage demands but potential vehicle queues will extend into an existing two way left turn lane.

In the 2022 horizon, the northbound and southbound left turn lanes at the Dell Range Boulevard and Van Buren Avenue intersection (#3) are recommended to provide lengths of 100 feet. The northbound left turn lane at the Dell Range Boulevard and Whitney Road intersection (#6) is recommended at 100 feet.

By the 2040 horizon, there are several other turn lane improvements needed. The existing northbound right turn lane at the intersection of Dell Range Boulevard and Ridge Road (#1) may need to be extended by 2040 to provide 200 feet of storage while the westbound approach may need to provide a 100-foot right turn lane. The northbound approach to the Dell Range Boulevard and College Drive intersection (#2) may need to be improved by 2040 to provide dual left turn lanes with 225 feet of storage, a separate 250-foot right turn lane, a 100-foot westbound right turn lane, and a 100-foot southbound right turn lane. Additional southbound and westbound left turn lanes of 100 feet in length are recommended to be provided at the Dell Range Boulevard and Whitney Road intersection (#6). The eastbound left turn lane at the US-30 and Van Buren Avenue intersection (#8) is recommended at a length of 250 feet. The westbound left turn lane at Dell Range Boulevard and Hayes Avenue (#9) is recommended at 100 feet. The existing eastbound right turn lane at the Storey Boulevard and College Drive intersection (#12) may need to be extended to provide 175 feet of storage. In addition, a 100-foot westbound left turn lane may be needed. At the Thomas Road and College Drive intersection (#13), separate 100-foot eastbound and 275-foot westbound left turn lanes are recommended if Thomas Road provides a connection to the Whitney Ranch project. At the commercial accesses along Dell Range Boulevard (#22) and Whitney Road (#21), 100-foot left turn lanes are recommended for entering traffic movements along the public street. Likewise, separate 100-foot left turn lanes and right turn lanes are recommended for the existing access approach.

5.4 Signal Warrant Analysis

A traffic signal warrant analysis was conducted at the intersections of Dell Range Boulevard/Van Buren Avenue, Dell Range Boulevard/Whitney Road, US-30/Hayes Avenue, US-30/Whitney Road, Storey Boulevard/Ridge Road, Storey Boulevard/College Drive, and College Drive/Thomas Road due to long delays currently being experienced or expected to be experienced with left turn and through movements from stop controlled minor approaches. The most restrictive form of traffic control is the traffic signal. A traffic signal not only provides traffic control and direction to motorists, it also takes on the active role of allocating and assigning time to each direction of travel. Therefore, the installation of traffic signals must be uniform across the entire nation to maintain the proper respect for the devices, as well as to ensure the device benefits the public. The Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) 2009 establishes the standards and the basic principles governing the design, usage, and installation of all traffic control devices (including the traffic signal). The determination to install a traffic control signal should be based on an engineering study of existing traffic conditions, pedestrian characteristics, and the geometry of the intersection in question.

Signal warrant evaluations were conducted in accordance with the requirements set forth in the MUTCD 2009. The intent of this analysis was to conduct an evaluation of traffic and roadway conditions in order to determine if a traffic signal may be the appropriate form of traffic control at the subject intersections. Further study will be required in the future after traffic volumes are realized since the traffic signal warrant application is to be based on actual traffic conditions.

The MUTCD 2009, provides a series of signal warrants that define the minimum conditions under which the installation of a traffic control signal should be considered. The installation of a traffic control signal, even when justified by existing conditions, can be improperly designed, placed, and operated, causing excessive delay, driver disregard and increases in collision frequency. The MUTCD states; "*The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.*" As such, consideration should be given to providing alternative, less restrictive, forms of traffic control; including the installation of multi-way STOP sign control, roundabouts, and turning movement restrictions. Although most of the steps in conducting the traffic signal warrant analysis are quantitative, the final step of recommending whether a signal should be considered for installation involves a degree of qualitative assessments that require the use of engineering judgment.

The justification for the installation of a traffic signal at an intersection is based on warrants stated in the MUTCD 2009. The decision to install a signal should not be based solely upon the warrants, since the installation of traffic signals may increase certain types of collisions. Delay, congestion, approach condition, driver confusion, future land use or other evidence of the need for right-of-way assignment beyond that which could be provided by stop signs must be demonstrated.

When the 85th percentile speed of traffic on the major street exceeds 40 miles per hour in either an urban or rural area, or when the study intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes evaluated may be 70 percent of the stated minimums. For reference, the Dell Range Boulevard/Van Buren Avenue, Dell Range Boulevard/Whitney Road, Storey Boulevard/Ridge Road, Storey Boulevard/College Drive, and College Drive/Thomas Road intersections are not within the 70 percent volume threshold due to the posted speed limits at these locations being 40 miles per hour or less. The intersections of US-30/Hayes Avenue and US-30/Whitney Road fall within the 70 percent volume threshold.

The installation of a traffic control signal should be considered if one or more of the following traffic signal warrants as outlined within the MUTCD are met:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour Volume
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

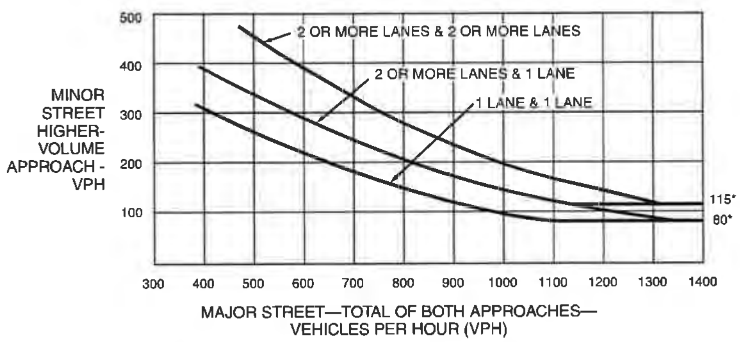
Since this analysis is for a projection of future traffic to determine the likelihood of these intersections meeting traffic volume warrants, the Four-Hour Vehicular Volume (Warrant 2) was

evaluated. These four hours were projected from the morning and afternoon peak hour counts conducted at the intersections with background traffic growth and the addition of project traffic.

Warrant 2, Four-Hour Vehicular Volume

The four-hour vehicular volume warrant is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The installation of a traffic signal shall be considered if the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor street approach are above the appropriate curve in Figure 4C-1 (MUTCD – see following). The higher volume on the minor street does not have to be on the same approach during each of the four hours. If the posted speed limit or the 85th percentile speed exceeds 40 mph on the major street, or if the intersection lies within the built-up area of an isolated community having a population less than 10,000 people, Figure 4C-2 (MUTCD – see following), which represents a 70 percent factor may be used.

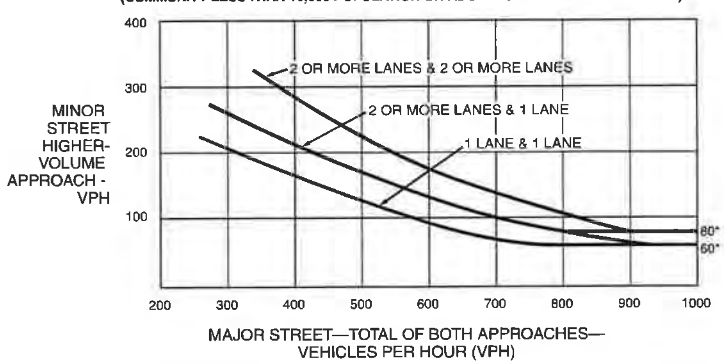
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Traffic Signal Warrant Analysis Results

The following provides an intersection by intersection discussion relative to when traffic signal warrants are anticipated to be met.

Dell Range Boulevard and Van Buren Avenue

The Four-Hour Vehicular Volume signal warrant condition **is satisfied** for the projected 2040 total traffic conditions at the intersection of Dell Range Boulevard and Van Buren Avenue. All four of the hourly data points for 2040 which represent the vehicles per hour on the major street (total of both directions) and the corresponding vehicles per hour on the minor street approach are above the curve in Figure 4C-1 of the MUTCD for the existing combination of dual approach lanes and a single approach lane. The plotted points are shown in **Figure 12**. Therefore, a traffic signal is anticipated to be the appropriate control at this intersection with development of Whitney Ranch.

Dell Range Boulevard and Whitney Road

The Four-Hour Vehicular Volume signal warrant condition **is satisfied** for the projected 2040 total traffic conditions at the intersection of Dell Range Boulevard and Whitney Road. All four of the hourly data points for 2040 which represent the vehicles per hour on the major street (total of both directions) and the corresponding vehicles per hour on the minor street approach are above the curve in Figure 4C-1 of the MUTCD for the existing combination of a single approach lane and a single approach lane. The plotted points are shown in **Figure 13**. Therefore, a traffic signal is anticipated to be the appropriate control at this intersection with continued development of the surrounding area.

Storey Boulevard and Ridge Road

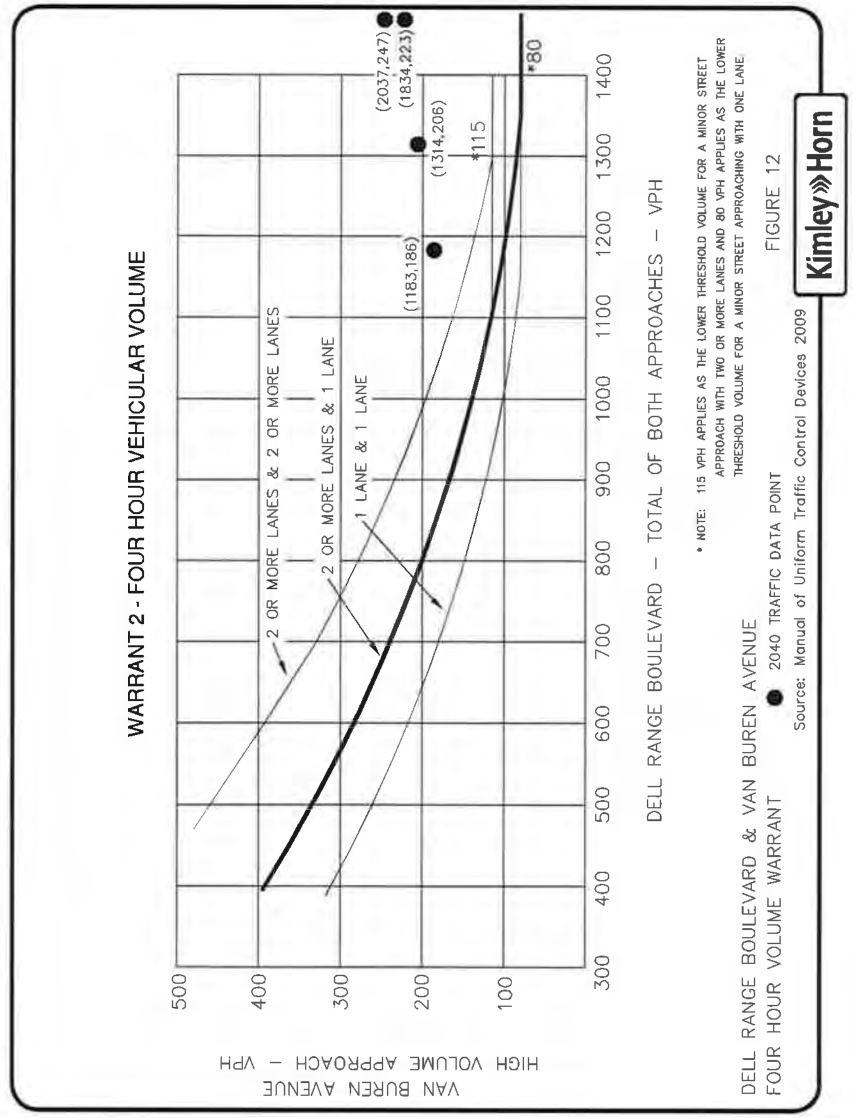
The Four-Hour Vehicular Volume signal warrant condition **is satisfied** for the projected 2040 total traffic conditions at the intersection of Storey Boulevard and Ridge Road. All four of the hourly data points for 2040 which represent the vehicles per hour on the major street (total of both directions) and the corresponding vehicles per hour on the minor street approach are above the curve in Figure 4C-1 of the MUTCD for the existing combination of dual approach lanes and a single approach lane. The plotted points are shown in **Figure 16**. Therefore, a traffic signal is anticipated to be the appropriate control at this intersection with continued development of the surrounding area.

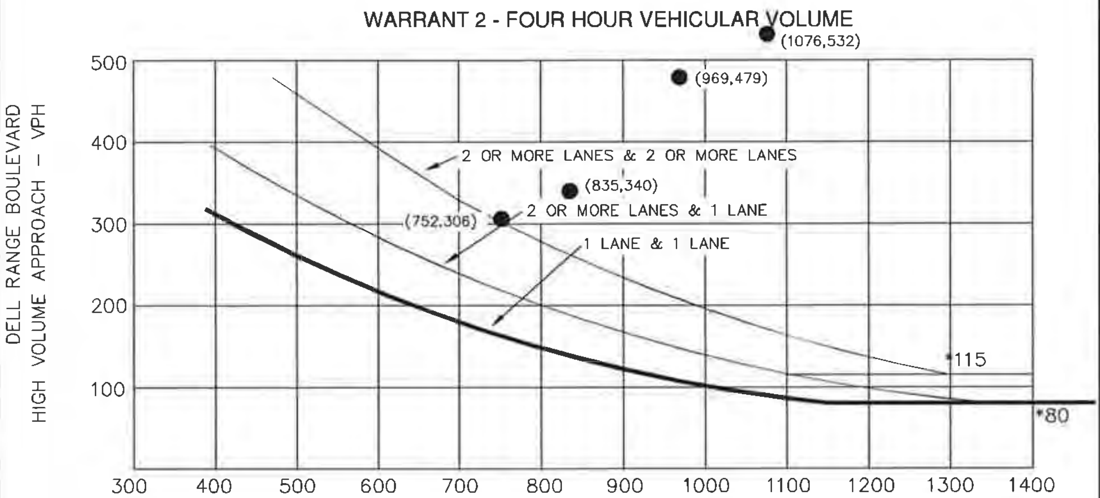
College Drive and Storey Boulevard

The Four-Hour Vehicular Volume signal warrant condition **is satisfied** for the projected 2040 total traffic conditions at the intersection of College Drive and Storey Boulevard. All four of the hourly data points for 2040 which represent the vehicles per hour on the major street (total of both directions) and the corresponding vehicles per hour on the minor street approach are above the curve in Figure 4C-1 of the MUTCD for the existing combination of a single approach lane and a single approach lane. The plotted points are shown in **Figure 17**. Therefore, a traffic signal is anticipated to be the appropriate control at this intersection with continued development of the surrounding area.

College Drive and Thomas Road

The Four-Hour Vehicular Volume signal warrant condition **is satisfied** for the projected 2040 total traffic conditions at the intersection of College Drive and Thomas Road. All four of the hourly data points for 2040 which represent the vehicles per hour on the major street (total of both directions) and the corresponding vehicles per hour on the minor street approach are above the curve in Figure 4C-1 of the MUTCD for the existing combination of a single approach lane and a single approach lane. The plotted points are shown in **Figure 18**. Therefore, a traffic signal is anticipated to be the appropriate control at this intersection with development of Whitney Ranch.





* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

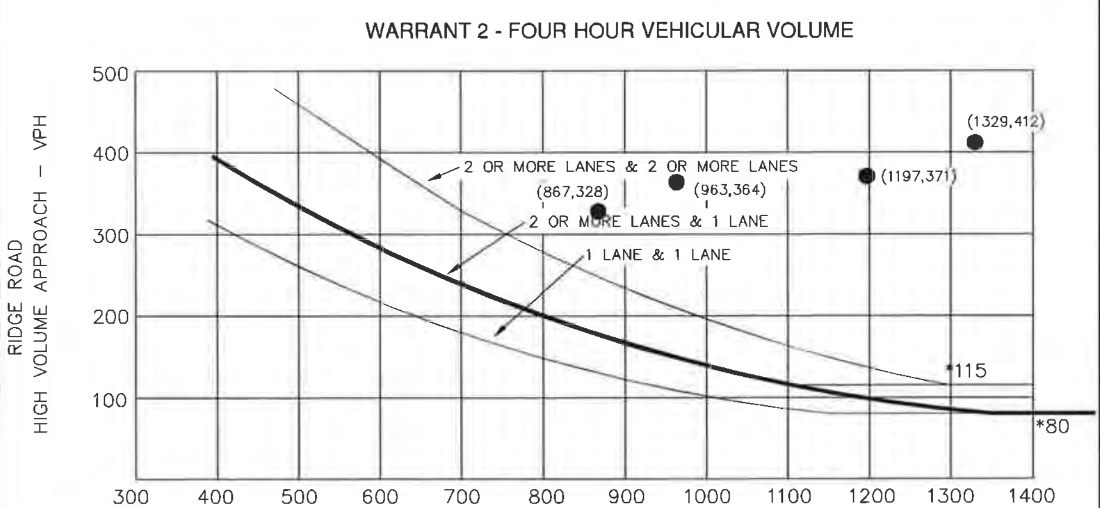
WHITNEY ROAD & DELL RANGE BOULEVARD
FOUR HOUR VOLUME WARRANT

● 2040 TRAFFIC DATA POINT

FIGURE 13

Source: Manual of Uniform Traffic Control Devices 2009

Kimley»Horn



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

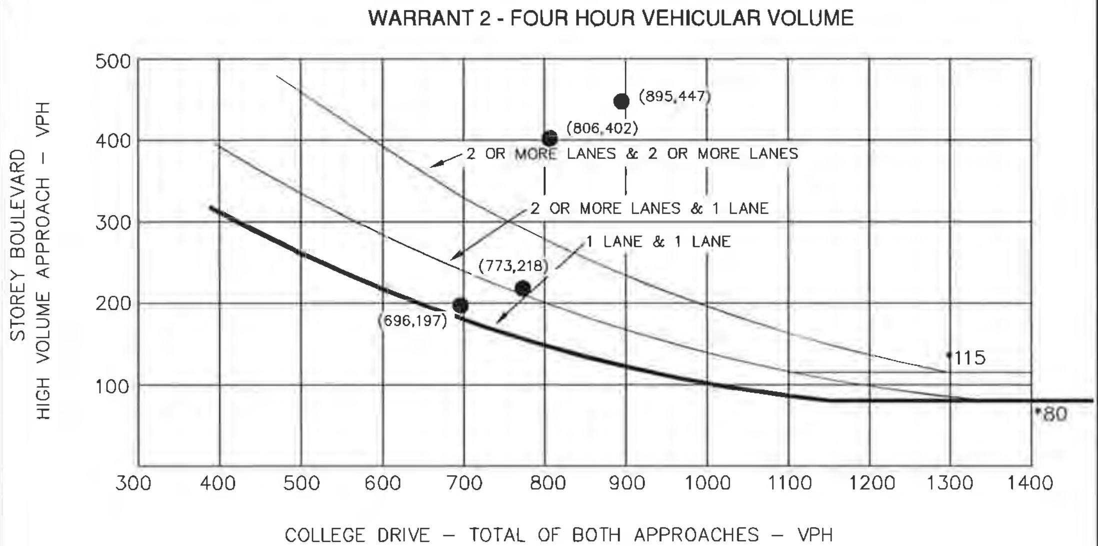
STOREY BOULEVARD & RIDGE ROAD
FOUR HOUR VOLUME WARRANT

● 2040 TRAFFIC DATA POINT

FIGURE 14

Source: Manual of Uniform Traffic Control Devices 2009

Kimley»Horn



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE

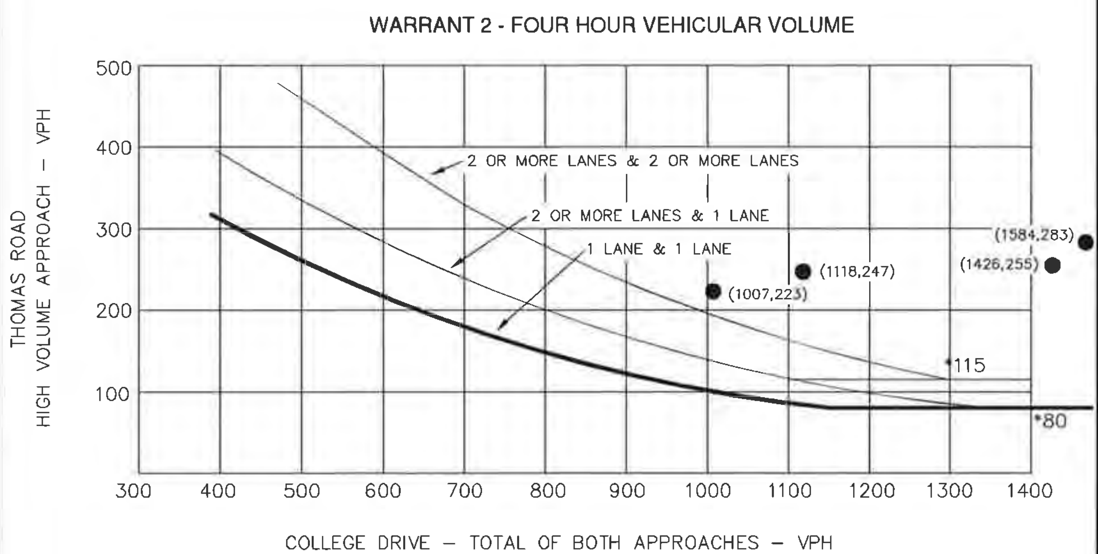
COLLEGE DRIVE & STOREY BOULEVARD
FOUR HOUR VOLUME WARRANT

● 2040 TRAFFIC DATA POINT

FIGURE 15

Source: Manual of Uniform Traffic Control Devices 2009

Kimley»Horn



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

COLLEGE DRIVE & THOMAS ROAD
FOUR HOUR VOLUME WARRANT

● 2040 TRAFFIC DATA POINT

FIGURE 16

Source: Manual of Uniform Traffic Control Devices 2009

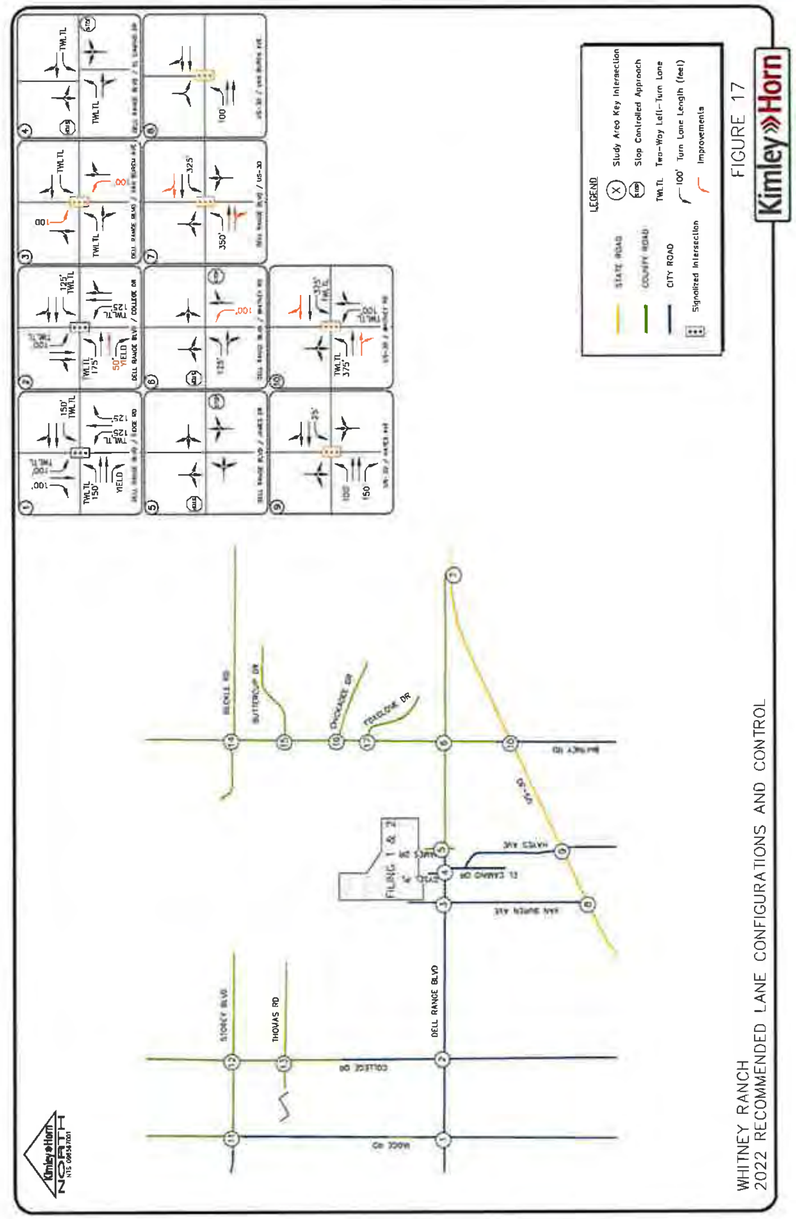
Kimley»Horn

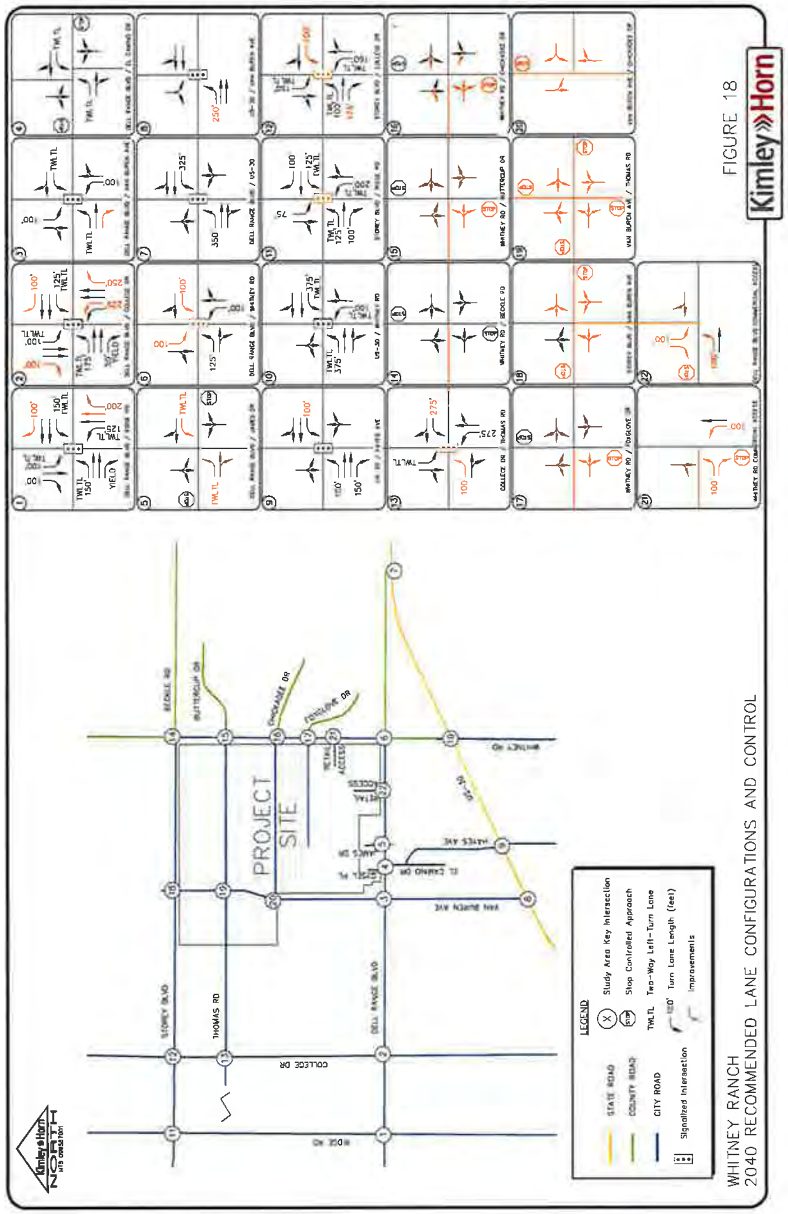
5.5 Pedestrian and Transit Connections

Pedestrian connections are recommended from Whitney Ranch to surrounding sidewalks. As part of the first phase of Filings 1 and 2, sidewalks will be constructed along both sides of the public streets within the project site. These sidewalks will provide a connection to Van Buren Avenue and the existing sidewalk provided along the east side of the roadway. Sidewalks exist along both sides of Van Buren Avenue to Dell Range Boulevard that connect to the pedestrian pathways along this roadway. Likewise, a crosswalk exists across the west leg of the Dell Range Boulevard and Van Buren Avenue intersection to provide pedestrian access to the school to the south of this intersection. This pedestrian crosswalk will be enhanced by the recommended signalization of this intersection. Presently, no transit service is available in the area. As the population of the area grows, necessary connections to any transit facility will be considered.

5.6 Improvement Summary

Based on the results of the operational and queuing analysis, the recommended lane configurations and control of the study key intersections and project access driveway is shown in **Figure 19** for the 2022 horizon and **Figure 20** for the 2040 horizon.





6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed Whitney Ranch development will be successfully incorporated into the existing and future roadway network. The existing traffic volume analysis, proposed project development, and expected future traffic volumes resulted in the following conclusions and recommendations:

2022 Phase 1 Traffic Condition Improvements

- The intersection of Dell Range Boulevard and College Drive (#2) should be improved to provide two eastbound through lanes. The existing pork chop raised island could be reconstructed to allow for the second through lane through the signalized intersection to then taper to a single eastbound through lane further east using the existing transition.
- The Dell Range Boulevard and Van Buren Avenue intersection (#3) should be signalized, and the northbound and southbound approaches should be designated to provide separate 100-foot left turn lanes.
- The northbound approach to the intersection of Dell Range Boulevard and Whitney Road (#6) should be improved to provide a 100-foot separate left turn lane.
- Gysel Place is recommended to be a paved roadway from the intersection with Dell Range Boulevard to provide paved access to the project site upon completion of the first phase of development.
- It is understood that WYDOT is improving US-30 to include two through lanes in each direction throughout the study area. Likewise, the US-30 intersections with Dell Range Boulevard, Van Buren Avenue, Hayes Avenue, and Whitney Road are anticipated to be signalized.

2040 Long-Term Horizon Traffic Condition Improvements

- It is recommended that Dell Range Boulevard be improved to be a five-lane roadway providing two through lanes in each direction between and through the intersections of College Drive to Van Buren Avenue. The five-lane roadway is recommended to transition to one through lane in each direction east of the Van Buren Avenue intersection. A continuous two-way left turn lane should remain through the five-lane section.

- It is recommended that Dell Range Boulevard be improved to be a three-lane roadway with a continuous two way left turn lane between James Drive and Whitney Road.
- It is recommended that the northbound right turn lane at the Dell Range Boulevard and Ridge Road intersection (#1) be restriped to show an extension from the existing 125 feet to 200 feet. Additionally, this intersection may require a second northbound through lane and a 100-foot westbound right turn lane by the long-term horizon.
- The intersection of Dell Range Boulevard and College Drive (#2) may need 225-foot northbound dual left turn lanes, a 250-foot northbound right turn lane, a 100-foot westbound right turn lane, and a 100-foot southbound right turn lane by 2040.
- The intersection of Dell Range Boulevard and James Drive (#5) should be improved to provide a center two-way left-turn lane along Dell Range Boulevard.
- The intersection of Dell Range Boulevard and Whitney Road (#6) should be signalized, and the westbound and southbound approaches should provide separate 100-foot left turn lanes so that all approaches include left turn lanes.
- The eastbound left turn lane at the US-30 and Van Buren Avenue intersection (#8) should be extended to a length of 250 feet to accommodate projected queues.
- A westbound left turn lane at the US-30 and Hayes Avenue intersection (#9) is recommended to be 100-foot long to accommodate projected queues.
- The Storey Boulevard and Ridge Road intersection (#11) should be signalized.
- It is recommended that the eastbound right turn lane at the Storey Boulevard and College Drive intersection (#12) be extended from 100 feet to 175 feet. This intersection

should also be considered for signalization and provide a separate 100-foot westbound left turn lane.

- The intersection of College Drive and Thomas Road (#13) may warrant signalization upon buildout of the proposed Whitney Ranch development. The eastbound and westbound approaches of this intersection should provide separate left turn lanes of 100 feet and 275 feet, respectively.
- The future intersection of Storey Boulevard and Van Buren Avenue (#18) should operate with stop control along Van Buren Avenue or be constructed as a single lane roundabout to accommodate future traffic volumes.
- The future intersection of Thomas Road and Van Buren Avenue (#19) should operate with all-way stop control or be constructed as a single lane roundabout to accommodate future traffic volumes.
- At the full movement access intersections along Dell Range Boulevard (#22) and Whitney Road (#21) for the commercial parcel on the northwest corner of this intersection, it is recommended that the driveway approaches to the public street have separate left turn and right turn lanes and operate with stop control. Likewise, 100-foot left turn lanes for entering traffic movements are also recommended along the public street.

General Recommendations

All on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings, and conform to City of Cheyenne and/or Wyoming Department of Transportation standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

APPENDICES

APPENDIX A

Intersection Count Sheets

Kimley-Horn and Associates, Inc.
096567001 – Whitney Ranch - Cheyenne

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

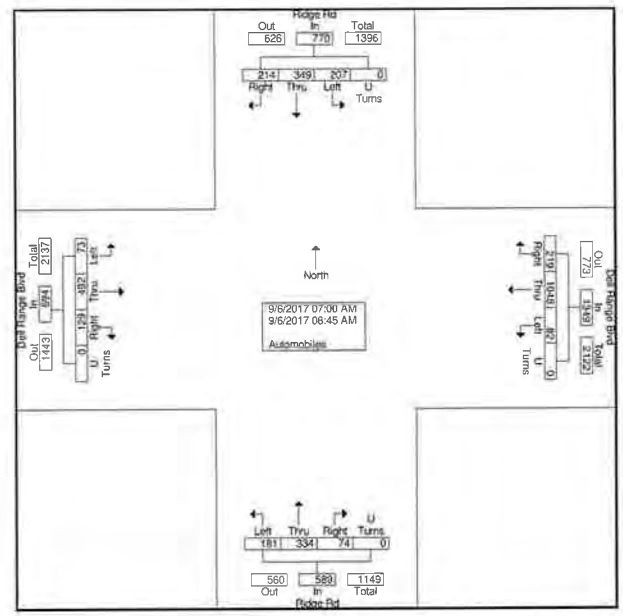
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	7	41	14	0	62	11	135	30	0	176	15	29	3	0	47	25	33	25	0	83	368
07:15 AM	8	58	13	0	79	12	150	15	0	177	28	33	12	0	73	19	39	40	0	98	427
07:30 AM	5	70	11	0	86	13	134	20	0	167	19	48	8	0	75	30	41	33	0	104	432
07:45 AM	10	67	13	0	90	12	159	51	0	222	33	66	14	0	113	36	52	35	0	123	548
Total	30	236	51	0	317	48	578	116	0	742	95	176	37	0	308	110	165	133	0	408	1775
08:00 AM	6	61	26	0	93	6	101	44	0	151	16	49	7	0	72	29	55	26	0	110	426
08:15 AM	12	63	17	0	92	10	134	29	0	173	16	47	14	0	77	30	51	19	0	100	442
08:30 AM	13	73	14	0	100	8	106	10	0	124	31	30	7	0	68	19	46	20	0	85	377
08:45 AM	12	59	21	0	92	10	129	20	0	159	23	32	9	0	64	19	32	16	0	67	382
Total	43	256	78	0	377	34	470	103	0	607	86	158	37	0	281	97	184	81	0	362	1627
Grand Total	73	492	129	0	694	82	1048	219	0	1349	181	334	74	0	589	207	349	214	0	770	3402
Apprch %	10.5	70.9	18.6	0		6.1	77.7	16.2	0		30.7	56.7	12.6	0		26.9	45.3	27.8	0		
Total %	2.1	14.5	3.8	0	20.4	2.4	30.8	6.4	0	39.7	5.3	9.8	2.2	0	17.3	6.1	10.3	6.3	0	22.6	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



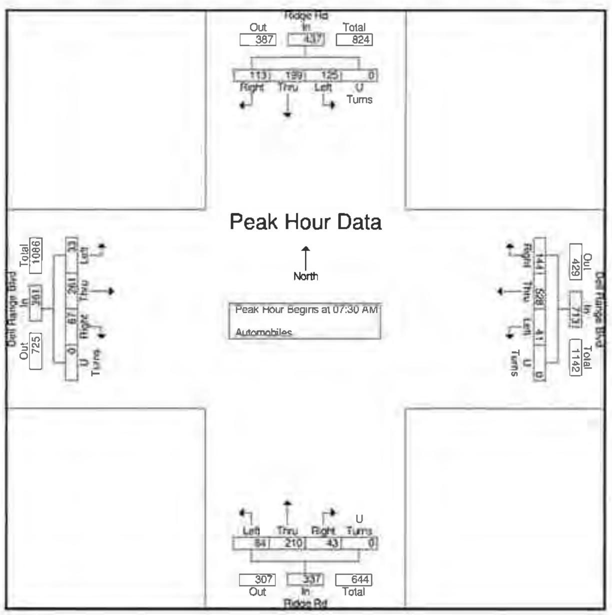
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	5	70	11	0	86	13	134	20	0	167	19	48	8	0	75	30	41	33	0	104	432
07:45 AM	10	67	13	0	90	12	159	51	0	222	33	66	14	0	113	36	52	35	0	123	548
08:00 AM	6	61	26	0	93	6	101	44	0	151	16	49	7	0	72	29	55	26	0	110	426
08:15 AM	12	63	17	0	92	10	134	29	0	173	16	47	14	0	77	30	51	19	0	100	442
Total Volume	33	261	67	0	361	41	528	144	0	713	84	210	43	0	337	125	199	113	0	437	1848
% App. Total	9.1	72.3	18.6	0		5.8	74.1	20.2	0		24.9	62.3	12.8	0		28.6	45.5	25.9	0		
PHF	.688	.932	.644	.000	.970	.788	.830	.706	.000	.803	.636	.795	.768	.000	.745	.868	.905	.807	.000	.888	.843



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

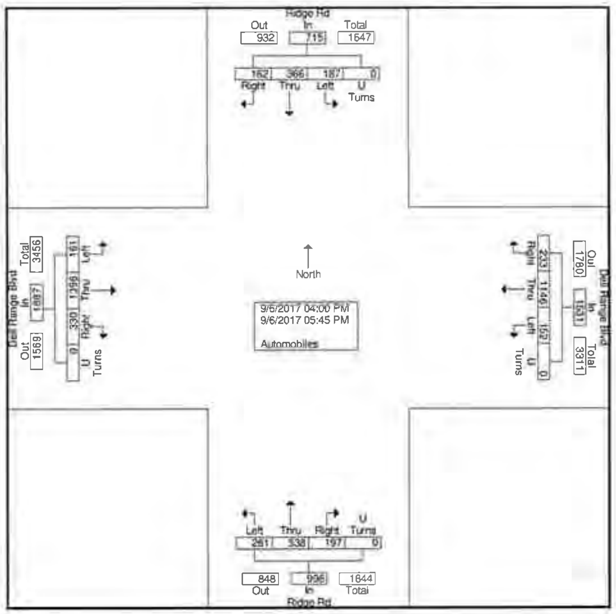
Groups Printed- Automobiles

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	14	180	37	0	231	20	136	24	0	180	32	68	23	0	123	32	37	20	0	89	623
04:15 PM	22	162	44	0	228	16	140	26	0	182	39	68	27	0	134	20	30	18	0	68	612
04:30 PM	18	174	40	0	232	21	145	26	0	192	25	56	29	0	110	25	48	16	0	89	623
04:45 PM	21	182	44	0	247	10	157	43	0	210	29	65	22	0	116	17	49	18	0	84	657
Total	75	698	165	0	938	67	578	119	0	764	125	257	101	0	483	94	164	72	0	330	2515
05:00 PM	19	180	48	0	247	25	133	32	0	190	27	62	22	0	111	25	63	27	0	115	663
05:15 PM	24	182	36	0	242	17	135	33	0	185	41	98	31	0	170	20	61	15	0	96	693
05:30 PM	20	167	41	0	228	23	157	29	0	209	40	67	25	0	132	22	39	26	0	87	656
05:45 PM	23	169	40	0	232	20	143	20	0	183	28	54	18	0	100	26	39	22	0	87	602
Total	86	698	165	0	949	85	568	114	0	767	136	281	96	0	513	93	202	90	0	385	2614
Grand Total	161	1396	330	0	1887	152	1146	233	0	1531	261	538	197	0	996	187	366	162	0	715	5129
Apprch %	8.5	74	17.5	0		9.9	74.9	15.2	0		26.2	54	19.8	0		26.2	51.2	22.7	0		
Total %	3.1	27.2	6.4	0	36.8	3	22.3	4.5	0	29.8	5.1	10.5	3.8	0	19.4	3.6	7.1	3.2	0	13.9	

RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

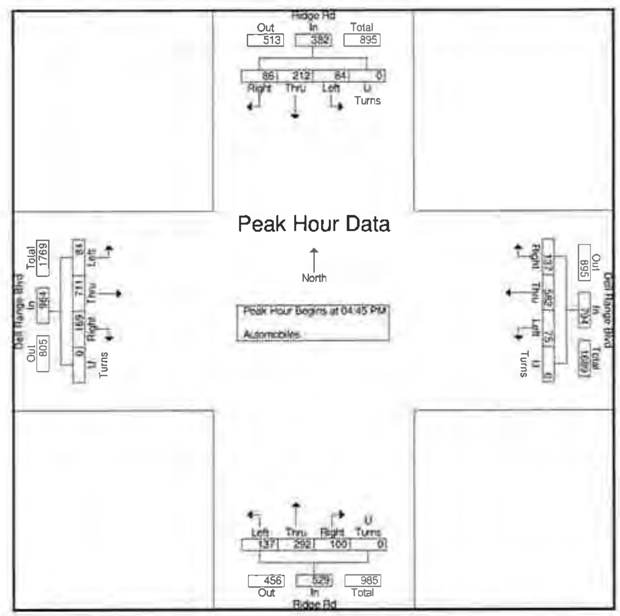


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Ridge Rd

File Name : Dell Range and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	21	182	44	0	247	10	157	43	0	210	29	65	22	0	116	17	49	18	0	84	657
05:00 PM	19	180	48	0	247	25	133	32	0	190	27	62	22	0	111	25	63	27	0	115	663
05:15 PM	24	182	36	0	242	17	135	33	0	185	41	98	31	0	170	20	61	15	0	96	693
05:30 PM	20	167	41	0	228	23	157	29	0	209	40	67	25	0	132	22	39	26	0	87	656
Total Volume	84	711	169	0	964	75	582	137	0	794	137	292	100	0	529	84	212	86	0	382	2669
% App. Total	8.7	73.8	17.5	0		9.4	73.3	17.3	0		25.9	55.2	18.9	0		22	55.5	22.5	0		
PHF	.875	.977	.880	.000	.976	.750	.927	.797	.000	.945	.835	.745	.806	.000	.778	.840	.841	.796	.000	.830	.963



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

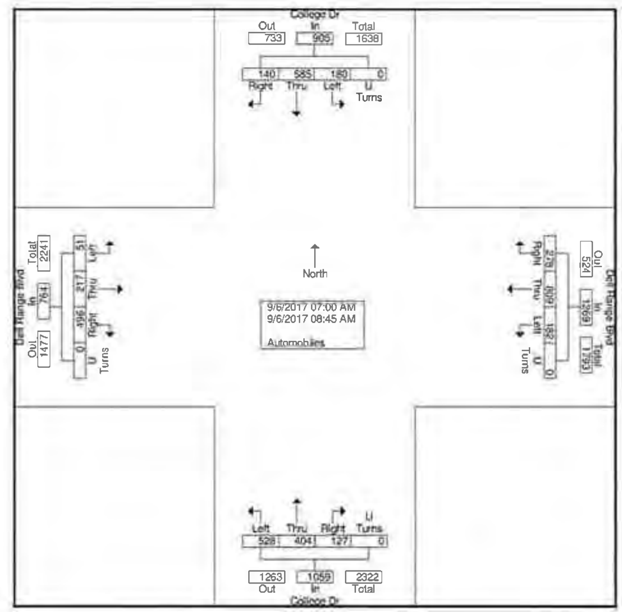
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	3	26	54	0	83	25	118	41	0	184	45	44	12	0	101	17	64	26	0	107	475
07:15 AM	5	26	53	0	84	33	122	40	0	195	48	47	36	0	131	21	70	22	0	113	523
07:30 AM	5	28	70	0	103	38	112	48	0	198	59	46	17	0	122	21	88	26	0	135	558
07:45 AM	6	29	72	0	107	31	112	38	0	181	90	76	10	0	176	28	90	16	0	134	598
Total	19	109	249	0	377	127	464	167	0	758	242	213	75	0	530	87	312	90	0	489	2154
08:00 AM	7	30	69	0	106	13	97	40	0	150	68	45	14	0	127	31	74	12	0	117	500
08:15 AM	8	28	63	0	99	13	85	31	0	129	69	55	15	0	139	29	77	10	0	116	483
08:30 AM	10	24	60	0	94	14	78	14	0	106	67	56	11	0	134	16	71	11	0	98	432
08:45 AM	7	26	55	0	88	15	85	26	0	126	82	35	12	0	129	17	51	17	0	85	428
Total	32	108	247	0	387	55	345	111	0	511	286	191	52	0	529	93	273	50	0	416	1843
Grand Total	51	217	496	0	764	182	809	278	0	1269	528	404	127	0	1059	180	585	140	0	905	3997
Apprch %	6.7	28.4	64.9	0		14.3	63.8	21.9	0		49.9	38.1	12	0		19.9	64.6	15.5	0		
Total %	1.3	5.4	12.4	0	19.1	4.6	20.2	7	0	31.7	13.2	10.1	3.2	0	26.5	4.5	14.6	3.5	0	22.6	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



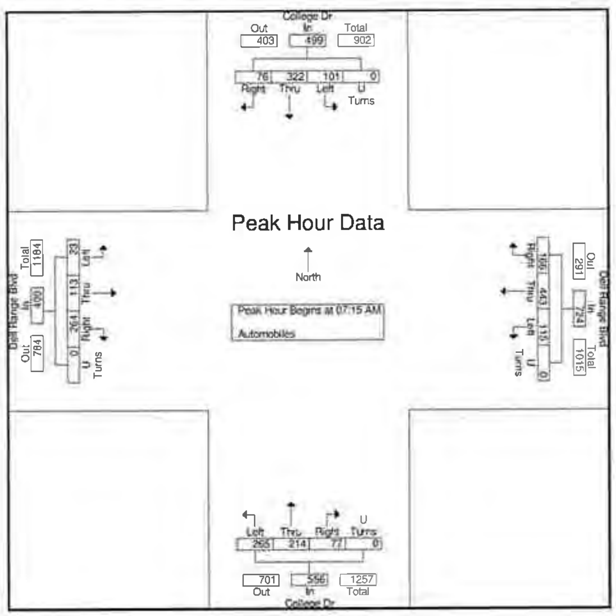
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	5	26	53	0	84	33	122	40	0	195	48	47	36	0	131	21	70	22	0	113	523
07:30 AM	5	28	70	0	103	38	112	48	0	198	59	46	17	0	122	21	88	26	0	135	558
07:45 AM	6	29	72	0	107	31	112	38	0	181	90	76	10	0	176	28	90	16	0	134	598
08:00 AM	7	30	69	0	106	13	97	40	0	150	68	45	14	0	127	31	74	12	0	117	500
Total Volume	23	113	264	0	400	115	443	166	0	724	265	214	77	0	556	101	322	76	0	499	2179
% App. Total	5.8	28.2	66	0		15.9	61.2	22.9	0		47.7	38.5	13.8	0		20.2	64.5	15.2	0		
PHF	.821	.942	.917	.000	.935	.757	.908	.865	.000	.914	.736	.704	.535	.000	.790	.815	.894	.731	.000	.924	.911



Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

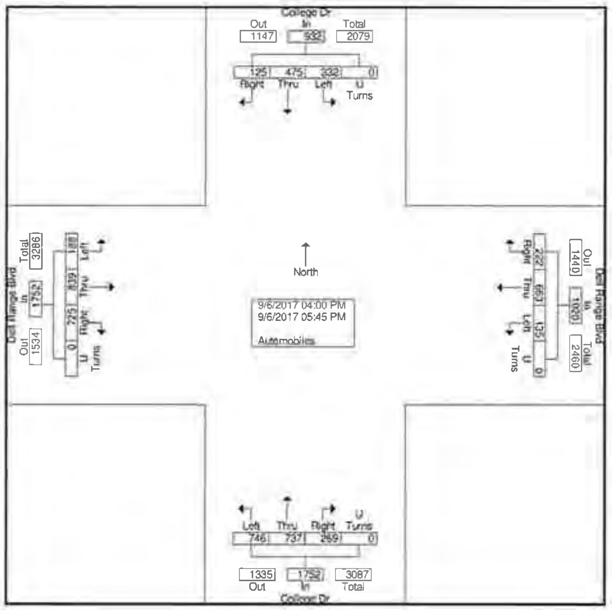
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	23	107	93	0	223	38	93	28	0	159	88	75	42	0	205	31	49	12	0	92	679
04:15 PM	17	90	94	0	201	13	64	25	0	102	102	82	33	0	217	42	62	19	0	123	643
04:30 PM	27	98	95	0	220	10	84	24	0	118	77	81	23	0	181	38	72	14	0	124	643
04:45 PM	32	114	81	0	227	13	81	27	0	121	105	82	30	0	217	44	59	18	0	121	686
Total	99	409	363	0	871	74	322	104	0	500	372	320	128	0	820	155	242	63	0	460	2651
05:00 PM	18	101	100	0	219	12	87	29	0	128	101	97	30	0	228	49	59	13	0	121	696
05:15 PM	16	111	85	0	212	14	91	33	0	138	89	125	49	0	263	54	65	14	0	133	746
05:30 PM	27	112	87	0	226	18	80	31	0	129	106	97	35	0	238	49	57	19	0	125	718
05:45 PM	28	106	90	0	224	17	83	25	0	125	78	98	27	0	203	25	52	16	0	93	645
Total	89	430	362	0	881	61	341	118	0	520	374	417	141	0	932	177	233	62	0	472	2805
Grand Total	188	839	725	0	1752	135	663	222	0	1020	746	737	269	0	1752	332	475	125	0	932	5456
Apprch %	10.7	47.9	41.4	0		13.2	65	21.8	0		42.6	42.1	15.4	0		35.6	51	13.4	0		
Total %	3.4	15.4	13.3	0	32.1	2.5	12.2	4.1	0	18.7	13.7	13.5	4.9	0	32.1	6.1	8.7	2.3	0	17.1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



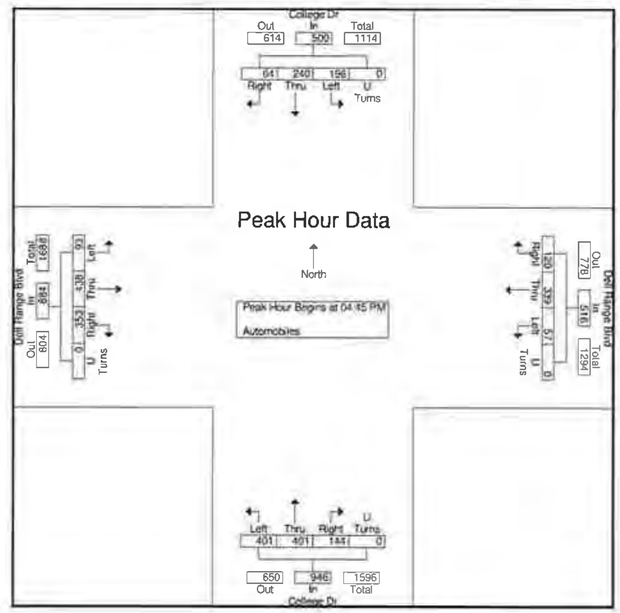
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and College Dr

File Name : Dell Range and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	32	114	81	0	227	13	81	27	0	121	105	82	30	0	217	44	59	18	0	121	686
05:00 PM	18	101	100	0	219	12	87	29	0	128	101	97	30	0	228	49	59	13	0	121	696
05:15 PM	16	111	85	0	212	14	91	33	0	138	89	125	49	0	263	54	65	14	0	133	746
05:30 PM	27	112	87	0	226	18	80	31	0	129	106	97	35	0	238	49	57	19	0	125	718
Total Volume	93	438	353	0	884	57	339	120	0	516	401	401	144	0	946	196	240	64	0	500	2846
% App. Total	10.5	49.5	39.9	0		11	65.7	23.3	0		42.4	42.4	15.2	0		39.2	48	12.8	0		
PHF	.727	.961	.883	.000	.974	.792	.931	.909	.000	.935	.946	.802	.735	.000	.899	.907	.923	.842	.000	.940	.954



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Van Buren Ave

File Name : Dell Range and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

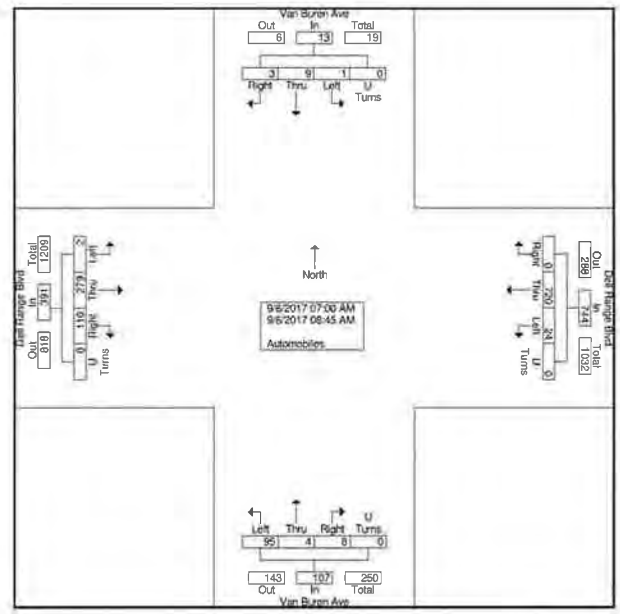
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Van Buren Ave Northbound					Van Buren Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	22	6	0	28	1	106	0	0	107	9	0	0	0	9	1	1	0	0	2	146
07:15 AM	0	32	12	0	44	5	108	0	0	113	13	0	0	0	13	0	0	0	0	0	170
07:30 AM	0	36	8	0	44	2	99	0	0	101	9	0	0	0	9	0	2	1	0	3	157
07:45 AM	1	48	16	0	65	3	105	0	0	108	11	0	1	0	12	0	1	0	0	1	186
Total	1	138	42	0	181	11	418	0	0	429	42	0	1	0	43	1	4	1	0	6	659
08:00 AM	0	40	13	0	53	4	101	0	0	105	7	0	1	0	8	0	0	0	0	0	166
08:15 AM	0	37	39	0	76	8	72	0	0	80	16	4	4	0	24	0	5	0	0	5	185
08:30 AM	1	31	13	0	45	1	52	0	0	53	23	0	2	0	25	0	0	1	0	1	124
08:45 AM	0	33	3	0	36	0	77	0	0	77	7	0	0	0	7	0	0	1	0	1	121
Total	1	141	68	0	210	13	302	0	0	315	53	4	7	0	64	0	5	2	0	7	596
Grand Total	2	279	110	0	391	24	720	0	0	744	95	4	8	0	107	1	9	3	0	13	1255
Apprch %	0.5	71.4	28.1	0		3.2	96.8	0	0		88.8	3.7	7.5	0		7.7	69.2	23.1	0		
Total %	0.2	22.2	8.8	0	31.2	1.9	57.4	0	0	59.3	7.6	0.3	0.6	0	8.5	0.1	0.7	0.2	0	1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Van Buren Ave

File Name : Dell Range and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



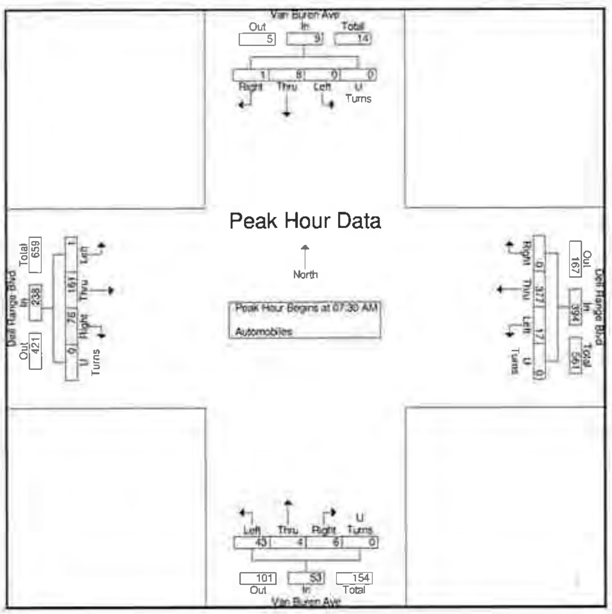
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Van Buren Ave

File Name : Dell Range and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Van Buren Ave Northbound					Van Buren Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	36	8	0	44	2	99	0	0	101	9	0	0	0	9	0	2	1	0	3	157
07:45 AM	1	48	16	0	65	3	105	0	0	108	11	0	1	0	12	0	1	0	0	1	186
08:00 AM	0	40	13	0	53	4	101	0	0	105	7	0	1	0	8	0	0	0	0	0	166
08:15 AM	0	37	39	0	76	8	72	0	0	80	16	4	4	0	24	0	5	0	0	5	185
Total Volume	1	161	76	0	238	17	377	0	0	394	43	4	6	0	53	0	8	1	0	9	694
% App. Total	0.4	67.6	31.9	0		4.3	95.7	0	0		81.1	7.5	11.3	0		0	88.9	11.1	0		
PHF	.250	.839	.487	.000	.783	.531	.898	.000	.000	.912	.672	.250	.375	.000	.552	.000	.400	.250	.000	.450	.933



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Van Buren Ave

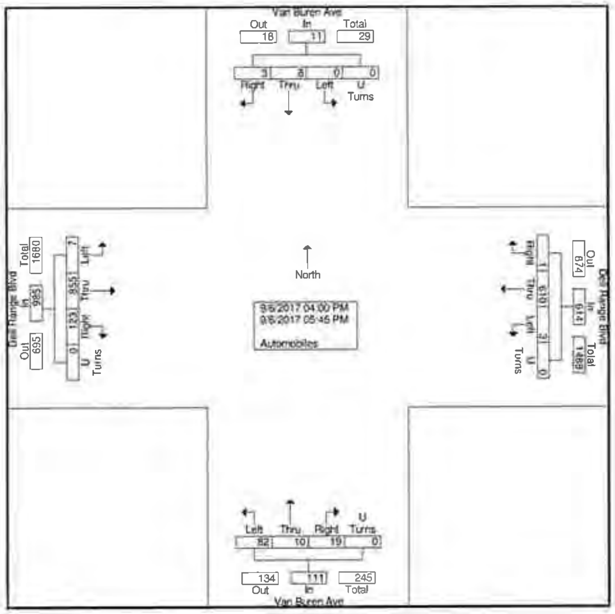
File Name : Dell Range and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Van Buren Ave Northbound					Van Buren Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	1	96	11	0	108	0	62	0	0	62	10	0	2	0	12	0	0	1	0	1	183
04:15 PM	1	102	13	0	116	0	58	1	0	59	9	3	2	0	14	0	0	0	0	0	189
04:30 PM	0	102	15	0	117	0	98	0	0	98	12	0	5	0	17	0	3	0	0	3	235
04:45 PM	0	107	17	0	124	0	66	0	0	66	15	0	6	0	21	0	1	0	0	1	212
Total	2	407	56	0	465	0	284	1	0	285	46	3	15	0	64	0	4	1	0	5	819
05:00 PM	1	114	12	0	127	0	97	0	0	97	7	2	1	0	10	0	0	1	0	1	235
05:15 PM	0	109	17	0	126	0	84	0	0	84	8	2	1	0	11	0	2	0	0	2	223
05:30 PM	1	128	19	0	148	1	84	0	0	85	8	1	2	0	11	0	0	0	0	0	244
05:45 PM	3	97	19	0	119	2	61	0	0	63	13	2	0	0	15	0	2	1	0	3	200
Total	5	448	67	0	520	3	326	0	0	329	36	7	4	0	47	0	4	2	0	6	902
Grand Total	7	855	123	0	985	3	610	1	0	614	82	10	19	0	111	0	8	3	0	11	1721
Apprch %	0.7	86.8	12.5	0		0.5	99.3	0.2	0		73.9	9	17.1	0		0	72.7	27.3	0		
Total %	0.4	49.7	7.1	0	57.2	0.2	35.4	0.1	0	35.7	4.8	0.6	1.1	0	6.4	0	0.5	0.2	0	0.6	

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Van Buren Ave

File Name : Dell Range and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

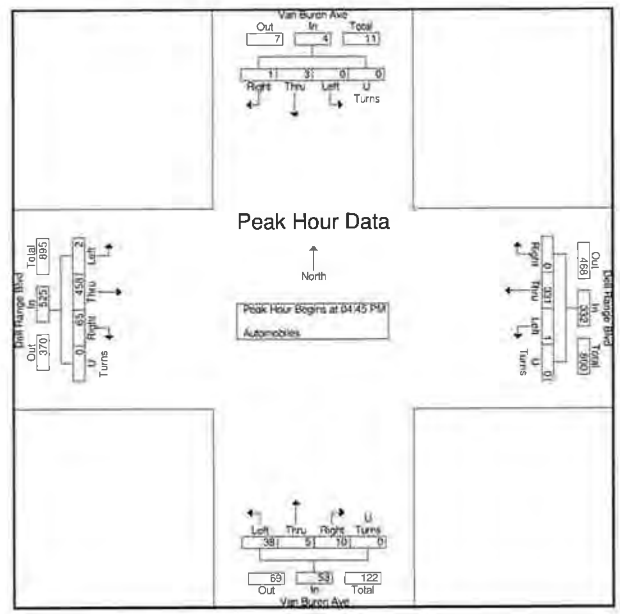


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Van Buren Ave

File Name : Dell Range and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Van Buren Ave Northbound					Van Buren Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	107	17	0	124	0	66	0	0	66	15	0	6	0	21	0	1	0	0	1	212
05:00 PM	1	114	12	0	127	0	97	0	0	97	7	2	1	0	10	0	0	1	0	1	235
05:15 PM	0	109	17	0	126	0	84	0	0	84	8	2	1	0	11	0	2	0	0	2	223
05:30 PM	1	128	19	0	148	1	84	0	0	85	8	1	2	0	11	0	0	0	0	0	244
Total Volume	2	458	65	0	525	1	331	0	0	332	38	5	10	0	53	0	3	1	0	4	914
% App. Total	0.4	87.2	12.4	0		0.3	99.7	0	0		71.7	9.4	18.9	0		0	75	25	0		
PHF	.500	.895	.855	.000	.887	.250	.853	.000	.000	.856	.633	.625	.417	.000	.631	.000	.375	.250	.000	.500	.936



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

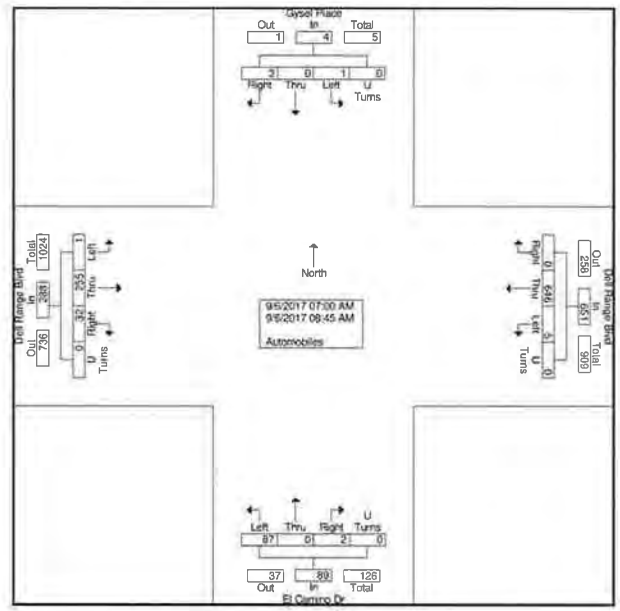
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					El Camino Dr Northbound					Gysel Place Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	21	2	0	23	2	89	0	0	91	13	0	1	0	14	0	0	0	0	0	128
07:15 AM	0	24	7	0	31	1	94	0	0	95	19	0	0	0	19	0	0	0	0	0	145
07:30 AM	0	32	4	0	36	0	96	0	0	96	9	0	0	0	9	0	0	0	0	0	141
07:45 AM	0	45	5	0	50	0	91	0	0	91	16	0	0	0	16	0	0	0	0	0	157
Total	0	122	18	0	140	3	370	0	0	373	57	0	1	0	58	0	0	0	0	0	571
08:00 AM	0	34	6	0	40	0	98	0	0	98	4	0	0	0	4	0	0	0	0	0	142
08:15 AM	1	39	2	0	42	0	65	0	0	65	10	0	0	0	10	0	0	1	0	1	118
08:30 AM	0	30	3	0	33	1	47	0	0	48	4	0	1	0	5	1	0	1	0	2	88
08:45 AM	0	30	3	0	33	1	66	0	0	67	12	0	0	0	12	0	0	1	0	1	113
Total	1	133	14	0	148	2	276	0	0	278	30	0	1	0	31	1	0	3	0	4	461
Grand Total	1	255	32	0	288	5	646	0	0	651	87	0	2	0	89	1	0	3	0	4	1032
Apprch %	0.3	88.5	11.1	0		0.8	99.2	0	0		97.8	0	2.2	0		25	0	75	0		
Total %	0.1	24.7	3.1	0	27.9	0.5	62.6	0	0	63.1	8.4	0	0.2	0	8.6	0.1	0	0.3	0	0.4	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



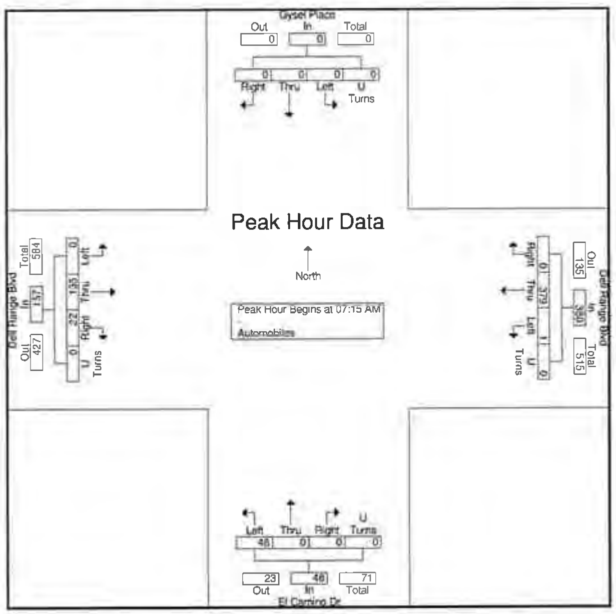
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					El Camino Dr Northbound					Gysel Place Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	24	7	0	31	1	94	0	0	95	19	0	0	0	19	0	0	0	0	0	145
07:30 AM	0	32	4	0	36	0	96	0	0	96	9	0	0	0	9	0	0	0	0	0	141
07:45 AM	0	45	5	0	50	0	91	0	0	91	16	0	0	0	16	0	0	0	0	0	157
08:00 AM	0	34	6	0	40	0	98	0	0	98	4	0	0	0	4	0	0	0	0	0	142
Total Volume	0	135	22	0	157	1	379	0	0	380	48	0	0	0	48	0	0	0	0	0	585
% App. Total	0	86	14	0		0.3	99.7	0	0		100	0	0	0		0	0	0	0		
PHF	.000	.750	.786	.000	.785	.250	.967	.000	.000	.969	.632	.000	.000	.000	.632	.000	.000	.000	.000	.000	.932



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

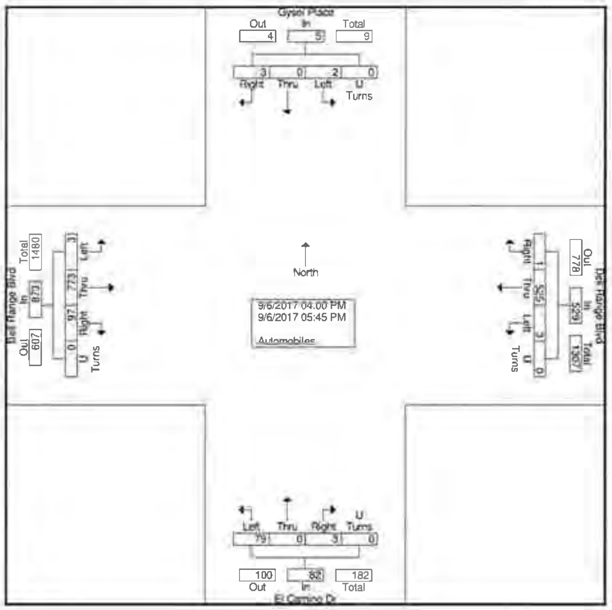
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					El Camino Dr Northbound					Gysel Place Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	89	10	0	99	1	50	0	0	51	7	0	0	0	7	0	0	1	0	1	158
04:15 PM	0	89	13	0	102	1	54	1	0	56	6	0	0	0	6	0	0	0	0	0	164
04:30 PM	2	94	11	0	107	0	73	0	0	73	21	0	1	0	22	2	0	1	0	3	205
04:45 PM	0	98	13	0	111	0	57	0	0	57	7	0	0	0	7	0	0	0	0	0	175
Total	2	370	47	0	419	2	234	1	0	237	41	0	1	0	42	2	0	2	0	4	702
05:00 PM	0	105	14	0	119	0	91	0	0	91	7	0	0	0	7	0	0	0	0	0	217
05:15 PM	0	93	15	0	108	0	73	0	0	73	11	0	0	0	11	0	0	1	0	1	193
05:30 PM	1	120	9	0	130	1	71	0	0	72	13	0	0	0	13	0	0	0	0	0	215
05:45 PM	0	85	12	0	97	0	56	0	0	56	7	0	2	0	9	0	0	0	0	0	162
Total	1	403	50	0	454	1	291	0	0	292	38	0	2	0	40	0	0	1	0	1	787
Grand Total	3	773	97	0	873	3	525	1	0	529	79	0	3	0	82	2	0	3	0	5	1489
Apprch %	0.3	88.5	11.1	0		0.6	99.2	0.2	0		96.3	0	3.7	0		40	0	60	0		
Total %	0.2	51.9	6.5	0	58.6	0.2	35.3	0.1	0	35.5	5.3	0	0.2	0	5.5	0.1	0	0.2	0	0.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



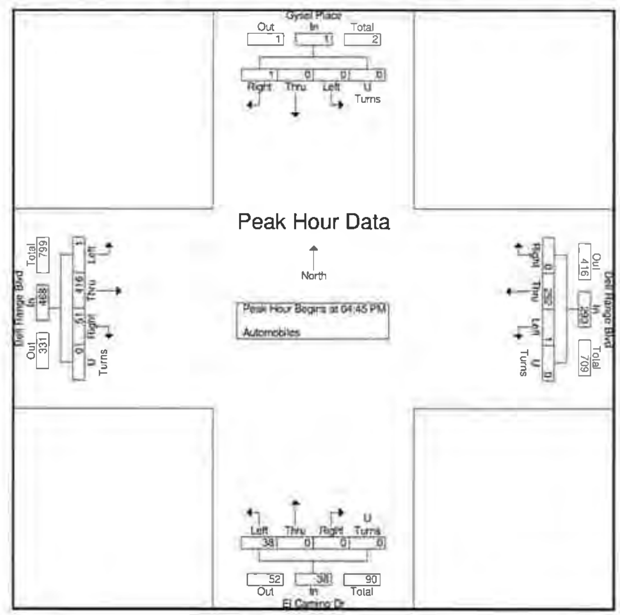
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Gysel Pl/El Camino

File Name : Dell Range and Gysel El Camino PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					El Camino Dr Northbound					Gysel Place Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	98	13	0	111	0	57	0	0	57	7	0	0	0	7	0	0	0	0	0	175
05:00 PM	0	105	14	0	119	0	91	0	0	91	7	0	0	0	7	0	0	0	0	0	217
05:15 PM	0	93	15	0	108	0	73	0	0	73	11	0	0	0	11	0	0	1	0	1	193
05:30 PM	1	120	9	0	130	1	71	0	0	72	13	0	0	0	13	0	0	0	0	0	215
Total Volume	1	416	51	0	468	1	292	0	0	293	38	0	0	0	38	0	0	1	0	1	800
% App. Total	0.2	88.9	10.9	0		0.3	99.7	0	0		100	0	0	0		0	0	100	0		
PHF	.250	.867	.850	.000	.900	.250	.802	.000	.000	.805	.731	.000	.000	.000	.731	.000	.000	.250	.000	.250	.922



Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

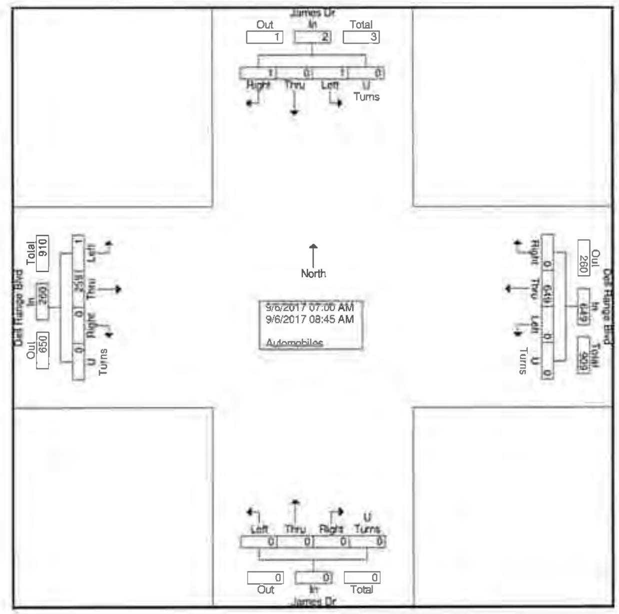
Groups Printed- Automobiles

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					James Dr Northbound					James Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	24	0	0	24	0	91	0	0	91	0	0	0	0	0	0	0	0	0	0	115
07:15 AM	0	24	0	0	24	0	94	0	0	94	0	0	0	0	0	0	0	0	0	0	118
07:30 AM	0	31	0	0	31	0	98	0	0	98	0	0	0	0	0	0	0	0	0	0	129
07:45 AM	0	47	0	0	47	0	90	0	0	90	0	0	0	0	0	0	0	0	0	0	137
Total	0	126	0	0	126	0	373	0	0	373	0	0	0	0	0	0	0	0	0	0	499
08:00 AM	0	32	0	0	32	0	99	0	0	99	0	0	0	0	0	1	0	1	0	2	133
08:15 AM	1	37	0	0	38	0	64	0	0	64	0	0	0	0	0	0	0	0	0	0	102
08:30 AM	0	34	0	0	34	0	48	0	0	48	0	0	0	0	0	0	0	0	0	0	82
08:45 AM	0	30	0	0	30	0	65	0	0	65	0	0	0	0	0	0	0	0	0	0	95
Total	1	133	0	0	134	0	276	0	0	276	0	0	0	0	0	1	0	1	0	2	412
Grand Total	1	259	0	0	260	0	649	0	0	649	0	0	0	0	0	1	0	1	0	2	911
Apprch %	0.4	99.6	0	0		0	100	0	0		0	0	0	0		50	0	50	0		
Total %	0.1	28.4	0	0	28.5	0	71.2	0	0	71.2	0	0	0	0	0	0.1	0	0.1	0	0.2	

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



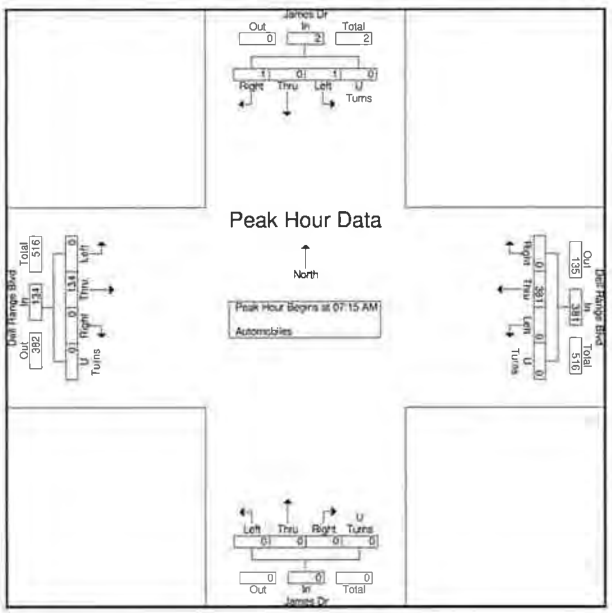
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					James Dr Northbound					James Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	24	0	0	24	0	94	0	0	94	0	0	0	0	0	0	0	0	0	0	118
07:30 AM	0	31	0	0	31	0	98	0	0	98	0	0	0	0	0	0	0	0	0	0	129
07:45 AM	0	47	0	0	47	0	90	0	0	90	0	0	0	0	0	0	0	0	0	0	137
08:00 AM	0	32	0	0	32	0	99	0	0	99	0	0	0	0	0	1	0	1	0	2	133
Total Volume	0	134	0	0	134	0	381	0	0	381	0	0	0	0	0	1	0	1	0	2	517
% App. Total	0	100	0	0		0	100	0	0		0	0	0	0		50	0	50	0		
PHF	.000	.713	.000	.000	.713	.000	.962	.000	.000	.962	.000	.000	.000	.000	.000	.250	.000	.250	.000	.250	.943



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

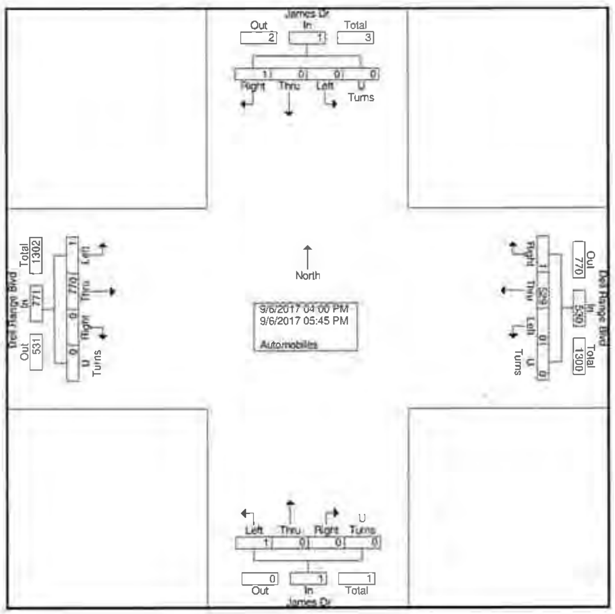
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					James Dr Northbound					James Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	86	0	0	86	0	53	0	0	53	0	0	0	0	0	0	0	0	0	0	139
04:15 PM	0	89	0	0	89	0	54	0	0	54	0	0	0	0	0	0	0	0	0	0	143
04:30 PM	0	93	0	0	93	0	74	0	0	74	0	0	0	0	0	0	0	0	0	0	167
04:45 PM	0	97	0	0	97	0	57	0	0	57	0	0	0	0	0	0	0	0	0	0	154
Total	0	365	0	0	365	0	238	0	0	238	0	0	0	0	0	0	0	0	0	0	603
05:00 PM	0	105	0	0	105	0	98	0	0	98	0	0	0	0	0	0	0	0	0	0	203
05:15 PM	1	95	0	0	96	0	68	0	0	68	0	0	0	0	0	0	0	0	0	0	164
05:30 PM	0	115	0	0	115	0	71	0	0	71	1	0	0	0	1	0	0	0	0	0	187
05:45 PM	0	90	0	0	90	0	54	1	0	55	0	0	0	0	0	0	0	1	0	1	146
Total	1	405	0	0	406	0	291	1	0	292	1	0	0	0	1	0	0	1	0	1	700
Grand Total	1	770	0	0	771	0	529	1	0	530	1	0	0	0	1	0	0	1	0	1	1303
Apprch %	0.1	99.9	0	0		0	99.8	0.2	0		100	0	0	0		0	0	100	0		
Total %	0.1	59.1	0	0	59.2	0	40.6	0.1	0	40.7	0.1	0	0	0	0.1	0	0	0.1	0	0.1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



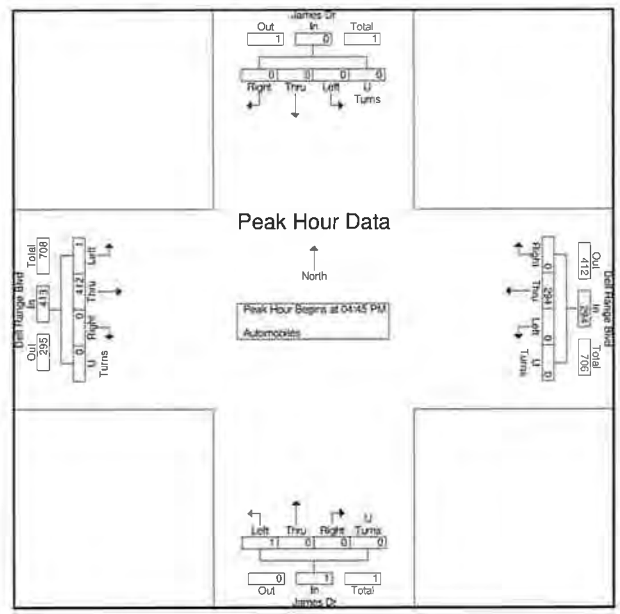
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and James Dr

File Name : Dell Range and James PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					James Dr Northbound					James Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	97	0	0	97	0	57	0	0	57	0	0	0	0	0	0	0	0	0	0	154
05:00 PM	0	105	0	0	105	0	98	0	0	98	0	0	0	0	0	0	0	0	0	0	203
05:15 PM	1	95	0	0	96	0	68	0	0	68	0	0	0	0	0	0	0	0	0	0	164
05:30 PM	0	115	0	0	115	0	71	0	0	71	1	0	0	0	1	0	0	0	0	0	187
Total Volume	1	412	0	0	413	0	294	0	0	294	1	0	0	0	1	0	0	0	0	0	708
% App. Total	0.2	99.8	0	0		0	100	0	0		100	0	0	0		0	0	0	0		
PHF	.250	.896	.000	.000	.898	.000	.750	.000	.000	.750	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.872



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

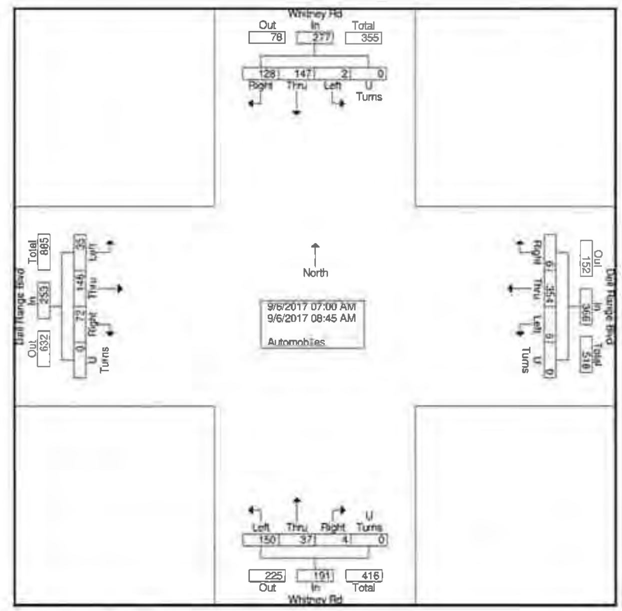
	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	1	13	9	0	23	1	49	0	0	50	18	5	0	0	23	1	23	25	0	49	145
07:15 AM	2	14	8	0	24	0	51	0	0	51	15	6	0	0	21	1	35	23	0	59	155
07:30 AM	4	17	9	0	30	1	62	0	0	63	20	7	0	0	27	0	33	16	0	49	169
07:45 AM	4	20	18	0	42	2	46	3	0	51	28	4	2	0	34	0	19	16	0	35	162
Total	11	64	44	0	119	4	208	3	0	215	81	22	2	0	105	2	110	80	0	192	631
08:00 AM	3	20	12	0	35	1	48	0	0	49	23	2	1	0	26	0	9	19	0	28	138
08:15 AM	7	17	12	0	36	0	36	1	0	37	18	4	0	0	22	0	12	10	0	22	117
08:30 AM	9	23	2	0	34	1	19	2	0	22	17	6	1	0	24	0	9	10	0	19	99
08:45 AM	5	22	2	0	29	0	43	0	0	43	11	3	0	0	14	0	7	9	0	16	102
Total	24	82	28	0	134	2	146	3	0	151	69	15	2	0	86	0	37	48	0	85	456
Grand Total	35	146	72	0	253	6	354	6	0	366	150	37	4	0	191	2	147	128	0	277	1087
Apprch %	13.8	57.7	28.5	0		1.6	96.7	1.6	0		78.5	19.4	2.1	0		0.7	53.1	46.2	0		
Total %	3.2	13.4	6.6	0	23.3	0.6	32.6	0.6	0	33.7	13.8	3.4	0.4	0	17.6	0.2	13.5	11.8	0	25.5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



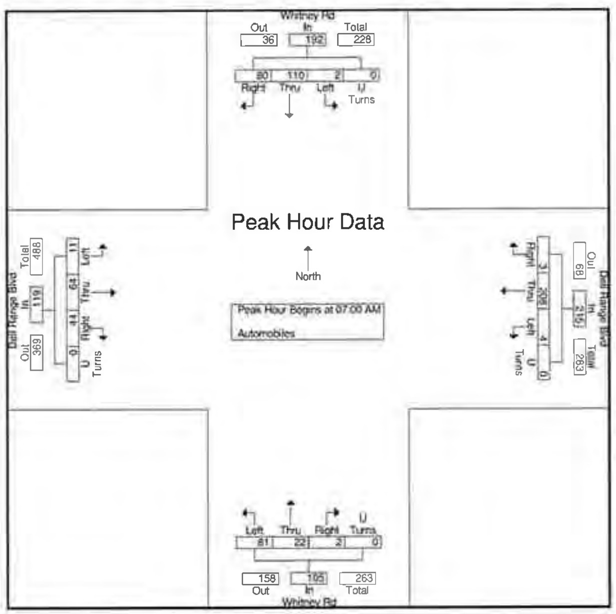
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	13	9	0	23	1	49	0	0	50	18	5	0	0	23	1	23	25	0	49	145
07:15 AM	2	14	8	0	24	0	51	0	0	51	15	6	0	0	21	1	35	23	0	59	155
07:30 AM	4	17	9	0	30	1	62	0	0	63	20	7	0	0	27	0	33	16	0	49	169
07:45 AM	4	20	18	0	42	2	46	3	0	51	28	4	2	0	34	0	19	16	0	35	162
Total Volume	11	64	44	0	119	4	208	3	0	215	81	22	2	0	105	2	110	80	0	192	631
% App. Total	9.2	53.8	37	0		1.9	96.7	1.4	0		77.1	21	1.9	0		1	57.3	41.7	0		
PHF	.688	.800	.611	.000	.708	.500	.639	.250	.000	.853	.723	.786	.250	.000	.772	.500	.786	.800	.000	.814	.933



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

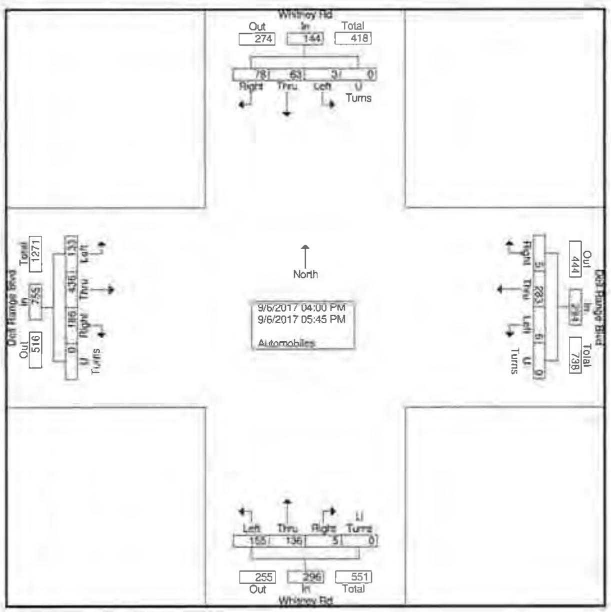
Groups Printed- Automobiles

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	20	46	18	0	84	0	36	0	0	36	11	12	1	0	24	0	7	7	0	14	158
04:15 PM	17	58	15	0	90	1	35	1	0	37	12	15	1	0	28	1	4	10	0	15	170
04:30 PM	15	54	23	0	92	0	49	0	0	49	17	18	0	0	35	0	9	10	0	19	195
04:45 PM	18	56	19	0	93	0	28	1	0	29	14	12	2	0	28	1	12	7	0	20	170
Total	70	214	75	0	359	1	148	2	0	151	54	57	4	0	115	2	32	34	0	68	693
05:00 PM	11	58	35	0	104	1	42	2	0	45	30	22	0	0	52	1	8	15	0	24	225
05:15 PM	17	49	25	0	91	1	30	1	0	32	30	24	0	0	54	0	13	10	0	23	200
05:30 PM	16	61	31	0	108	1	39	0	0	40	20	20	1	0	41	0	3	12	0	15	204
05:45 PM	19	54	20	0	93	2	24	0	0	26	21	13	0	0	34	0	7	7	0	14	167
Total	63	222	111	0	396	5	135	3	0	143	101	79	1	0	181	1	31	44	0	76	796
Grand Total	133	436	186	0	755	6	283	5	0	294	155	136	5	0	296	3	63	78	0	144	1489
Apprch %	17.6	57.7	24.6	0		2	96.3	1.7	0		52.4	45.9	1.7	0		2.1	43.8	54.2	0		
Total %	8.9	29.3	12.5	0	50.7	0.4	19	0.3	0	19.7	10.4	9.1	0.3	0	19.9	0.2	4.2	5.2	0	9.7	

RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

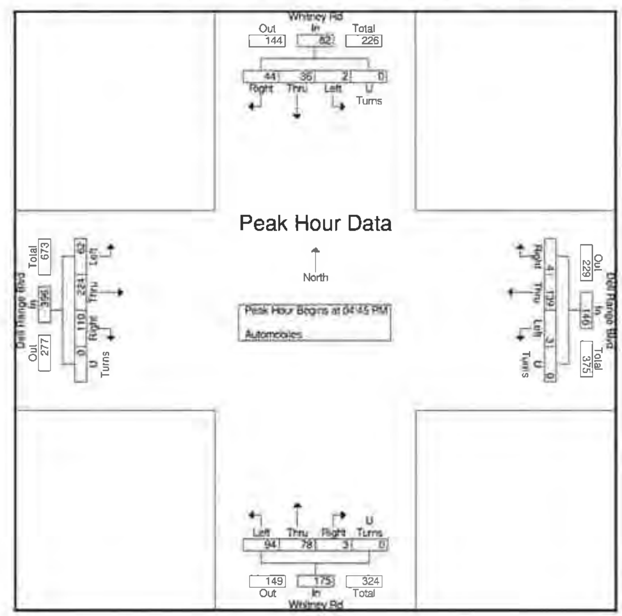


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and Whitney Rd

File Name : Dell Range and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Dell Range Blvd Eastbound					Dell Range Blvd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	18	56	19	0	93	0	28	1	0	29	14	12	2	0	28	1	12	7	0	20	170
05:00 PM	11	58	35	0	104	1	42	2	0	45	30	22	0	0	52	1	8	15	0	24	225
05:15 PM	17	49	25	0	91	1	30	1	0	32	30	24	0	0	54	0	13	10	0	23	200
05:30 PM	16	61	31	0	108	1	39	0	0	40	20	20	1	0	41	0	3	12	0	15	204
Total Volume	62	224	110	0	396	3	139	4	0	146	94	78	3	0	175	2	36	44	0	82	799
% App. Total	15.7	56.6	27.8	0		2.1	95.2	2.7	0		53.7	44.6	1.7	0		2.4	43.9	53.7	0		
PHF	.861	.918	.786	.000	.917	.750	.827	.500	.000	.811	.783	.813	.375	.000	.810	.500	.692	.733	.000	.854	.888



RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and US-30

File Name : Dell Range and US-30 AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

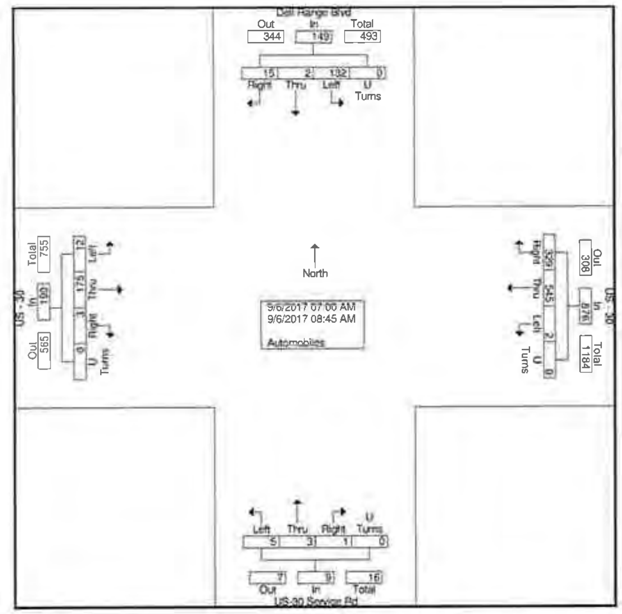
	US - 30 Eastbound					US - 30 Westbound					US-30 Service Rd Northbound					Dell Range Blvd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	19	0	0	19	0	87	51	0	138	0	0	0	0	0	13	0	1	0	14	171
07:15 AM	1	23	0	0	24	0	119	46	0	165	0	0	0	0	0	11	0	3	0	14	203
07:30 AM	0	21	0	0	21	0	101	57	0	158	0	1	0	0	1	18	0	1	0	19	199
07:45 AM	6	28	0	0	34	1	71	44	0	116	0	1	0	0	1	20	0	5	0	25	176
Total	7	91	0	0	98	1	378	198	0	577	0	2	0	0	2	62	0	10	0	72	749
08:00 AM	3	19	2	0	24	0	47	43	0	90	1	1	0	0	2	16	0	1	0	17	133
08:15 AM	1	36	0	0	37	0	56	26	0	82	3	0	1	0	4	12	1	1	0	14	137
08:30 AM	1	14	0	0	15	0	32	19	0	51	1	0	0	0	1	26	0	3	0	29	96
08:45 AM	0	15	1	0	16	1	32	43	0	76	0	0	0	0	0	16	1	0	0	17	109
Total	5	84	3	0	92	1	167	131	0	299	5	1	1	0	7	70	2	5	0	77	475
Grand Total	12	175	3	0	190	2	545	329	0	876	5	3	1	0	9	132	2	15	0	149	1224
Apprch %	6.3	92.1	1.6	0		0.2	62.2	37.6	0		55.6	33.3	11.1	0		88.6	1.3	10.1	0		
Total %	1	14.3	0.2	0	15.5	0.2	44.5	26.9	0	71.6	0.4	0.2	0.1	0	0.7	10.8	0.2	1.2	0	12.2	

RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and US-30

File Name : Dell Range and US-30 AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

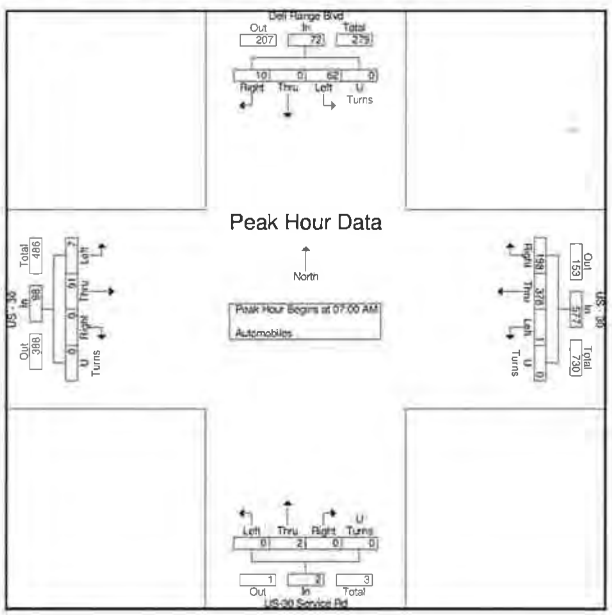


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Dell Range Blvd and US-30

File Name : Dell Range and US-30 AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					US-30 Service Rd Northbound					Dell Range Blvd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	19	0	0	19	0	87	51	0	138	0	0	0	0	0	13	0	1	0	14	171
07:15 AM	1	23	0	0	24	0	119	46	0	165	0	0	0	0	0	11	0	3	0	14	203
07:30 AM	0	21	0	0	21	0	101	57	0	158	0	1	0	0	1	18	0	1	0	19	199
07:45 AM	6	28	0	0	34	1	71	44	0	116	0	1	0	0	1	20	0	5	0	25	176
Total Volume	7	91	0	0	98	1	378	198	0	577	0	2	0	0	2	62	0	10	0	72	749
% App. Total	7.1	92.9	0	0		0.2	65.5	34.3	0		0	100	0	0		86.1	0	13.9	0		
PHF	.292	.813	.000	.000	.721	.250	.794	.868	.000	.874	.000	.500	.000	.000	.500	.775	.000	.500	.000	.720	.922



RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and US-30

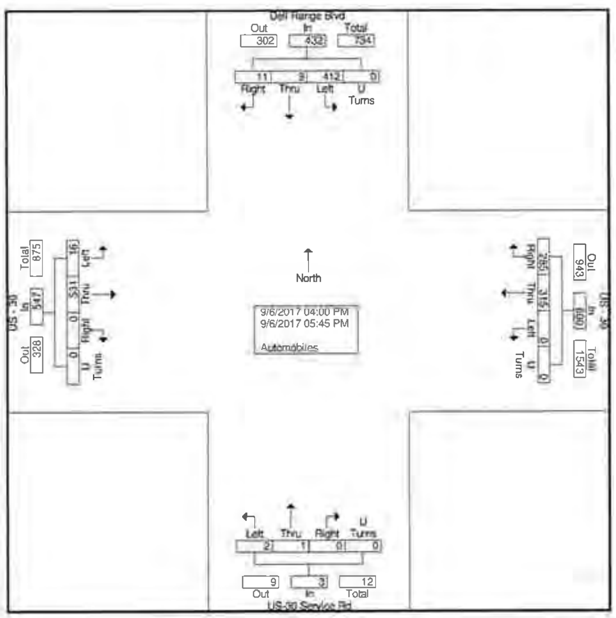
File Name : Dell Range and US-30 PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

	US - 30 Eastbound					US - 30 Westbound					US-30 Service Rd Northbound					Dell Range Blvd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	3	50	0	0	53	0	34	41	0	75	1	0	0	0	1	46	1	3	0	50	179
04:15 PM	1	61	0	0	62	0	48	34	0	82	0	0	0	0	0	57	1	0	0	58	202
04:30 PM	3	62	0	0	65	0	48	48	0	96	0	0	0	0	0	53	0	1	0	54	215
04:45 PM	2	59	0	0	61	0	33	25	0	58	0	0	0	0	0	49	2	1	0	52	171
Total	9	232	0	0	241	0	163	148	0	311	1	0	0	0	1	205	4	5	0	214	767
05:00 PM	1	82	0	0	83	0	35	45	0	80	0	1	0	0	1	53	0	1	0	54	218
05:15 PM	3	79	0	0	82	0	35	33	0	68	0	0	0	0	0	46	2	1	0	49	199
05:30 PM	1	86	0	0	87	0	44	37	0	81	1	0	0	0	1	61	0	2	0	63	232
05:45 PM	2	52	0	0	54	0	38	22	0	60	0	0	0	0	0	47	3	2	0	52	166
Total	7	299	0	0	306	0	152	137	0	289	1	1	0	0	2	207	5	6	0	218	815
Grand Total	16	531	0	0	547	0	315	285	0	600	2	1	0	0	3	412	9	11	0	432	1582
Apprch %	2.9	97.1	0	0		0	52.5	47.5	0		66.7	33.3	0	0		95.4	2.1	2.5	0		
Total %	1	33.6	0	0	34.6	0	19.9	18	0	37.9	0.1	0.1	0	0	0.2	26	0.6	0.7	0	27.3	

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and US-30

File Name : Dell Range and US-30 PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

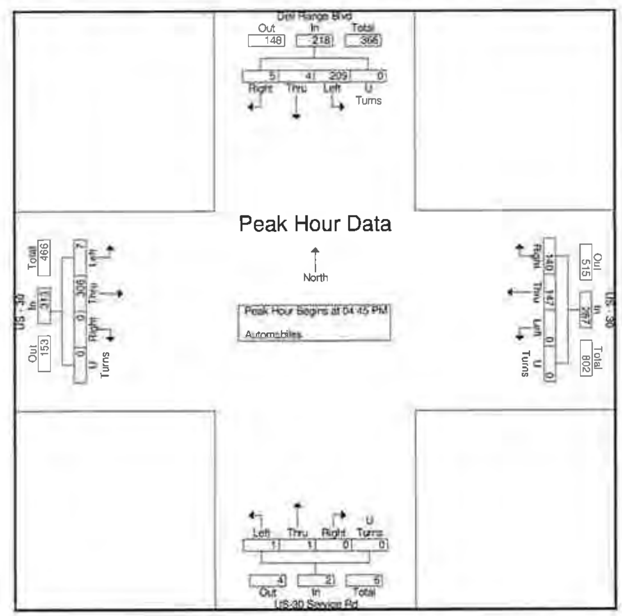


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Dell Range Blvd and US-30

File Name : Dell Range and US-30 PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					US-30 Service Rd Northbound					Dell Range Blvd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	59	0	0	61	0	33	25	0	58	0	0	0	0	0	49	2	1	0	52	171
05:00 PM	1	82	0	0	83	0	35	45	0	80	0	1	0	0	1	53	0	1	0	54	218
05:15 PM	3	79	0	0	82	0	35	33	0	68	0	0	0	0	0	46	2	1	0	49	199
05:30 PM	1	86	0	0	87	0	44	37	0	81	1	0	0	0	1	61	0	2	0	63	232
Total Volume	7	306	0	0	313	0	147	140	0	287	1	1	0	0	2	209	4	5	0	218	820
% App. Total	2.2	97.8	0	0		0	51.2	48.8	0		50	50	0	0		95.9	1.8	2.3	0		
PHF	.583	.890	.000	.000	.899	.000	.835	.778	.000	.886	.250	.250	.000	.000	.500	.857	.500	.625	.000	.865	.884



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

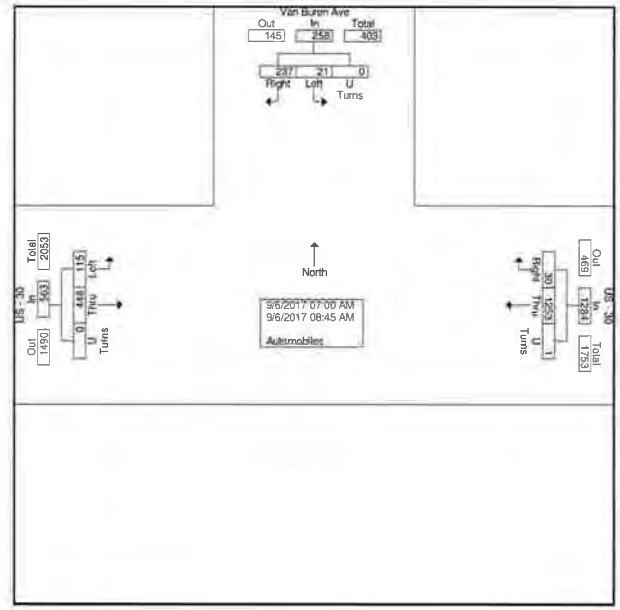
	US - 30 Eastbound				US - 30 Westbound				Van Buren Ave Southbound				
Start Time	Left	Thru	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Right	U Turns	App. Total	Int. Total
07:00 AM	16	45	0	61	203	4	1	208	3	28	0	31	300
07:15 AM	14	52	0	66	240	2	0	242	4	44	0	48	356
07:30 AM	20	60	0	80	230	3	0	233	2	22	0	24	337
07:45 AM	14	71	0	85	186	1	0	187	0	40	0	40	312
Total	64	228	0	292	859	10	1	870	9	134	0	143	1305
08:00 AM	18	70	0	88	113	7	0	120	4	29	0	33	241
08:15 AM	17	58	0	75	106	6	0	112	6	27	0	33	220
08:30 AM	8	40	0	48	95	3	0	98	1	32	0	33	179
08:45 AM	8	52	0	60	80	4	0	84	1	15	0	16	160
Total	51	220	0	271	394	20	0	414	12	103	0	115	800
Grand Total	115	448	0	563	1253	30	1	1284	21	237	0	258	2105
Apprch %	20.4	79.6	0		97.6	2.3	0.1		8.1	91.9	0		
Total %	5.5	21.3	0	26.7	59.5	1.4	0	61	1	11.3	0	12.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



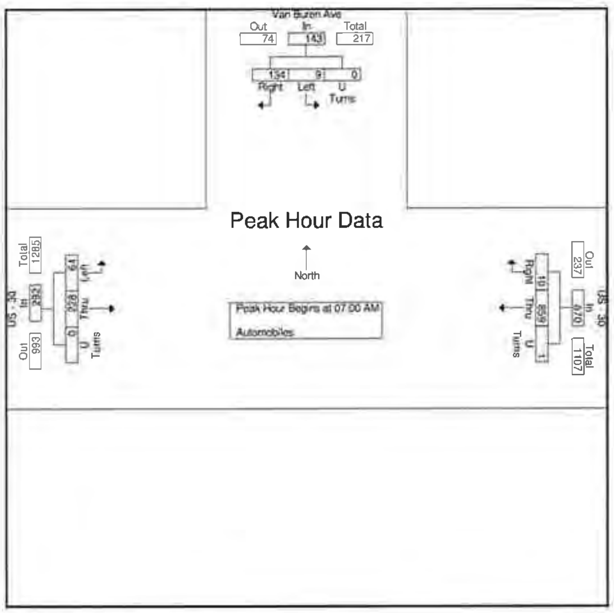
RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound				US - 30 Westbound				Van Buren Ave Southbound				
Start Time	Left	Thru	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Right	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	16	45	0	61	203	4	1	208	3	28	0	31	300
07:15 AM	14	52	0	66	240	2	0	242	4	44	0	48	356
07:30 AM	20	60	0	80	230	3	0	233	2	22	0	24	337
07:45 AM	14	71	0	85	186	1	0	187	0	40	0	40	312
Total Volume	64	228	0	292	859	10	1	870	9	134	0	143	1305
% App. Total	21.9	78.1	0		98.7	1.1	0.1		6.3	93.7	0		
PHF	.800	.803	.000	.859	.895	.625	.250	.899	.563	.761	.000	.745	.916



RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

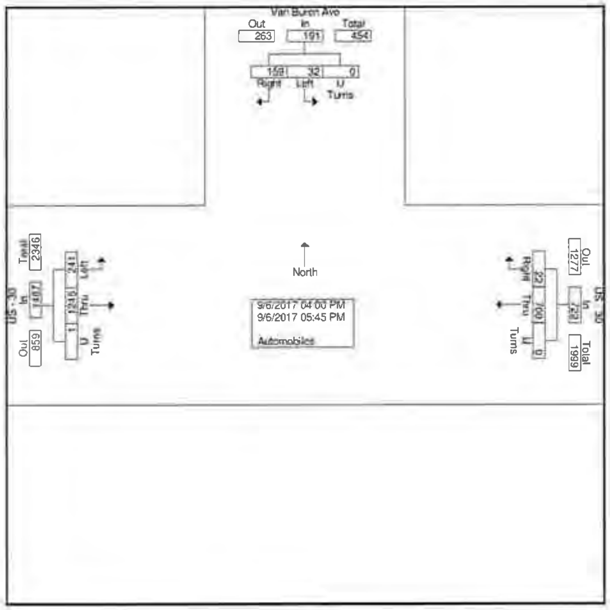
	US - 30 Eastbound				US - 30 Westbound				Van Buren Ave Southbound				
Start Time	Left	Thru	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Right	U Turns	App. Total	Int. Total
04:00 PM	25	132	1	158	67	1	0	68	5	21	0	26	252
04:15 PM	21	141	0	162	82	2	0	84	4	19	0	23	269
04:30 PM	30	125	0	155	94	2	0	96	3	18	0	21	272
04:45 PM	40	146	0	186	86	3	0	89	4	14	0	18	293
Total	116	544	1	661	329	8	0	337	16	72	0	88	1086
05:00 PM	36	186	0	222	95	7	0	102	3	17	0	20	344
05:15 PM	37	211	0	248	99	2	0	101	4	25	0	29	378
05:30 PM	30	173	0	203	73	3	0	76	5	19	0	24	303
05:45 PM	22	131	0	153	104	2	0	106	4	26	0	30	289
Total	125	701	0	826	371	14	0	385	16	87	0	103	1314
Grand Total	241	1245	1	1487	700	22	0	722	32	159	0	191	2400
Apprch %	16.2	83 7	0 1		97	3	0		16.8	83.2	0		
Total %	10	51 9	0	62	29.2	0.9	0	30.1	1.3	6.6	0	8	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



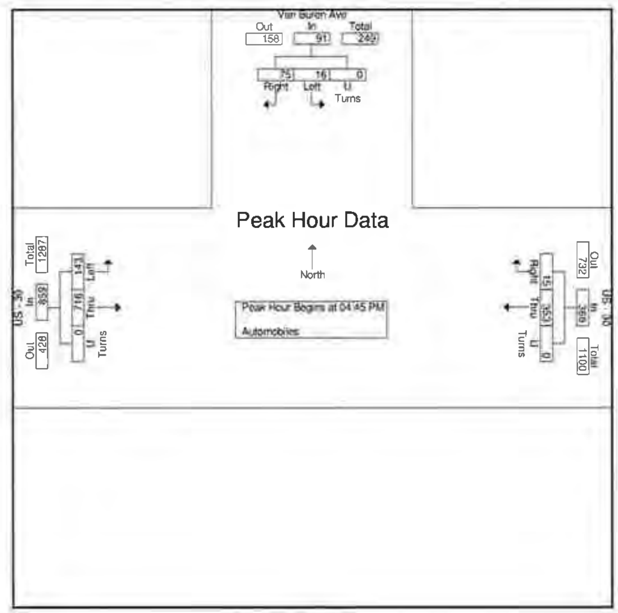
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Van Buren Ave

File Name : US-30 and Van Buren PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound				US - 30 Westbound				Van Buren Ave Southbound				
Start Time	Left	Thru	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Right	U Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	40	146	0	186	86	3	0	89	4	14	0	18	293
05:00 PM	36	186	0	222	95	7	0	102	3	17	0	20	344
05:15 PM	37	211	0	248	99	2	0	101	4	25	0	29	378
05:30 PM	30	173	0	203	73	3	0	76	5	19	0	24	303
Total Volume	143	716	0	859	353	15	0	368	16	75	0	91	1318
% App. Total	16.6	83.4	0		95.9	4.1	0		17.6	82.4	0		
PHF	.894	.848	.000	.866	.891	.536	.000	.902	.800	.750	.000	.784	.872



RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

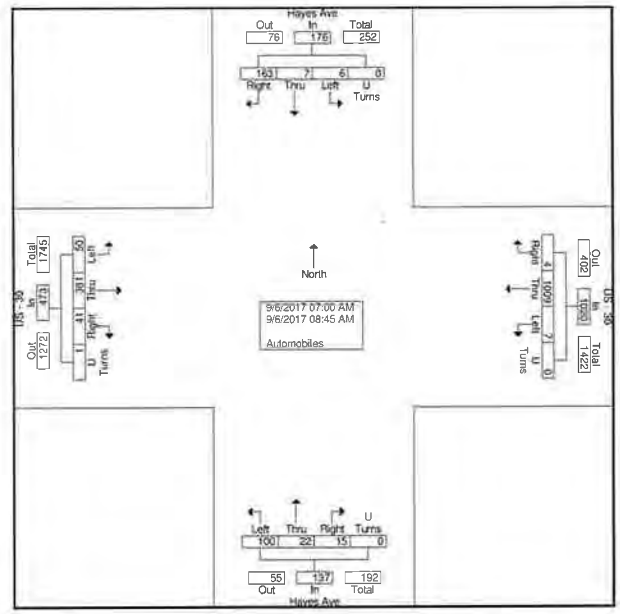
	US - 30 Eastbound					US - 30 Westbound					Hayes Ave Northbound					Hayes Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	6	38	8	0	52	3	168	1	0	172	27	4	0	0	31	1	1	27	0	29	284
07:15 AM	6	47	3	0	56	0	197	0	0	197	19	6	1	0	26	0	1	27	0	28	307
07:30 AM	8	56	4	0	68	0	177	0	0	177	14	1	4	0	19	1	1	32	0	34	298
07:45 AM	3	65	5	0	73	1	143	0	0	144	15	5	2	0	22	0	1	20	0	21	260
Total	23	206	20	0	249	4	685	1	0	690	75	16	7	0	98	2	4	106	0	112	1149
08:00 AM	7	62	5	0	74	0	94	0	0	94	3	1	2	0	6	2	1	16	0	19	193
08:15 AM	4	46	5	0	55	3	97	2	0	102	6	3	5	0	14	1	0	12	0	13	184
08:30 AM	10	32	5	0	47	0	73	0	0	73	7	1	0	0	8	1	1	15	0	17	145
08:45 AM	6	35	6	1	48	0	60	1	0	61	9	1	1	0	11	0	1	14	0	15	135
Total	27	175	21	1	224	3	324	3	0	330	25	6	8	0	39	4	3	57	0	64	657
Grand Total	50	381	41	1	473	7	1009	4	0	1020	100	22	15	0	137	6	7	163	0	176	1806
Apprch %	10.6	80.5	8.7	0.2		0.7	98.9	0.4	0		73	16.1	10.9	0		3.4	4	92.6	0		
Total %	2.8	21.1	2.3	0.1	26.2	0.4	55.9	0.2	0	56.5	5.5	1.2	0.8	0	7.6	0.3	0.4	9	0	9.7	

RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



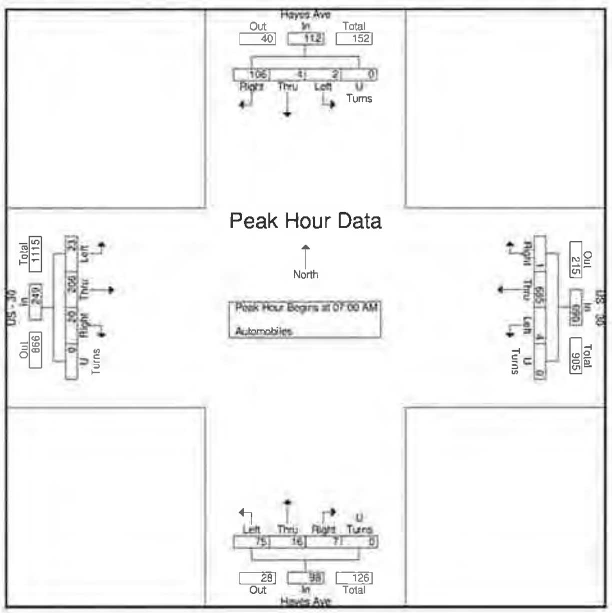
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					Hayes Ave Northbound					Hayes Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	6	38	8	0	52	3	168	1	0	172	27	4	0	0	31	1	1	27	0	29	284
07:15 AM	6	47	3	0	56	0	197	0	0	197	19	6	1	0	26	0	1	27	0	28	307
07:30 AM	8	56	4	0	68	0	177	0	0	177	14	1	4	0	19	1	1	32	0	34	298
07:45 AM	3	65	5	0	73	1	143	0	0	144	15	5	2	0	22	0	1	20	0	21	260
Total Volume	23	206	20	0	249	4	685	1	0	690	75	16	7	0	98	2	4	106	0	112	1149
% App. Total	9.2	82.7	8	0		0.6	99.3	0.1	0		76.5	16.3	7.1	0		1.8	3.6	94.6	0		
PHF	.719	.792	.625	.000	.853	.333	.869	.250	.000	.876	.694	.667	.438	.000	.790	.500	1.00	.828	.000	.824	.936



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

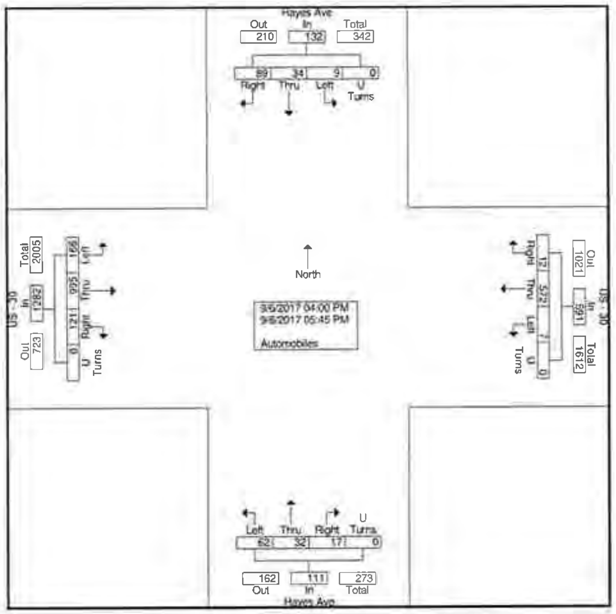
	US - 30 Eastbound					US - 30 Westbound					Hayes Ave Northbound					Hayes Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	21	111	10	0	142	0	57	2	0	59	3	2	2	0	7	0	5	5	0	10	218
04:15 PM	24	113	6	0	143	0	78	2	0	80	4	4	0	0	8	1	4	10	0	15	246
04:30 PM	17	96	12	0	125	1	82	2	0	85	4	8	1	0	13	0	3	10	0	13	236
04:45 PM	18	122	19	0	159	1	69	1	0	71	11	2	3	0	16	0	5	15	0	20	266
Total	80	442	47	0	569	2	286	7	0	295	22	16	6	0	44	1	17	40	0	58	966
05:00 PM	25	142	17	0	184	1	79	2	0	82	9	1	1	0	11	1	3	12	0	16	293
05:15 PM	32	163	26	0	221	0	65	1	0	66	15	4	2	0	21	4	5	14	0	23	331
05:30 PM	16	139	20	0	175	4	65	2	0	71	6	10	1	0	17	1	7	9	0	17	280
05:45 PM	13	109	11	0	133	0	77	0	0	77	10	1	7	0	18	2	2	14	0	18	246
Total	86	553	74	0	713	5	286	5	0	296	40	16	11	0	67	8	17	49	0	74	1150
Grand Total	166	995	121	0	1282	7	572	12	0	591	62	32	17	0	111	9	34	89	0	132	2116
Apprch %	12.9	77.6	9.4	0		1.2	96.8	2	0		55.9	28.8	15.3	0		6.8	25.8	67.4	0		
Total %	7.8	47	5.7	0	60.6	0.3	27	0.6	0	27.9	2.9	1.5	0.8	0	5.2	0.4	1.6	4.2	0	6.2	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



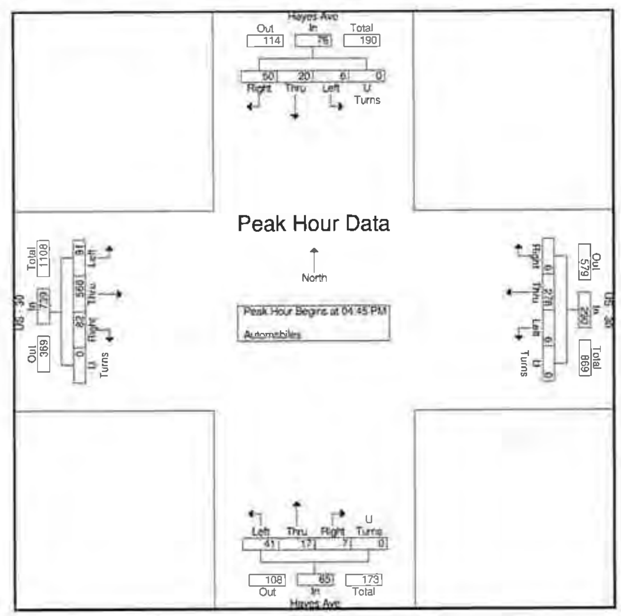
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Hayes Ave

File Name : US-30 and Hayes PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					Hayes Ave Northbound					Hayes Ave Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	18	122	19	0	159	1	69	1	0	71	11	2	3	0	16	0	5	15	0	20	266
05:00 PM	25	142	17	0	184	1	79	2	0	82	9	1	1	0	11	1	3	12	0	16	293
05:15 PM	32	163	26	0	221	0	65	1	0	66	15	4	2	0	21	4	5	14	0	23	331
05:30 PM	16	139	20	0	175	4	65	2	0	71	6	10	1	0	17	1	7	9	0	17	280
Total Volume	91	566	82	0	739	6	278	6	0	290	41	17	7	0	65	6	20	50	0	76	1170
% App. Total	12.3	76.6	11.1	0		2.1	95.9	2.1	0		63.1	26.2	10.8	0		7.9	26.3	65.8	0		
PHF	.711	.868	.788	.000	.836	.375	.880	.750	.000	.884	.683	.425	.583	.000	.774	.375	.714	.833	.000	.826	.884



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

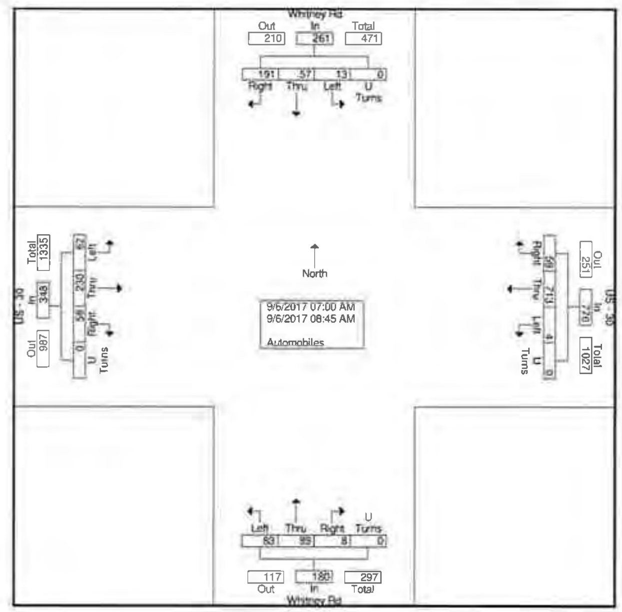
	US - 30 Eastbound					US - 30 Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	8	20	6	0	34	0	122	7	0	129	14	12	1	0	27	1	6	25	0	32	222
07:15 AM	5	31	4	0	40	1	148	5	0	154	7	6	1	0	14	0	6	44	0	50	258
07:30 AM	10	24	5	0	39	0	121	7	0	128	10	13	0	0	23	1	5	39	0	45	235
07:45 AM	9	44	16	0	69	2	111	14	0	127	15	18	1	0	34	2	12	23	0	37	267
Total	32	119	31	0	182	3	502	33	0	538	46	49	3	0	98	4	29	131	0	164	982
08:00 AM	7	34	8	0	49	0	55	8	0	63	9	14	3	0	26	2	10	14	0	26	164
08:15 AM	9	41	11	0	61	0	65	7	0	72	10	8	2	0	20	5	7	13	0	25	178
08:30 AM	9	16	1	0	26	1	49	6	0	56	9	10	0	0	19	1	7	21	0	29	130
08:45 AM	5	20	5	0	30	0	42	5	0	47	9	8	0	0	17	1	4	12	0	17	111
Total	30	111	25	0	166	1	211	26	0	238	37	40	5	0	82	9	28	60	0	97	583
Grand Total	62	230	56	0	348	4	713	59	0	776	83	89	8	0	180	13	57	191	0	261	1565
Apprch %	17.8	66.1	16.1	0		0.5	91.9	7.6	0		46.1	49.4	4.4	0		5	21.8	73.2	0		
Total %	4	14.7	3.6	0	22.2	0.3	45.6	3.8	0	49.6	5.3	5.7	0.5	0	11.5	0.8	3.6	12.2	0	16.7	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

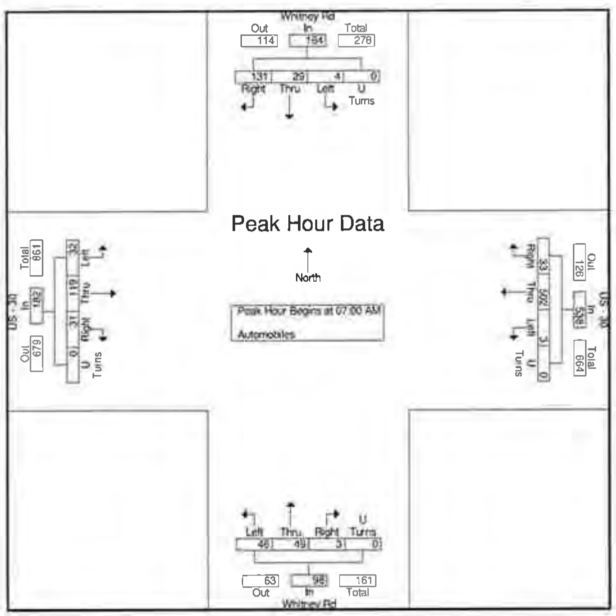


Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	8	20	6	0	34	0	122	7	0	129	14	12	1	0	27	1	6	25	0	32	222
07:15 AM	5	31	4	0	40	1	148	5	0	154	7	6	1	0	14	0	6	44	0	50	258
07:30 AM	10	24	5	0	39	0	121	7	0	128	10	13	0	0	23	1	5	39	0	45	235
07:45 AM	9	44	16	0	69	2	111	14	0	127	15	18	1	0	34	2	12	23	0	37	267
Total Volume	32	119	31	0	182	3	502	33	0	538	46	49	3	0	98	4	29	131	0	164	982
% App. Total	17.6	65.4	17	0		0.6	93.3	6.1	0		46.9	50	3.1	0		2.4	17.7	79.9	0		
PHF	.800	.676	.484	.000	.659	.375	.848	.589	.000	.873	.767	.681	.750	.000	.721	.500	.604	.744	.000	.820	.919



Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

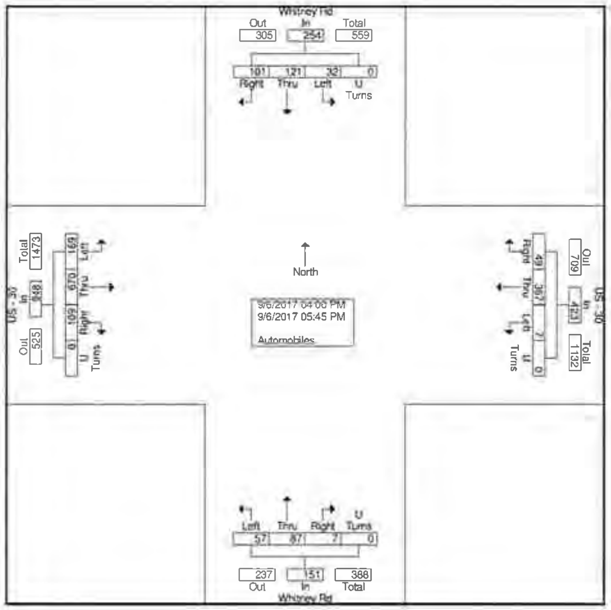
	US - 30 Eastbound					US - 30 Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	15	71	10	0	96	2	39	5	0	46	8	7	0	0	15	3	12	11	0	26	183
04:15 PM	24	68	12	0	104	0	50	3	0	53	6	6	1	0	13	3	11	8	0	22	192
04:30 PM	21	67	8	0	96	1	60	6	0	67	5	5	0	0	10	5	16	10	0	31	204
04:45 PM	23	72	12	0	107	0	40	5	0	45	7	11	0	0	18	4	11	19	0	34	204
Total	83	278	42	0	403	3	189	19	0	211	26	29	1	0	56	15	50	48	0	113	783
05:00 PM	21	106	14	0	141	0	46	11	0	57	5	15	2	0	22	3	24	18	0	45	265
05:15 PM	32	103	18	0	153	3	42	9	0	54	8	13	3	0	24	3	16	15	0	34	265
05:30 PM	18	105	18	0	141	1	44	3	0	48	10	18	0	0	28	7	17	6	0	30	247
05:45 PM	15	78	17	0	110	0	46	7	0	53	8	12	1	0	21	4	14	14	0	32	216
Total	86	392	67	0	545	4	178	30	0	212	31	58	6	0	95	17	71	53	0	141	993
Grand Total	169	670	109	0	948	7	367	49	0	423	57	87	7	0	151	32	121	101	0	254	1776
Apprch %	17.8	70.7	11.5	0		1.7	86.8	11.6	0		37.7	57.6	4.6	0		12.6	47.6	39.8	0		
Total %	9.5	37.7	6.1	0	53.4	0.4	20.7	2.8	0	23.8	3.2	4.9	0.4	0	8.5	1.8	6.8	5.7	0	14.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



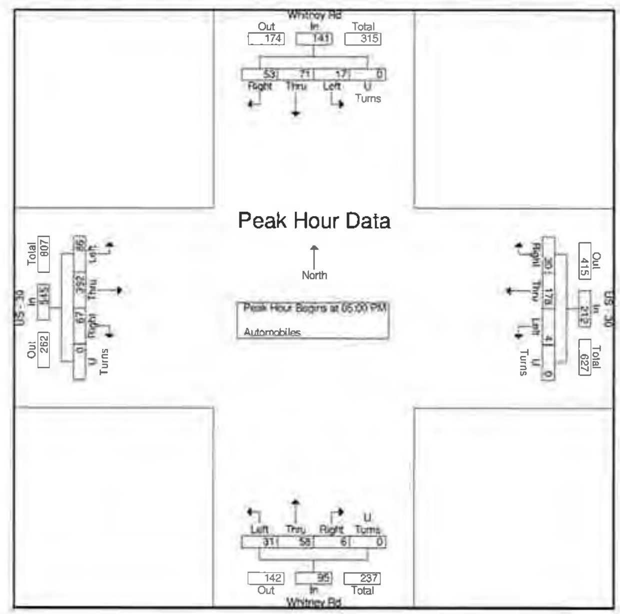
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
US-30 and Whitney Rd

File Name : US-30 and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	US - 30 Eastbound					US - 30 Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	21	106	14	0	141	0	46	11	0	57	5	15	2	0	22	3	24	18	0	45	265
05:15 PM	32	103	18	0	153	3	42	9	0	54	8	13	3	0	24	3	16	15	0	34	265
05:30 PM	18	105	18	0	141	1	44	3	0	48	10	18	0	0	28	7	17	6	0	30	247
05:45 PM	15	78	17	0	110	0	46	7	0	53	8	12	1	0	21	4	14	14	0	32	216
Total Volume	86	392	67	0	545	4	178	30	0	212	31	58	6	0	95	17	71	53	0	141	993
% App. Total	15.8	71.9	12.3	0		1.9	84	14.2	0		32.6	61.1	6.3	0		12.1	50.4	37.6	0		
PHF	.672	.925	.931	.000	.891	.333	.967	.682	.000	.930	.775	.806	.500	.000	.848	.607	.740	.736	.000	.783	.937



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

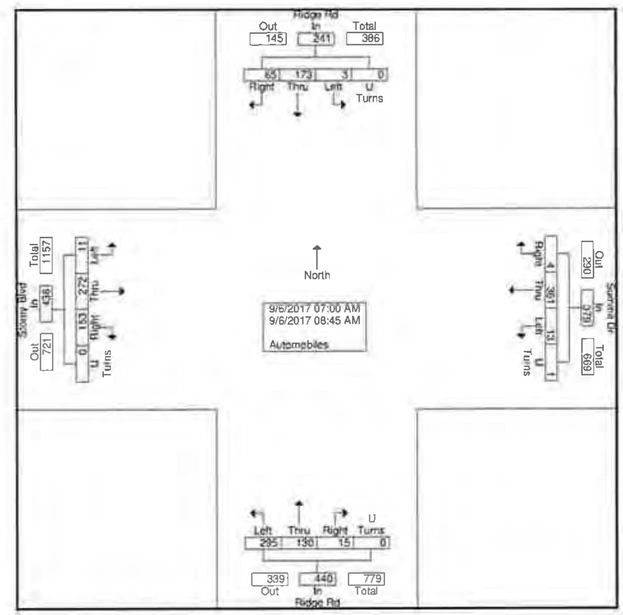
	Storey Blvd Eastbound					Summit Dr Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	1	24	8	0	33	1	43	0	0	44	26	12	4	0	42	0	23	7	0	30	149
07:15 AM	0	24	10	0	34	2	41	1	0	44	18	14	0	0	32	2	28	8	0	38	148
07:30 AM	2	34	18	0	54	4	59	1	0	64	35	14	4	0	53	1	23	5	0	29	200
07:45 AM	0	35	26	0	61	0	66	1	0	67	59	21	3	0	83	0	23	9	0	32	243
Total	3	117	62	0	182	7	209	3	0	219	138	61	11	0	210	3	97	29	0	129	740
08:00 AM	1	52	21	0	74	2	52	1	0	55	67	16	1	0	84	0	23	14	0	37	250
08:15 AM	2	44	31	0	77	2	45	0	0	47	41	16	1	0	58	0	16	13	0	29	211
08:30 AM	4	36	25	0	65	2	29	0	0	31	22	15	2	0	39	0	20	5	0	25	160
08:45 AM	1	23	14	0	38	0	26	0	1	27	27	22	0	0	49	0	17	4	0	21	135
Total	8	155	91	0	254	6	152	1	1	160	157	69	4	0	230	0	76	36	0	112	756
Grand Total	11	272	153	0	436	13	361	4	1	379	295	130	15	0	440	3	173	65	0	241	1496
Apprch %	2.5	62.4	35.1	0		3.4	95.3	1.1	0.3		67	29.5	3.4	0		1.2	71.8	27	0		
Total %	0.7	18.2	10.2	0	29.1	0.9	24.1	0.3	0.1	25.3	19.7	8.7	1	0	29.4	0.2	11.6	4.3	0	16.1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

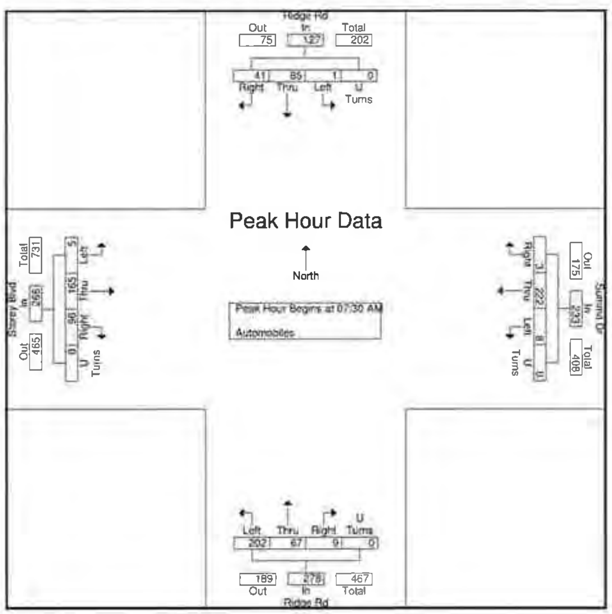


Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Storey Blvd Eastbound					Summit Dr Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	2	34	18	0	54	4	59	1	0	64	35	14	4	0	53	1	23	5	0	29	200
07:45 AM	0	35	26	0	61	0	66	1	0	67	59	21	3	0	83	0	23	9	0	32	243
08:00 AM	1	52	21	0	74	2	52	1	0	55	67	16	1	0	84	0	23	14	0	37	250
08:15 AM	2	44	31	0	77	2	45	0	0	47	41	16	1	0	58	0	16	13	0	29	211
Total Volume	5	165	96	0	266	8	222	3	0	233	202	67	9	0	278	1	85	41	0	127	904
% App. Total	1.9	62	36.1	0		3.4	95.3	1.3	0		72.7	24.1	3.2	0		0.8	66.9	32.3	0		
PHF	.625	.793	.774	.000	.864	.500	.841	.750	.000	.869	.754	.798	.563	.000	.827	.250	.924	.732	.000	.858	.904



Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

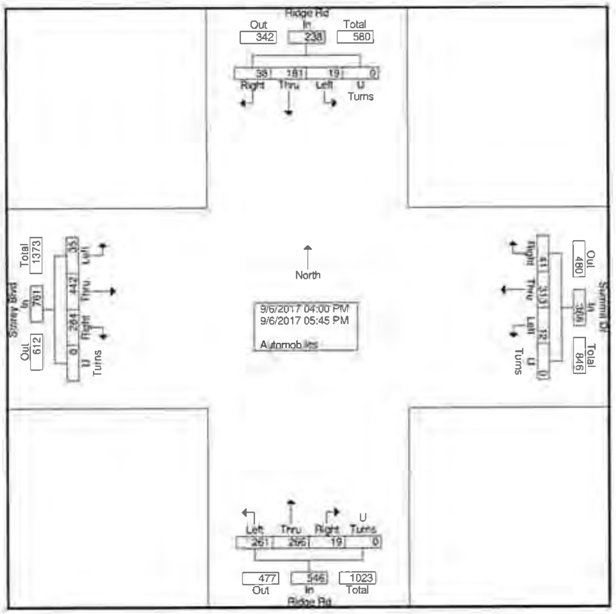
	Storey Blvd Eastbound					Summit Dr Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	3	46	34	0	83	1	27	2	0	30	29	25	0	0	54	2	14	3	0	19	186
04:15 PM	1	58	35	0	94	5	40	2	0	47	24	26	3	0	53	2	7	4	0	13	207
04:30 PM	5	54	45	0	104	2	46	2	0	50	33	28	2	0	63	1	14	5	0	20	237
04:45 PM	2	59	29	0	90	0	49	5	0	54	27	32	4	0	63	1	21	3	0	25	232
Total	11	217	143	0	371	8	162	11	0	181	113	111	9	0	233	6	56	15	0	77	862
05:00 PM	7	69	32	0	108	3	42	5	0	50	33	29	3	0	65	2	37	4	0	43	266
05:15 PM	6	69	49	0	124	0	38	9	0	47	43	55	2	0	100	3	27	6	0	36	307
05:30 PM	6	58	33	0	97	1	30	10	0	41	42	43	1	0	86	5	32	8	0	45	269
05:45 PM	5	29	27	0	61	0	41	6	0	47	30	28	4	0	62	3	29	5	0	37	207
Total	24	225	141	0	390	4	151	30	0	185	148	155	10	0	313	13	125	23	0	161	1049
Grand Total	35	442	284	0	761	12	313	41	0	366	261	266	19	0	546	19	181	38	0	238	1911
Apprch %	4.6	58.1	37.3	0		3.3	85.5	11.2	0		47.8	48.7	3.5	0		8	76.1	16	0		
Total %	1.8	23.1	14.9	0	39.8	0.6	16.4	2.1	0	19.2	13.7	13.9	1	0	28.6	1	9.5	2	0	12.5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



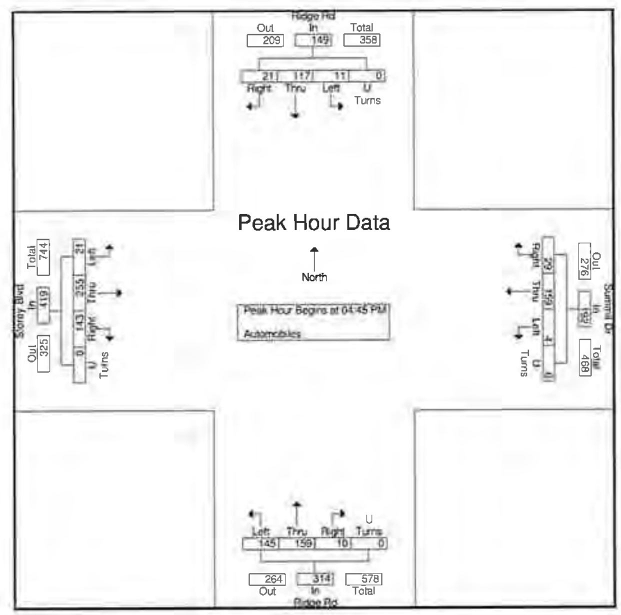
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Storey Blvd/Summit Dr and Ridge Rd

File Name : Storey Summit and Ridge PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Storey Blvd Eastbound					Summit Dr Westbound					Ridge Rd Northbound					Ridge Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	59	29	0	90	0	49	5	0	54	27	32	4	0	63	1	21	3	0	25	232
05:00 PM	7	69	32	0	108	3	42	5	0	50	33	29	3	0	65	2	37	4	0	43	266
05:15 PM	6	69	49	0	124	0	38	9	0	47	43	55	2	0	100	3	27	6	0	36	307
05:30 PM	6	58	33	0	97	1	30	10	0	41	42	43	1	0	86	5	32	8	0	45	269
Total Volume	21	255	143	0	419	4	159	29	0	192	145	159	10	0	314	11	117	21	0	149	1074
% App. Total	5	60.9	34.1	0		2.1	82.8	15.1	0		46.2	50.6	3.2	0		7.4	78.5	14.1	0		
PHF	.750	.924	.730	.000	.845	.333	.811	.725	.000	.889	.843	.723	.625	.000	.785	.550	.791	.656	.000	.828	.875



RDC Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Summit Dr and College Dr

File Name : Summit and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

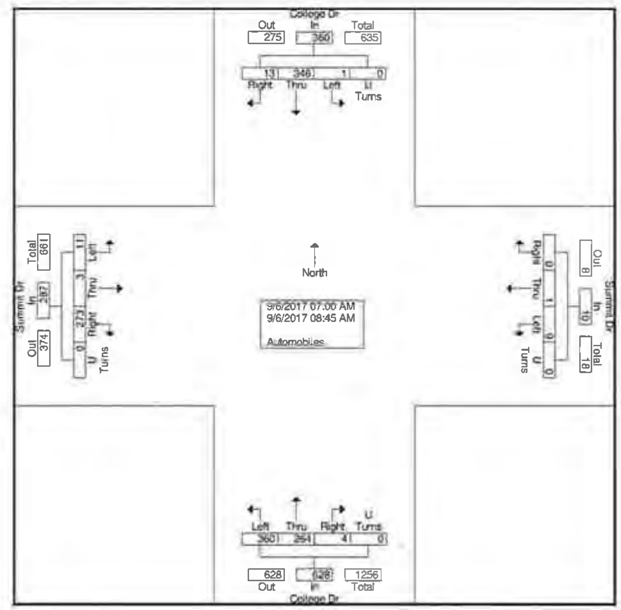
Groups Printed- Automobiles

	Summit Dr Eastbound					Summit Dr Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	2	0	23	0	25	0	0	0	0	0	46	36	1	0	83	0	46	1	0	47	155
07:15 AM	2	1	27	0	30	1	0	0	0	1	40	35	0	0	75	1	48	1	0	50	156
07:30 AM	1	0	36	0	37	2	0	0	0	2	64	32	0	0	96	0	54	1	0	55	190
07:45 AM	0	1	37	0	38	3	1	0	0	4	64	40	0	0	104	0	47	4	0	51	197
Total	5	2	123	0	130	6	1	0	0	7	214	143	1	0	358	1	195	7	0	203	698
08:00 AM	2	0	49	0	51	2	0	0	0	2	48	32	0	0	80	0	43	0	0	43	176
08:15 AM	2	1	42	0	45	0	0	0	0	0	41	41	2	0	84	0	35	4	0	39	168
08:30 AM	1	0	35	0	36	0	0	0	0	0	30	24	0	0	54	0	42	1	0	43	133
08:45 AM	1	0	24	0	25	1	0	0	0	1	27	24	1	0	52	0	31	1	0	32	110
Total	6	1	150	0	157	3	0	0	0	3	146	121	3	0	270	0	151	6	0	157	587
Grand Total	11	3	273	0	287	9	1	0	0	10	360	264	4	0	628	1	346	13	0	360	1285
Apprch %	3.8	1	95.1	0		90	10	0	0		57.3	42	0.6	0		0.3	96.1	3.6	0		
Total %	0.9	0.2	21.2	0	22.3	0.7	0.1	0	0	0.8	28	20.5	0.3	0	48.9	0.1	26.9	1	0	28	

RDC Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Summit Dr and College Dr

File Name : Summit and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



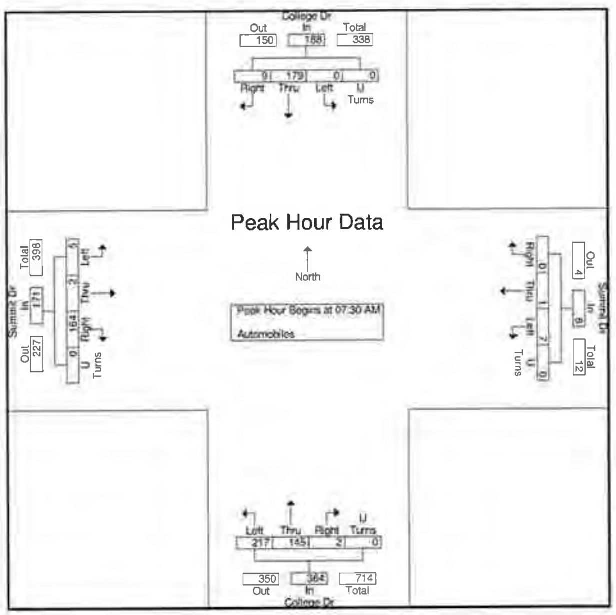
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Summit Dr and College Dr

File Name : Summit and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Summit Dr Eastbound					Summit Dr Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	0	36	0	37	2	0	0	0	2	64	32	0	0	96	0	54	1	0	55	190
07:45 AM	0	1	37	0	38	3	1	0	0	4	64	40	0	0	104	0	47	4	0	51	197
08:00 AM	2	0	49	0	51	2	0	0	0	2	48	32	0	0	80	0	43	0	0	43	176
08:15 AM	2	1	42	0	45	0	0	0	0	0	41	41	2	0	84	0	35	4	0	39	168
Total Volume	5	2	164	0	171	7	1	0	0	8	217	145	2	0	364	0	179	9	0	188	731
% App. Total	2.9	1.2	95.9	0		87.5	12.5	0	0		59.6	39.8	0.5	0		0	95.2	4.8	0		
PHF	.625	.500	.837	.000	.838	.583	.250	.000	.000	.500	.848	.684	.250	.000	.875	.000	.829	.563	.000	.855	.928



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Summit Dr and College Dr

File Name : Summit and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

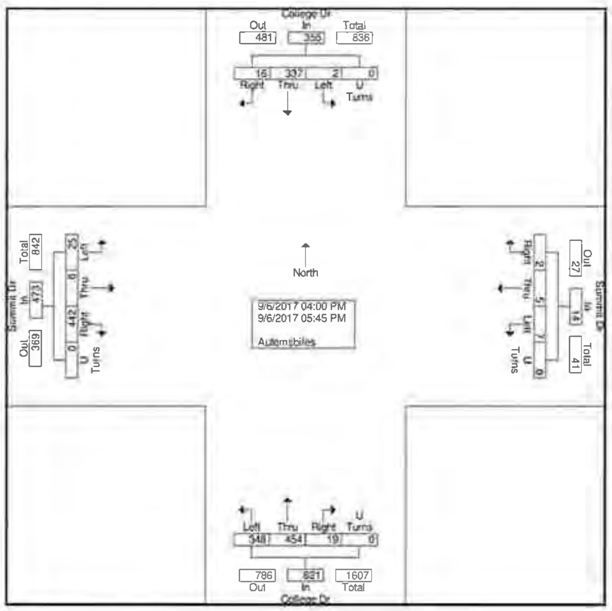
Groups Printed- Automobiles

	Summit Dr Eastbound					Summit Dr Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	3	0	44	0	47	0	0	0	0	0	32	45	1	0	78	0	42	3	0	45	170
04:15 PM	2	0	59	0	61	2	0	0	0	2	41	45	1	0	87	0	44	3	0	47	197
04:30 PM	3	0	54	0	57	1	1	0	0	2	47	45	0	0	92	0	43	3	0	46	197
04:45 PM	2	1	56	0	59	0	2	0	0	2	52	47	2	0	101	0	35	2	0	37	199
Total	10	1	213	0	224	3	3	0	0	6	172	182	4	0	358	0	164	11	0	175	763
05:00 PM	4	2	70	0	76	0	1	0	0	1	39	65	7	0	111	1	53	4	0	58	246
05:15 PM	3	2	68	0	73	1	0	1	0	2	46	74	3	0	123	1	47	1	0	49	247
05:30 PM	2	1	61	0	64	3	0	0	0	3	45	70	3	0	118	0	40	0	0	40	225
05:45 PM	6	0	30	0	36	0	1	1	0	2	46	63	2	0	111	0	33	0	0	33	182
Total	15	5	229	0	249	4	2	2	0	8	176	272	15	0	463	2	173	5	0	180	900
Grand Total	25	6	442	0	473	7	5	2	0	14	348	454	19	0	821	2	337	16	0	355	1663
Apprch %	5.3	1.3	93.4	0		50	35.7	14.3	0		42.4	55.3	2.3	0		0.6	94.9	4.5	0		
Total %	1.5	0.4	26.6	0	28.4	0.4	0.3	0.1	0	0.8	20.9	27.3	1.1	0	49.4	0.1	20.3	1	0	21.3	

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Summit Dr and College Dr

File Name : Summit and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

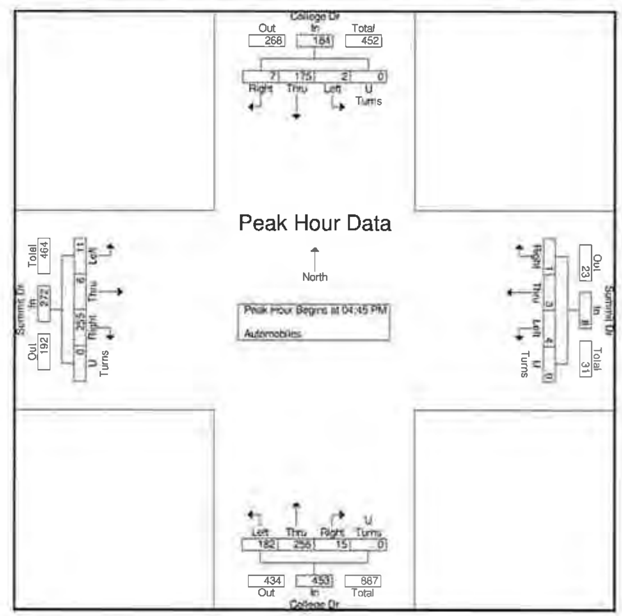


Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Summit Dr and College Dr

File Name : Summit and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Summit Dr Eastbound					Summit Dr Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	1	56	0	59	0	2	0	0	2	52	47	2	0	101	0	35	2	0	37	199
05:00 PM	4	2	70	0	76	0	1	0	0	1	39	65	7	0	111	1	53	4	0	58	246
05:15 PM	3	2	68	0	73	1	0	1	0	2	46	74	3	0	123	1	47	1	0	49	247
05:30 PM	2	1	61	0	64	3	0	0	0	3	45	70	3	0	118	0	40	0	0	40	225
Total Volume	11	6	255	0	272	4	3	1	0	8	182	256	15	0	453	2	175	7	0	184	917
% App. Total	4	2.2	93.8	0		50	37.5	12.5	0		40.2	56.5	3.3	0		1.1	95.1	3.8	0		
PHF	.688	.750	.911	.000	.895	.333	.375	.250	.000	.667	.875	.865	.536	.000	.921	.500	.825	.438	.000	.793	.928



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Thomas Rd and College Dr

File Name : Thomas and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

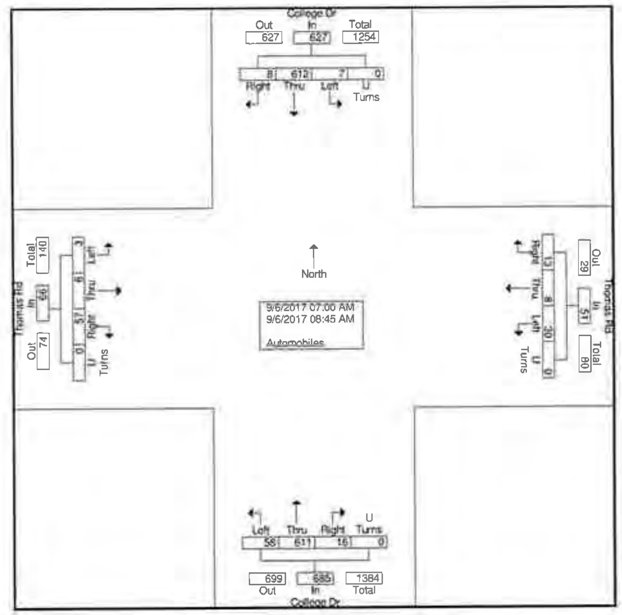
	Thomas Rd Eastbound					Thomas Rd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	2	7	0	9	3	0	4	0	7	8	80	3	0	91	0	66	1	0	67	174
07:15 AM	0	0	9	0	9	2	1	2	0	5	8	74	1	0	83	1	73	2	0	76	173
07:30 AM	0	0	10	0	10	3	1	2	0	6	2	96	3	0	101	3	87	2	0	92	209
07:45 AM	0	1	7	0	8	2	3	0	0	5	10	102	2	0	114	0	85	1	0	86	213
Total	0	3	33	0	36	10	5	8	0	23	28	352	9	0	389	4	311	6	0	321	769
08:00 AM	1	1	3	0	5	4	1	1	0	6	8	76	1	0	85	0	95	1	0	96	192
08:15 AM	0	1	5	0	6	12	1	2	0	15	6	81	2	0	89	1	76	1	0	78	188
08:30 AM	1	1	11	0	13	1	0	1	0	2	11	52	1	0	64	2	73	0	0	75	154
08:45 AM	1	0	5	0	6	3	1	1	0	5	5	50	3	0	58	0	57	0	0	57	126
Total	3	3	24	0	30	20	3	5	0	28	30	259	7	0	296	3	301	2	0	306	660
Grand Total	3	6	57	0	66	30	8	13	0	51	58	611	16	0	685	7	612	8	0	627	1429
Apprch %	4.5	9.1	86.4	0		58.8	15.7	25.5	0		8.5	89.2	2.3	0		1.1	97.6	1.3	0		
Total %	0.2	0.4	4	0	4.6	2.1	0.6	0.9	0	3.6	4.1	42.8	1.1	0	47.9	0.5	42.8	0.6	0	43.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Thomas Rd and College Dr

File Name : Thomas and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



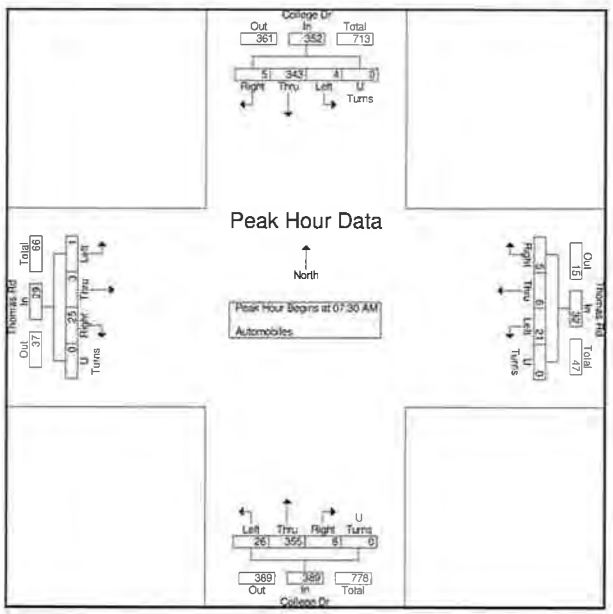
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Thomas Rd and College Dr

File Name : Thomas and College AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Thomas Rd Eastbound					Thomas Rd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	10	0	10	3	1	2	0	6	2	96	3	0	101	3	87	2	0	92	209
07:45 AM	0	1	7	0	8	2	3	0	0	5	10	102	2	0	114	0	85	1	0	86	213
08:00 AM	1	1	3	0	5	4	1	1	0	6	8	76	1	0	85	0	95	1	0	96	192
08:15 AM	0	1	5	0	6	12	1	2	0	15	6	81	2	0	89	1	76	1	0	78	188
Total Volume	1	3	25	0	29	21	6	5	0	32	26	355	8	0	389	4	343	5	0	352	802
% App. Total	3.4	10.3	86.2	0		65.6	18.8	15.6	0		6.7	91.3	2.1	0		1.1	97.4	1.4	0		
PHF	.250	.750	.625	.000	.725	.438	.500	.625	.000	.533	.650	.870	.667	.000	.853	.333	.903	.625	.000	.917	.941



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Thomas Rd and College Dr

File Name : Thomas and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

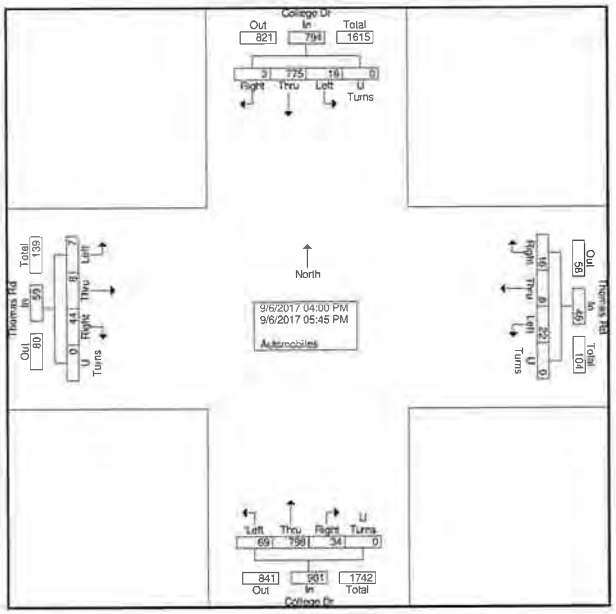
Groups Printed- Automobiles

	Thomas Rd Eastbound					Thomas Rd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	2	1	8	0	11	0	1	2	0	3	4	79	8	0	91	4	82	0	0	86	191
04:15 PM	0	1	1	0	2	3	1	3	0	7	7	80	1	0	88	1	106	0	0	107	204
04:30 PM	1	0	4	0	5	5	1	2	0	8	7	89	4	0	100	1	94	0	0	95	208
04:45 PM	2	2	3	0	7	3	1	3	0	7	6	105	5	0	116	1	96	1	0	98	228
Total	5	4	16	0	25	11	4	10	0	25	24	353	18	0	395	7	378	1	0	386	831
05:00 PM	1	0	8	0	9	1	1	0	0	2	4	105	3	0	112	2	119	1	0	122	245
05:15 PM	0	3	4	0	7	5	0	2	0	7	17	118	4	0	139	1	117	0	0	118	271
05:30 PM	0	1	9	0	10	2	2	3	0	7	8	116	4	0	128	5	98	0	0	103	248
05:45 PM	1	0	7	0	8	3	1	1	0	5	16	106	5	0	127	1	63	1	0	65	205
Total	2	4	28	0	34	11	4	6	0	21	45	445	16	0	506	9	397	2	0	408	969
Grand Total	7	8	44	0	59	22	8	16	0	46	69	798	34	0	901	16	775	3	0	794	1800
Apprch %	11.9	13.6	74.6	0		47.8	17.4	34.8	0		7.7	88.6	3.8	0		2	97.6	0.4	0		
Total %	0.4	0.4	2.4	0	3.3	1.2	0.4	0.9	0	2.6	3.8	44.3	1.9	0	50.1	0.9	43.1	0.2	0	44.1	

RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Thomas Rd and College Dr

File Name : Thomas and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2

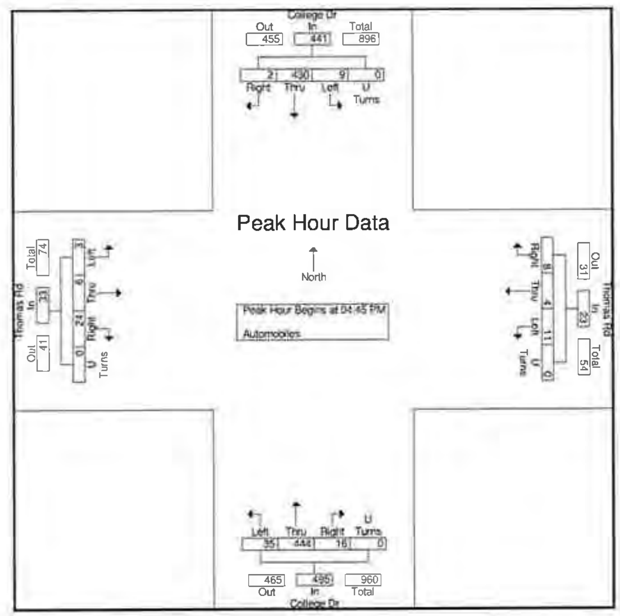


RDC
Ridgeview Data Collection
Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Thomas Rd and College Dr

File Name : Thomas and College PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Thomas Rd Eastbound					Thomas Rd Westbound					College Dr Northbound					College Dr Southbound					
Start Time	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Left	Thru	Right	U Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	2	3	0	7	3	1	3	0	7	6	105	5	0	116	1	96	1	0	98	228
05:00 PM	1	0	8	0	9	1	1	0	0	2	4	105	3	0	112	2	119	1	0	122	245
05:15 PM	0	3	4	0	7	5	0	2	0	7	17	118	4	0	139	1	117	0	0	118	271
05:30 PM	0	1	9	0	10	2	2	3	0	7	8	116	4	0	128	5	98	0	0	103	248
Total Volume	3	6	24	0	33	11	4	8	0	23	35	444	16	0	495	9	430	2	0	441	992
% App. Total	9.1	18.2	72.7	0		47.8	17.4	34.8	0		7.1	89.7	3.2	0		2	97.5	0.5	0		
PHF	.375	.500	.667	.000	.825	.550	.500	.667	.000	.821	.515	.941	.800	.000	.890	.450	.903	.500	.000	.904	.915



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

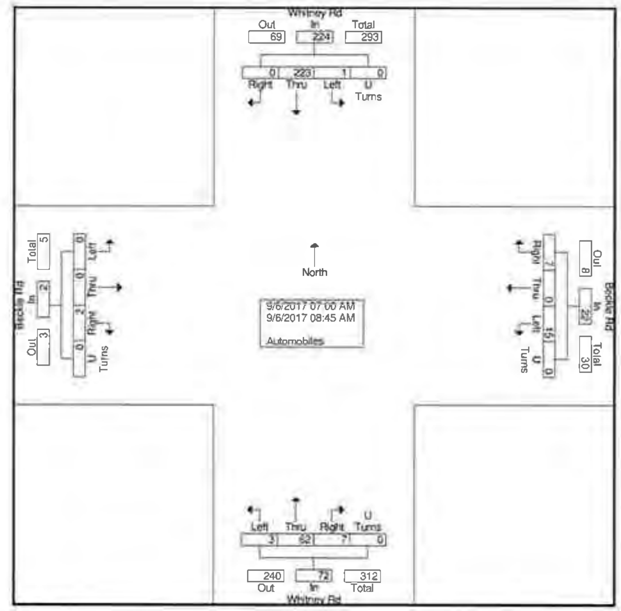
	Beckle Rd Eastbound					Beckle Rd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	0	1	0	1	4	0	1	0	5	2	3	0	0	5	0	48	0	0	48	59
07:15 AM	0	0	0	0	0	2	0	0	0	2	0	6	1	0	7	0	41	0	0	41	50
07:30 AM	0	0	0	0	0	3	0	1	0	4	0	9	2	0	11	0	39	0	0	39	54
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	9	1	0	10	1	30	0	0	31	41
Total	0	0	1	0	1	9	0	2	0	11	2	27	4	0	33	1	158	0	0	159	204
08:00 AM	0	0	0	0	0	3	0	2	0	5	0	3	1	0	4	0	20	0	0	20	29
08:15 AM	0	0	1	0	1	1	0	1	0	2	0	12	0	0	12	0	16	0	0	16	31
08:30 AM	0	0	0	0	0	0	0	0	0	0	1	11	2	0	14	0	15	0	0	15	29
08:45 AM	0	0	0	0	0	2	0	2	0	4	0	9	0	0	9	0	14	0	0	14	27
Total	0	0	1	0	1	6	0	5	0	11	1	35	3	0	39	0	65	0	0	65	116
Grand Total	0	0	2	0	2	15	0	7	0	22	3	62	7	0	72	1	223	0	0	224	320
Apprch %	0	0	100	0		68.2	0	31.8	0		4.2	86.1	9.7	0		0.4	99.6	0	0		
Total %	0	0	0.6	0	0.6	4.7	0	2.2	0	6.9	0.9	19.4	2.2	0	22.5	0.3	69.7	0	0	70	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



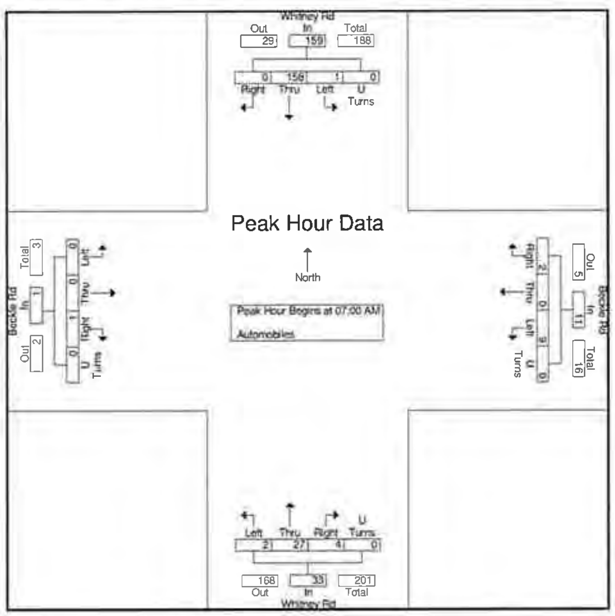
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Beckle Rd Eastbound					Beckle Rd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	1	0	1	4	0	1	0	5	2	3	0	0	5	0	48	0	0	48	59
07:15 AM	0	0	0	0	0	2	0	0	0	2	0	6	1	0	7	0	41	0	0	41	50
07:30 AM	0	0	0	0	0	3	0	1	0	4	0	9	2	0	11	0	39	0	0	39	54
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	9	1	0	10	1	30	0	0	31	41
Total Volume	0	0	1	0	1	9	0	2	0	11	2	27	4	0	33	1	158	0	0	159	204
% App. Total	0	0	100	0		81.8	0	18.2	0		6.1	81.8	12.1	0		0.6	99.4	0	0		
PHF	.000	.000	.250	.000	.250	.563	.000	.500	.000	.550	.250	.750	.500	.000	.750	.250	.823	.000	.000	.828	.864



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

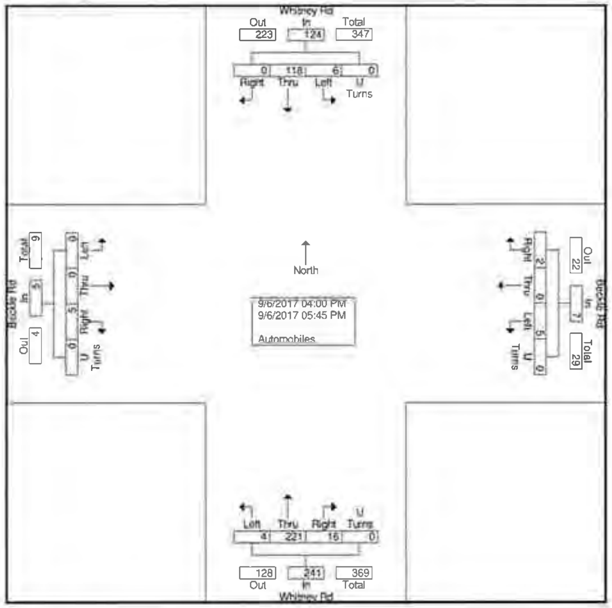
	Beckle Rd Eastbound					Beckle Rd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	0	1	0	1	0	0	0	0	0	2	26	1	0	29	2	13	0	0	15	45
04:15 PM	0	0	0	0	0	1	0	0	0	1	0	33	0	0	33	1	15	0	0	16	50
04:30 PM	0	0	3	0	3	0	0	1	0	1	0	27	2	0	29	0	14	0	0	14	47
04:45 PM	0	0	0	0	0	1	0	0	0	1	0	23	2	0	25	0	15	0	0	15	41
Total	0	0	4	0	4	2	0	1	0	3	2	109	5	0	116	3	57	0	0	60	183
05:00 PM	0	0	0	0	0	1	0	0	0	1	1	24	4	0	29	2	24	0	0	26	56
05:15 PM	0	0	1	0	1	1	0	1	0	2	0	36	1	0	37	1	16	0	0	17	57
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	27	3	0	31	0	10	0	0	10	41
05:45 PM	0	0	0	0	0	1	0	0	0	1	0	25	3	0	28	0	11	0	0	11	40
Total	0	0	1	0	1	3	0	1	0	4	2	112	11	0	125	3	61	0	0	64	194
Grand Total	0	0	5	0	5	5	0	2	0	7	4	221	16	0	241	6	118	0	0	124	377
Apprch %	0	0	100	0		71.4	0	28.6	0		1.7	91.7	6.6	0		4.8	95.2	0	0		
Total %	0	0	1.3	0	1.3	1.3	0	0.5	0	1.9	1.1	58.6	4.2	0	63.9	1.6	31.3	0	0	32.9	

RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



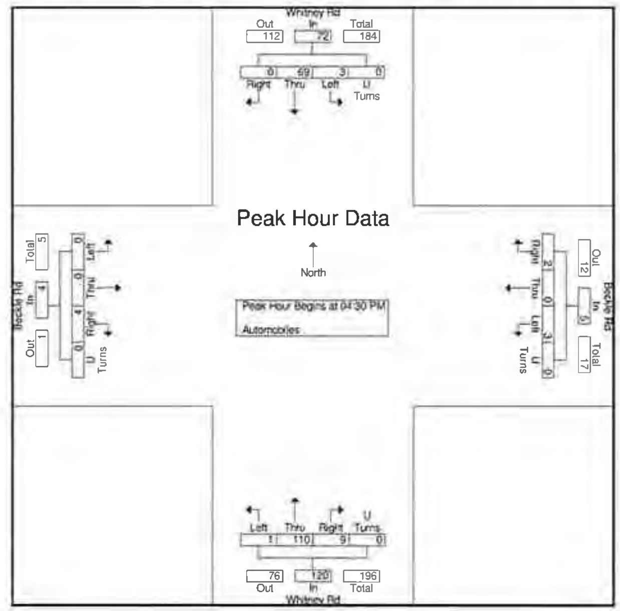
RDC Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Beckle Rd and Whitney Rd

File Name : Beckle and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Beckle Rd Eastbound					Beckle Rd Westbound					Whitney Rd Northbound					Whitney Rd Southbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	3	0	3	0	0	1	0	1	0	27	2	0	29	0	14	0	0	14	47
04:45 PM	0	0	0	0	0	1	0	0	0	1	0	23	2	0	25	0	15	0	0	15	41
05:00 PM	0	0	0	0	0	1	0	0	0	1	1	24	4	0	29	2	24	0	0	26	56
05:15 PM	0	0	1	0	1	1	0	1	0	2	0	36	1	0	37	1	16	0	0	17	57
Total Volume	0	0	4	0	4	3	0	2	0	5	1	110	9	0	120	3	69	0	0	72	201
% App. Total	0	0	100	0		60	0	40	0		0.8	91.7	7.5	0		4.2	95.8	0	0		
PHF	.000	.000	.333	.000	.333	.750	.000	.500	.000	.625	.250	.764	.563	.000	.811	.375	.719	.000	.000	.692	.882



Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Buttercup Dr and Whitney Rd

File Name : Buttercup and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

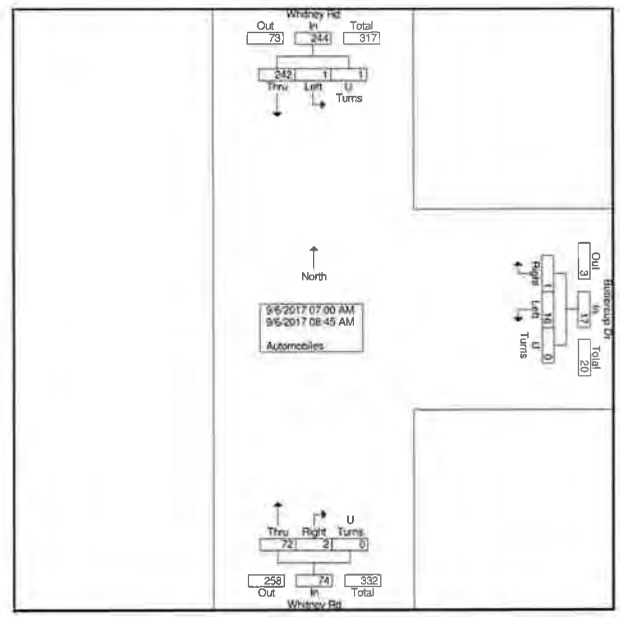
	Buttercup Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
07:00 AM	2	0	0	2	5	0	0	5	0	54	0	54	61
07:15 AM	5	0	0	5	7	0	0	7	0	43	0	43	55
07:30 AM	2	1	0	3	12	0	0	12	0	43	1	44	59
07:45 AM	3	0	0	3	9	1	0	10	1	29	0	30	43
Total	12	1	0	13	33	1	0	34	1	169	1	171	218
08:00 AM	2	0	0	2	4	1	0	5	0	24	0	24	31
08:15 AM	1	0	0	1	12	0	0	12	0	18	0	18	31
08:30 AM	0	0	0	0	15	0	0	15	0	15	0	15	30
08:45 AM	1	0	0	1	8	0	0	8	0	16	0	16	25
Total	4	0	0	4	39	1	0	40	0	73	0	73	117
Grand Total	16	1	0	17	72	2	0	74	1	242	1	244	335
Apprch %	94.1	5.9	0		97.3	2.7	0		0.4	99.2	0.4		
Total %	4.8	0.3	0	5.1	21.5	0.6	0	22.1	0.3	72.2	0.3	72.8	

Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Buttercup Dr and Whitney Rd

File Name : Buttercup and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

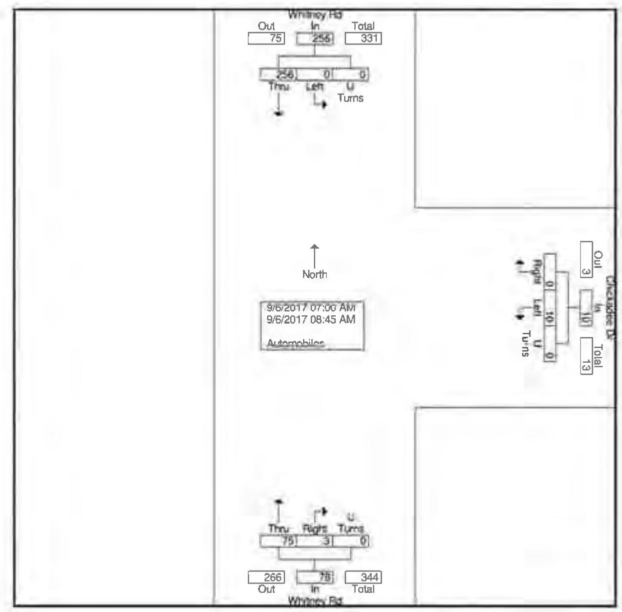
	Chickadee Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
07:00 AM	0	0	0	0	6	0	0	6	0	55	0	55	61
07:15 AM	2	0	0	2	7	0	0	7	0	49	0	49	58
07:30 AM	1	0	0	1	11	0	0	11	0	43	0	43	55
07:45 AM	2	0	0	2	12	0	0	12	0	34	0	34	48
Total	5	0	0	5	36	0	0	36	0	181	0	181	222
08:00 AM	3	0	0	3	3	0	0	3	0	26	0	26	32
08:15 AM	1	0	0	1	12	0	0	12	0	17	0	17	30
08:30 AM	1	0	0	1	17	2	0	19	0	16	0	16	36
08:45 AM	0	0	0	0	7	1	0	8	0	16	0	16	24
Total	5	0	0	5	39	3	0	42	0	75	0	75	122
Grand Total	10	0	0	10	75	3	0	78	0	256	0	256	344
Apprch %	100	0	0		96.2	3.8	0		0	100	0		
Total %	2.9	0	0	2.9	21.8	0.9	0	22.7	0	74.4	0	74.4	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



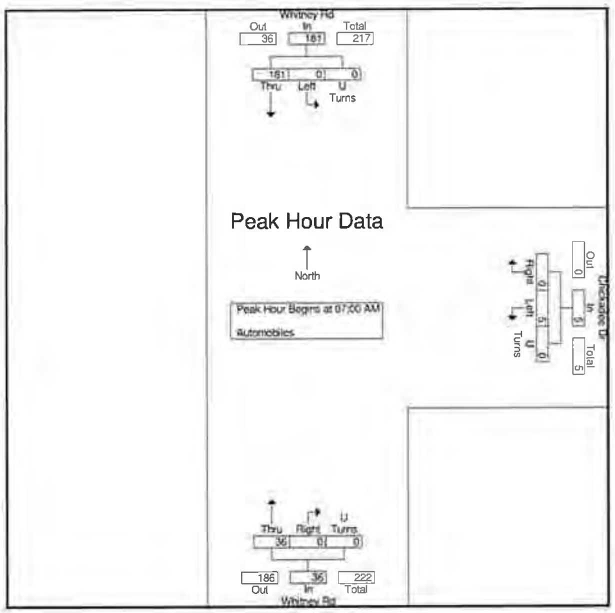
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Chickadee Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	6	0	0	6	0	55	0	55	61
07:15 AM	2	0	0	2	7	0	0	7	0	49	0	49	58
07:30 AM	1	0	0	1	11	0	0	11	0	43	0	43	55
07:45 AM	2	0	0	2	12	0	0	12	0	34	0	34	48
Total Volume	5	0	0	5	36	0	0	36	0	181	0	181	222
% App. Total	100	0	0		100	0	0		0	100	0		
PHF	.625	.000	.000	.625	.750	.000	.000	.750	.000	.823	.000	.823	.910



Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

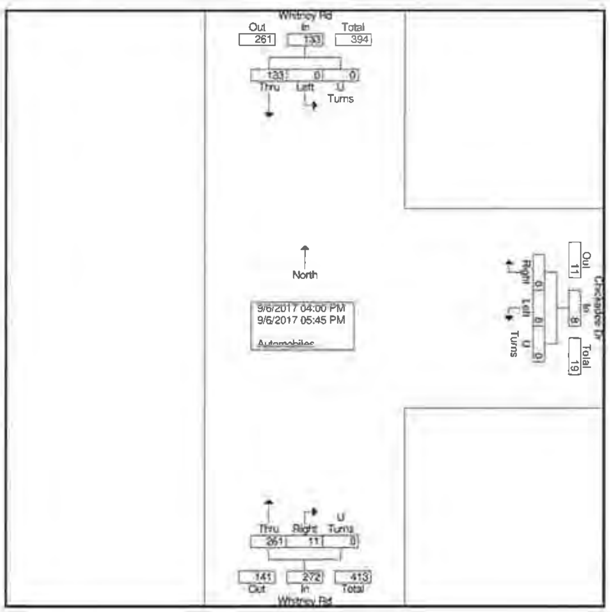
	Chickadee Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
04:00 PM	1	0	0	1	29	0	0	29	0	15	0	15	45
04:15 PM	0	0	0	0	31	2	0	33	0	14	0	14	47
04:30 PM	0	0	0	0	31	2	0	33	0	17	0	17	50
04:45 PM	2	0	0	2	30	3	0	33	0	16	0	16	51
Total	3	0	0	3	121	7	0	128	0	62	0	62	193
05:00 PM	3	0	0	3	32	2	0	34	0	27	0	27	64
05:15 PM	1	0	0	1	44	1	0	45	0	18	0	18	64
05:30 PM	1	0	0	1	34	0	0	34	0	14	0	14	49
05:45 PM	0	0	0	0	30	1	0	31	0	12	0	12	43
Total	5	0	0	5	140	4	0	144	0	71	0	71	220
Grand Total	8	0	0	8	261	11	0	272	0	133	0	133	413
Apprch %	100	0	0		96	4	0		0	100	0		
Total %	1.9	0	0	1.9	63.2	2.7	0	65.9	0	32.2	0	32.2	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



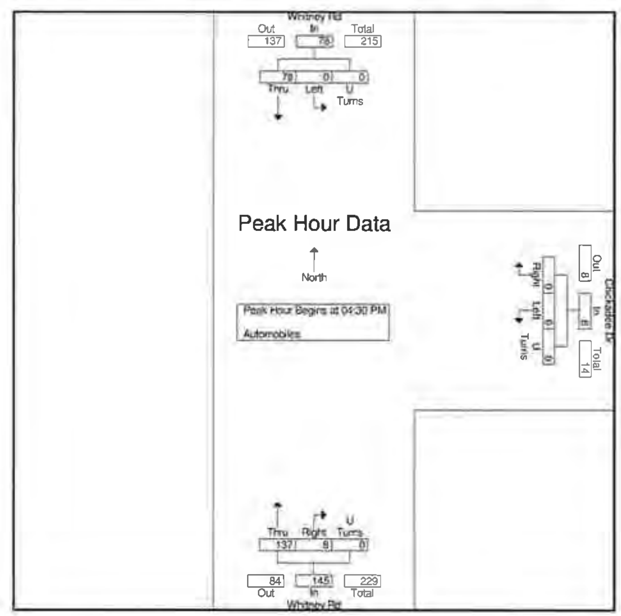
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Chickadee Dr and Whitney Rd

File Name : Chickadee and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Chickadee Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	0	0	0	31	2	0	33	0	17	0	17	50
04:45 PM	2	0	0	2	30	3	0	33	0	16	0	16	51
05:00 PM	3	0	0	3	32	2	0	34	0	27	0	27	64
05:15 PM	1	0	0	1	44	1	0	45	0	18	0	18	64
Total Volume	6	0	0	6	137	8	0	145	0	78	0	78	229
% App. Total	100	0	0		94.5	5.5	0		0	100	0		
PHF	.500	.000	.000	.500	.778	.667	.000	.806	.000	.722	.000	.722	.895



Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

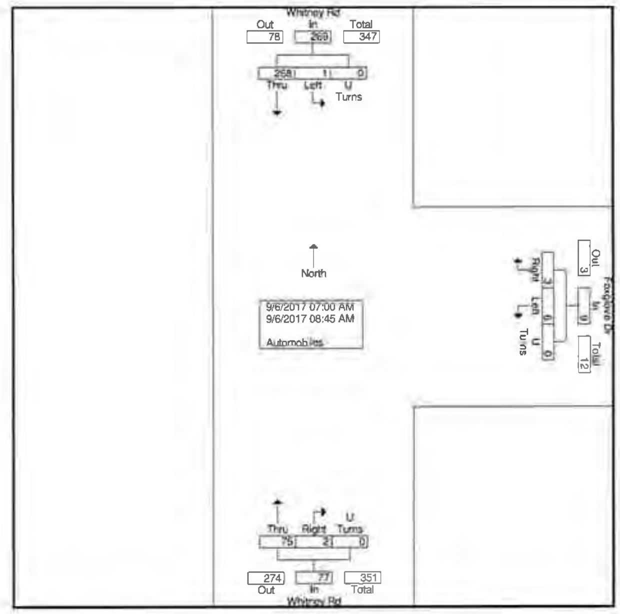
Groups Printed- Automobiles

	Foxglove Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
07:00 AM	0	0	0	0	5	1	0	6	0	57	0	57	63
07:15 AM	2	0	0	2	8	0	0	8	0	49	0	49	59
07:30 AM	0	0	0	0	11	0	0	11	0	48	0	48	59
07:45 AM	2	1	0	3	9	1	0	10	1	33	0	34	47
Total	4	1	0	5	33	2	0	35	1	187	0	188	228
08:00 AM	0	0	0	0	5	0	0	5	0	27	0	27	32
08:15 AM	0	0	0	0	12	0	0	12	0	20	0	20	32
08:30 AM	2	2	0	4	17	0	0	17	0	18	0	18	39
08:45 AM	0	0	0	0	8	0	0	8	0	16	0	16	24
Total	2	2	0	4	42	0	0	42	0	81	0	81	127
Grand Total	6	3	0	9	75	2	0	77	1	268	0	269	355
Apprch %	66.7	33.3	0		97.4	2.6	0		0.4	99.6	0		
Total %	1.7	0.8	0	2.5	21.1	0.6	0	21.7	0.3	75.5	0	75.8	

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



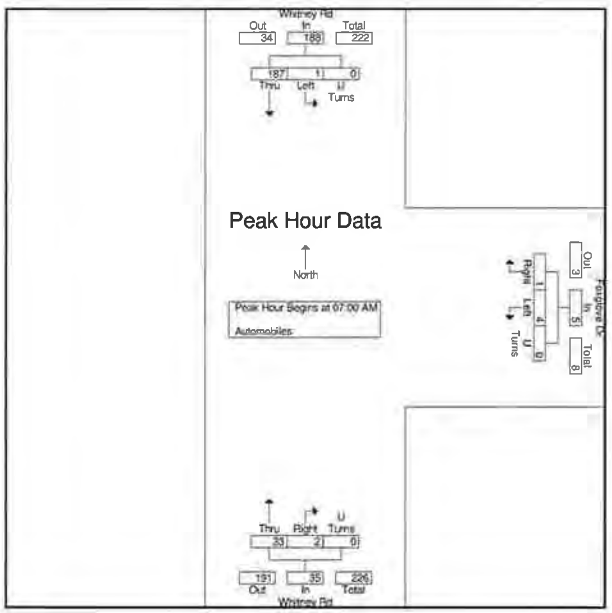
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
AM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney AM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Foxglove Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	5	1	0	6	0	57	0	57	63
07:15 AM	2	0	0	2	8	0	0	8	0	49	0	49	59
07:30 AM	0	0	0	0	11	0	0	11	0	48	0	48	59
07:45 AM	2	1	0	3	9	1	0	10	1	33	0	34	47
Total Volume	4	1	0	5	33	2	0	35	1	187	0	188	228
% App. Total	80	20	0		94.3	5.7	0		0.5	99.5	0		
PHF	.500	.250	.000	.417	.750	.500	.000	.795	.250	.820	.000	.825	.905



RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 1

Groups Printed- Automobiles

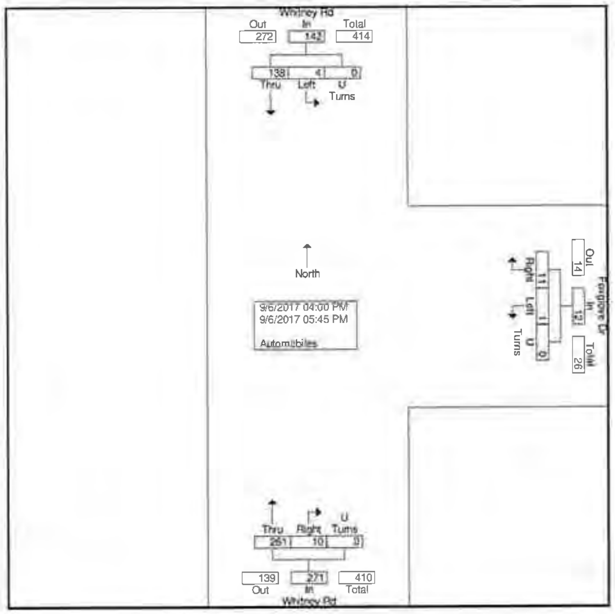
	Foxglove Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
04:00 PM	0	0	0	0	30	1	0	31	1	13	0	14	45
04:15 PM	0	2	0	2	31	1	0	32	0	12	0	12	46
04:30 PM	1	4	0	5	28	5	0	33	0	21	0	21	59
04:45 PM	0	1	0	1	30	1	0	31	1	18	0	19	51
Total	1	7	0	8	119	8	0	127	2	64	0	66	201
05:00 PM	0	1	0	1	35	0	0	35	0	29	0	29	65
05:15 PM	0	2	0	2	41	0	0	41	2	17	0	19	62
05:30 PM	0	0	0	0	36	0	0	36	0	15	0	15	51
05:45 PM	0	1	0	1	30	2	0	32	0	13	0	13	46
Total	0	4	0	4	142	2	0	144	2	74	0	76	224
Grand Total	1	11	0	12	261	10	0	271	4	138	0	142	425
Apprch %	8.3	91.7	0		96.3	3.7	0		2.8	97.2	0		
Total %	0.2	2.6	0	2.8	61.4	2.4	0	63.8	0.9	32.5	0	33.4	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 2



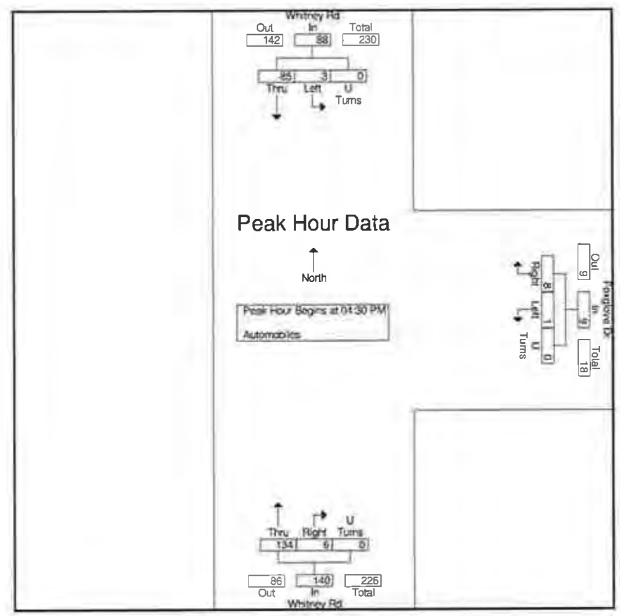
RDC
Ridgeview Data Collection

Morrison, CO 80465

Cheyenne, WY
Whitney Ranch
PM Peak
Foxglove Dr and Whitney Rd

File Name : Foxglove and Whitney PM
Site Code : IPO 262
Start Date : 9/6/2017
Page No : 3

	Foxglove Dr Westbound				Whitney Rd Northbound				Whitney Rd Southbound				
Start Time	Left	Right	U Turns	App. Total	Thru	Right	U Turns	App. Total	Left	Thru	U Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	1	4	0	5	28	5	0	33	0	21	0	21	59
04:45 PM	0	1	0	1	30	1	0	31	1	18	0	19	51
05:00 PM	0	1	0	1	35	0	0	35	0	29	0	29	65
05:15 PM	0	2	0	2	41	0	0	41	2	17	0	19	62
Total Volume	1	8	0	9	134	6	0	140	3	85	0	88	237
% App. Total	11.1	88.9	0		95.7	4.3	0		3.4	96.6	0		
PHF	.250	.500	.000	.450	.817	.300	.000	.854	.375	.733	.000	.759	.912



APPENDIX B

City of Cheyenne Transportation Plan Traffic Growth

Shape

Introduction

The shape section of the *Transportation Plan* outlines a transportation vision for the Cheyenne Area. The Transportation Vision defines the roadway, transit, bicycle, and pedestrian facilities that will be needed to provide Cheyenne Area residents with an adequate, connected, multimodal transportation system.

The *Transportation Plan* is based on information available at the time it was created, including other sections of *PlanCheyenne*. It includes enhancements to reflect the myriad of plans conducted since the Plan was first adopted in 2006. As future plans, documents, and studies are developed, these studies may amend the *Transportation Plan*. It is also anticipated that large tracts of property could develop their own master development plan. As part of the master development plan process, transportation elements of *PlanCheyenne* may be considered for amendment, provided that the transportation elements will continue to meet the principles, policies, and process described in *PlanCheyenne*. Furthermore, priorities presented in this plan may change in the future as development occurs.

PRINCIPLES AND POLICIES

Creation of a robust and effective transportation system in Cheyenne requires a vision of the type of transportation system the area desires. *PlanCheyenne* lays out seven Foundations, one of which speaks directly to transportation. The Cheyenne Area will continue to celebrate and enhance the character, quality, and authenticity of the community by developing a connected and diverse transportation system. To guide this vision, a set of principles and policies was developed. These principles reflect a vision of the character of Cheyenne's future transportation system. The associated policies present a way to implement this vision.

GROWTH IN THE REGION

The first step in the definition of a Transportation Vision is to identify the growth that is expected to take place in and around Cheyenne. Growth forecasts were generated for 2040 and beyond based on the Future Land Use Plan. Once growth has been quantified, future needs can be assessed.

NEEDS ASSESSMENT

After growth forecasts have been developed, the next step in developing a Transportation Vision is to identify needs that will arise as the region grows. These needs include roadway needs, transit needs, and needs for non-motorized transportation. Understanding the needs that the community will face allows planners to propose solutions that will fill these needs.

VISION PLANS – 2040 AND BEYOND

The 2040 Transportation Vision is a fiscally unconstrained plan for the transportation system in the Cheyenne area. This plan provides sufficient capacity to accommodate growth on most roadways and includes new roadways, sidewalks, and bike lanes in developing areas. Recommendations for retrofitting existing roads with sidewalks and bike lanes are also provided. The 2040 Vision Plan is based on a growth assumption of 1.25% per year.

The Buildout Transportation Vision Plan compliments the buildout of the Future Land Use Plan, but is not likely to occur until sometime after 2060. The buildout plan designates roadways and multimodal corridors that should be preserved for future use.

APPENDIX C

Trip Generation Calculations

Whitney Ranch Trip Generation Summary

Land Use	Quantity	Units	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Single-Family Detached Housing (210)	1,293	Units	11,066	229	686	915	663	389	1,052
Condominium/Townhouse (230)	913	Units	4,406	52	251	303	247	122	369
Shopping Center (820)	567,325	SF	10,493	278	171	449	920	997	1917
Elementary School (520)	700	Students	904	174	142	316	53	53	106
Total			26,869	733	1,250	1,983	1,883	1,561	3,444

Phase 1 Trip Generation

Land Use	Quantity	Units	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
Single-Family Detached Housing (210)	232	Units	2,278	43	129	172	141	83	224
Condominium/Townhouse (230)	24	Units	186	3	13	16	13	6	19
Total			2,464	46	142	188	154	89	243

Kimley»Horn

Project	Whitney Ranch				
Subject	Trip Generation for Single-Family Detached Housing				
Designed by	Jeff Planck	Date	September 21, 2017	Job No	096567001
Checked by		Date		Sheet No	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations

Land Use Code - Single-Family Detached Housing (210)

Independant Variable - Dwelling Units (X)

X = 1,293
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (page 297)

Average Weekday
(T) = 0.70 (X) + 9.74
(T) = 0.70 * (1293) + 9.94

Directional Distribution: 25% ent. 75% exit
T = 915 Average Vehicle Trip Ends
229 entering 686 exiting

229 + 686 = 915

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 298)

Average Weekday
Ln(T) = 0.90 Ln(X) + 0.51
Ln(T) = 0.90 * Ln(1293) + 0.51

Directional Distribution: 63% ent 37% exit
T = 1052 Average Vehicle Trip Ends
663 entering 389 exiting

663 + 389 = 1052

Peak Hour of Generator, Saturday (page 302)

Average Saturday
(T) = 0.89 (X) + 8.77
(T) = 0.89 * (1293) + 8.77

Directional Distribution: 53% ent. 47% exit.
T = 1160 Average Vehicle Trip Ends
615 entering 545 exiting

615 + 545 = 1160

Weekday (page 296)

Average Weekday
Ln(T) = 0.92 Ln(X) + 2.72
Ln(T) = 0.92 * Ln(1293) + 2.72

Directional Distribution: 50% entering, 50% exiting
T = 11066 Average Vehicle Trip Ends
5533 entering 5533 exiting

5533 + 5533 = 11066

Kimley»Horn

Project	Whitney Ranch				
Subject	Trip Generation for Residential Condominium/Townhouse				
Designed by	Jeff Planck	Date	September 21, 2017	Job No	096567001
Checked by		Date		Sheet No	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations

Land Use Code - Residential Condominium/Townhouse (230)

Independant Variable - Dwelling Units (X)

X = 913
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (page 395)

Ln(T) = 0.80 Ln(X) + 0.26
Ln(T) = 0.80 * Ln(913.0) + 0.26

Directional Distribution: 17% ent. 83% exit
T = 303 Average Vehicle Trip Ends
52 entering 251 exiting

52 + 251 = 303

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 396)

Ln(T) = 0.82 Ln(X) + 0.32
Ln(T) = 0.82 * Ln(913.0) + 0.32

Directional Distribution: 67% ent 33% exit
T = 369 Average Vehicle Trip Ends
247 entering 122 exiting

247 + 122 = 369

Weekday (page 394)

Average Weekday
Ln(T) = 0.87 Ln(X) + 2.46
Ln(T) = 0.87 * Ln(913.0) + 2.46

Directional Distribution: 50% entering, 50% exiting
T = 4406 Average Vehicle Trip Ends
2203 entering 2203 exiting

2203 + 2203 = 4406

Weekday Midday Peak Uses Saturday Peak Hour of Generator (page 400)

(T) = 0.29*(X) + 42.63
(T) = 0.29 * 913 + 42.63

Directional Distribution: 54% ent 46% exit
T = 307 Average Vehicle Trip Ends
166 entering 141 exiting

166 + 141 = 307

Kimley»Horn

Project: Whitney Ranch
Subject: Trip Generation for Shopping Center
Designed by: Jeff Planck Date: September 21, 2017 Job No. 096567001
Checked by: ______ Date: ______ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations
Land Use Code - Shopping Center (820)
Independant Variable - 1000 Square Feet Gross Leasable Area (X)
Gross Leasable Area = 567,325 Square Feet
X = 567 325
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 1562)

Ln(T) = 0.61 Ln(X) + 2.24
Ln(T) = 0.61 * Ln(567) + 2.24

Directional Distribution: 62% ent. 38% exit.
T = 449 Average Vehicle Trip Ends
278 entering 171 exiting

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 1563)

Ln(T) = 0.67 Ln(X) + 3.31
Ln(T) = 0.67 * Ln(567) + 3.31

Directional Distribution: 48% ent. 52% exit
T = 1917 Average Vehicle Trip Ends
920 entering 997 exiting

Weekday (page 1561)

Daily Weekday
Ln(T) = 0.65 Ln(X) + 5.83
Ln(T) = 0.65 * Ln(567) + 5.83

Directional Distribution: 50% entering, 50% exiting
T = 20986 Average Vehicle Trip Ends
10493 entering 10493 exiting

Saturday Peak Hour of Generator

Average Saturday
Ln(T) = 0.65 Ln(X) + 3.78
Ln(T) = 0.65 * Ln(567) + 3.78

Directional Distribution: 52% ent. 48% exit
T = 2702 Average Vehicle Trip Ends
1405 entering 1297 exiting

Non Pass-By Trip Volumes (Per ITE Trip Generation Handbook, June 2004)

PM Peak Hour = 34% Pass-by   Saturday Peak Hour = 26% Pass-by

	IN	Out	Total	
AM Peak	206	127	333	*uses lesser of PM and Saturday pass-by rates (26%)
PM Peak	607	658	1265	
Daily	6925	6925	13850	*uses PM peak hour pass-by rate
Saturday Peak	1040	960	2000	

Kimley-Horn and Associates, Inc.

Project: Whitney Ranch
Subject: Trip Generation for Elementary School
Designed by: Jeff Planck Date: September 21, 2017 Job No 096567001
Checked by: ______ Date: ______ Sheet No 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Average Rate Equations

Land Use Code - Elementary School (520)

Independant Variable - Students (X)
Students = 700
X = 700 0
T = Average Vehicle Trip Ends

Weekday (page 979)

Average Weekday
(T) = 1 29 (X)
(T) = 1.29 * (700 0)

Directional Distribution: 50% entering, 50% exiting
T = 904 Average Vehicle Trip Ends
452 entering 452 exiting
452 + 452 = 904

AM Peak Hour (page 980)

(T) = 0.45 (X)
(T) = 0.45 * (700 0)

Directional Distribution: 55% entering, 45% exiting
T = 316 Average Vehicle Trip Ends
173 8 entering 142 2 exiting
174 + 142 = 316

PM Peak Hour of Generator (page 982)

(T) = 0.28 (X)
(T) = 0.28 * (700.0)

Directional Distribution: 45% entering, 55% exiting
T = 196 Average Vehicle Trip Ends
88 2 entering 107 8 exiting
88 + 108 = 196

PM Peak Hour of Adjacent Street Traffic 4pm to 6pm (page 981)

(T) = 0.15 (X)
(T) = 0.15 * (700 0)

Directional Distribution: 49% entering, 51% exiting
T = 106 Average Vehicle Trip Ends
53 entering 53 exiting
53 + 53 = 106

###

Kimley»Horn

Project: Whitney Ranch - Phase 1
Subject: Trip Generation for Single-Family Detached Housing (Phase 1)
Designed by: Jeff Planck Date: September 21, 2017 Job No. 096567001
Checked by: ____ Date: ____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations

Land Use Code - Single-Family Detached Housing (210)

Independant Variable - Dwelling Units (X)

X = 232
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (page 297)

Average Weekday
(T) = 0.70 (X) + 9.74
(T) = 0.70 * (232) + 9.94

Directional Distribution: 25% ent 75% exit
T = 172 Average Vehicle Trip Ends
43 entering 129 exiting

43 + 129 = 172

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 298)

Average Weekday
Ln(T) = 0.90 Ln(X) + 0.51
Ln(T) = 0.90 * Ln(232) + 0.51

Directional Distribution: 63% ent 37% exit
T = 224 Average Vehicle Trip Ends
141 entering 83 exiting

141 + 83 = 224

Peak Hour of Generator, Saturday (page 302)

Average Saturday
(T) = 0.89 (X) + 8.77
(T) = 0.89 * (232) + 8.77

Directional Distribution: 53% ent 47% exit
T = 215 Average Vehicle Trip Ends
114 entering 101 exiting

114 + 101 = 215

Weekday (page 296)

Average Weekday
Ln(T) = 0.92 Ln(X) + 2.72
Ln(T) = 0.92 * Ln(232) + 2.72

Directional Distribution: 50% entering, 50% exiting
T = 2278 Average Vehicle Trip Ends
1139 entering 1139 exiting

1139 + 1139 = 2278

Kimley»Horn

Project: Whitney Ranch
Subject: Trip Generation for Residential Condominium/Townhouse
Designed by: Jeff Planck Date: September 21, 2017 Job No. 096567001
Checked by: ____ Date: ____ Sheet No. 1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 9th Edition, Fitted Curve Equations

Land Use Code - Residential Condominium/Townhouse (230)

Independant Variable - Dwelling Units (X)

X = 24
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (page 395)

Ln(T) = 0.80 Ln(X) + 0.26
Ln(T) = 0.80 * Ln(24.0) + 0.26

Directional Distribution: 17% ent 83% exit
T = 16 Average Vehicle Trip Ends
3 entering 13 exiting

3 + 13 = 16

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (page 396)

Ln(T) = 0.82 Ln(X) + 0.32
Ln(T) = 0.82 * Ln(24.0) + 0.32

Directional Distribution: 67% ent. 33% exit
T = 19 Average Vehicle Trip Ends
13 entering 6 exiting

13 + 6 = 19

Weekday (page 394)

Average Weekday
Ln(T) = 0.87 Ln(X) + 2.46
Ln(T) = 0.87 * Ln(24.0) + 2.46

Directional Distribution: 50% entering, 50% exiting
T = 186 Average Vehicle Trip Ends
93 entering 93 exiting

93 + 93 = 186

Weekday Midday Peak Uses Saturday Peak Hour of Generator (page 400)

(T) = 0.29*(X) + 42.63
(T) = 0.29 * 24 + 42.63

Directional Distribution: 54% ent 46% exit
T = 50 Average Vehicle Trip Ends
27 entering 23 exiting

27 + 23 = 50

APPENDIX D

Intersection Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	33	261	67	41	528	144	84	210	43	125	199	113
Future Volume (veh/h)	33	261	67	41	528	144	84	210	43	125	199	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	48	281	0	52	636	203	131	262	56	144	219	140
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.93	0.64	0.79	0.83	0.71	0.64	0.80	0.77	0.87	0.91	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	1156	517	516	867	277	342	387	329	319	399	340
Arrive On Green	0.04	0.39	0.00	0.01	0.13	0.13	0.07	0.25	0.25	0.08	0.25	0.25
Sat Flow, veh/h	1494	2980	1333	1494	2224	709	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	48	281	0	52	426	413	131	262	56	144	219	140
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1443	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	1.4	4.8	0.0	1.5	20.6	20.7	4.9	11.3	2.5	5.4	9.1	6.6
Cycle Q Clear(g_c), s	1.4	4.8	0.0	1.5	20.6	20.7	4.9	11.3	2.5	5.4	9.1	6.6
Prop In Lane	1.00		1.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	1156	517	516	581	563	342	387	329	319	399	340
V/C Ratio(X)	0.21	0.24	0.00	0.10	0.73	0.73	0.38	0.68	0.17	0.45	0.55	0.41
Avail Cap(c_a), veh/h	272	1156	517	552	581	563	342	387	329	319	399	340
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.6	15.5	0.0	13.1	28.9	28.9	19.6	25.5	22.2	19.7	24.2	23.3
Incr Delay (d2), s/veh	0.4	0.5	0.0	0.1	5.0	5.2	0.7	9.2	1.1	1.0	5.3	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.0	0.0	0.6	9.3	9.1	2.1	5.9	1.0	2.3	4.5	2.8
LnGrp Delay(d),s/veh	16.0	16.0	0.0	13.1	33.9	34.1	20.3	34.7	23.3	20.7	29.5	26.9
LnGrp LOS	B	B		B	C	C	C	C	C	C	C	C
Approach Vol, veh/h		329			891			449			503	
Approach Delay, s/veh		16.0			32.8			29.1			26.3	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	23.0	7.8	33.6	10.0	23.6	7.7	33.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	18.5	5.1	27.3	5.5	19.1	5.1	27.3
Max Q Clear Time (g_c+I1), s	7.4	13.3	3.5	6.8	6.9	11.1	3.4	22.7
Green Ext Time (p_c), s	0.0	1.7	0.0	7.6	0.0	2.3	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	84	711	169	75	582	137	137	292	100	84	212	86
Future Volume (veh/h)	84	711	169	75	582	137	137	292	100	84	212	86
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	95	726	0	100	626	171	165	395	123	100	252	108
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.88	0.98	0.88	0.75	0.93	0.80	0.83	0.74	0.81	0.84	0.84	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	990	443	272	775	211	366	475	404	251	462	393
Arrive On Green	0.06	0.33	0.00	0.02	0.11	0.11	0.07	0.30	0.30	0.06	0.29	0.29
Sat Flow, veh/h	1494	2980	1333	1494	2316	632	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	95	726	0	100	403	394	165	395	123	100	252	108
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1457	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	3.1	16.1	0.0	3.3	19.8	19.8	5.4	17.6	5.3	3.5	10.1	4.7
Cycle Q Clear(g_c), s	3.1	16.1	0.0	3.3	19.8	19.8	5.4	17.6	5.3	3.5	10.1	4.7
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	990	443	272	499	488	366	475	404	251	462	393
V/C Ratio(X)	0.41	0.73	0.00	0.37	0.81	0.81	0.45	0.83	0.30	0.40	0.55	0.27
Avail Cap(c_a), veh/h	245	990	443	280	499	488	366	475	404	256	462	393
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.58	0.58	0.58	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	22.1	0.0	17.6	31.0	31.0	18.4	24.3	20.1	18.7	22.2	20.3
Incr Delay (d2), s/veh	1.2	4.8	0.0	0.5	8.1	8.3	0.9	15.5	1.9	1.0	4.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.2	0.0	1.3	9.3	9.1	0.8	9.6	2.2	1.5	4.9	1.9
LnGrp Delay(d),s/veh	19.0	26.9	0.0	18.0	39.1	39.3	19.2	39.8	22.0	19.7	26.8	22.0
LnGrp LOS	B	C		B	D	D	B	D	C	B	C	C
Approach Vol, veh/h		821			897			683			460	
Approach Delay, s/veh		26.0			36.8			31.6			24.1	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	27.2	9.1	29.4	9.9	26.6	8.9	29.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	22.5	5.0	24.5	5.4	22.1	5.1	24.4				
Max Q Clear Time (g_c+I1), s	5.5	19.6	5.3	18.1	7.4	12.1	5.1	21.8				
Green Ext Time (p_c), s	0.0	1.4	0.0	4.5	0.0	3.5	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			30.4									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	35	278	71	44	562	153	89	223	46	133	212	120
Future Volume (veh/h)	35	278	71	44	562	153	89	223	46	133	212	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	51	299	0	56	677	215	139	279	60	153	233	148
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.93	0.64	0.79	0.83	0.71	0.64	0.80	0.77	0.87	0.91	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	1048	469	431	786	250	426	541	460	408	550	468
Arrive On Green	0.04	0.35	0.00	0.01	0.12	0.12	0.08	0.34	0.34	0.08	0.35	0.35
Sat Flow, veh/h	1494	2980	1333	1494	2227	707	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	51	299	0	56	453	439	139	279	60	153	233	148
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1444	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	2.2	7.2	0.0	2.4	29.8	29.9	5.9	14.2	3.1	6.5	11.3	8.1
Cycle Q Clear(g_c), s	2.2	7.2	0.0	2.4	29.8	29.9	5.9	14.2	3.1	6.5	11.3	8.1
Prop In Lane	1.00		1.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	162	1048	469	431	526	510	426	541	460	408	550	468
V/C Ratio(X)	0.31	0.29	0.00	0.13	0.86	0.86	0.33	0.52	0.13	0.37	0.42	0.32
Avail Cap(c_a), veh/h	188	1124	503	452	559	541	463	541	460	424	550	468
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.42	0.42	0.42	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	23.4	0.0	20.1	41.8	41.8	19.0	26.1	22.5	19.3	24.8	23.7
Incr Delay (d2), s/veh	1.1	0.1	0.0	0.1	5.7	5.9	0.4	3.5	0.6	0.6	2.4	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.0	0.0	1.0	13.2	12.8	2.5	6.6	1.2	2.7	5.3	3.2
LnGrp Delay(d),s/veh	25.2	23.5	0.0	20.1	47.5	47.7	19.5	29.6	23.1	19.9	27.1	25.5
LnGrp LOS	C	C		C	D	D	B	C	C	B	C	C
Approach Vol, veh/h		350			948			478			534	
Approach Delay, s/veh		23.8			46.0			25.8			24.6	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	39.0	8.4	39.7	12.3	39.6	8.3	39.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	29.5	5.3	37.7	10.3	28.7	5.5	37.5				
Max Q Clear Time (g_c+I1), s	8.5	16.2	4.4	9.2	7.9	13.3	4.2	31.9				
Green Ext Time (p_c), s	0.0	3.2	0.0	9.3	0.1	3.4	0.0	3.4				
Intersection Summary												
HCM 2010 Ctrl Delay			33.5									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
1: Ridge Road & Dell Range Boulevard

2022 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	89	757	180	80	619	146	146	311	106	89	226	92
Future Volume (veh/h)	89	757	180	80	619	146	146	311	106	89	226	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	101	772	0	107	666	182	176	420	131	106	269	115
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.88	0.98	0.88	0.75	0.93	0.80	0.83	0.74	0.81	0.84	0.84	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	976	436	224	754	206	414	594	505	283	534	453
Arrive On Green	0.06	0.33	0.00	0.06	0.33	0.33	0.09	0.38	0.38	0.05	0.34	0.34
Sat Flow, veh/h	1494	2980	1333	1494	2315	632	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	101	772	0	107	429	419	176	420	131	106	269	115
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1457	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	4.4	23.5	0.0	4.7	27.2	27.3	7.4	22.7	6.8	4.6	13.7	6.2
Cycle Q Clear(g_c), s	4.4	23.5	0.0	4.7	27.2	27.3	7.4	22.7	6.8	4.6	13.7	6.2
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	197	976	436	224	485	474	414	594	505	283	534	453
V/C Ratio(X)	0.51	0.79	0.00	0.48	0.88	0.88	0.42	0.71	0.26	0.37	0.50	0.25
Avail Cap(c_a), veh/h	212	1034	463	224	499	488	428	594	505	283	534	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.52	0.52	0.52	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	30.5	0.0	23.6	31.9	31.9	18.7	26.4	21.4	21.7	26.3	23.8
Incr Delay (d2), s/veh	2.1	4.0	0.0	0.8	9.6	9.9	0.7	6.9	1.2	0.8	3.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	10.2	0.0	2.0	12.5	12.3	3.1	10.9	2.7	1.9	6.4	2.5
LnGrp Delay(d),s/veh	26.7	34.6	0.0	24.4	41.5	41.8	19.4	33.3	22.7	22.5	29.7	25.2
LnGrp LOS	C	C		C	D	D	B	C	C	C	C	C
Approach Vol, veh/h		873			955			727			490	
Approach Delay, s/veh		33.7			39.7			28.0			27.1	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	42.4	10.4	37.2	13.9	38.5	10.6	37.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	35.9	5.9	34.7	10.3	31.1	7.1	33.5				
Max Q Clear Time (g_c+I1), s	6.6	24.7	6.7	25.5	9.4	15.7	6.4	29.3				
Green Ext Time (p_c), s	0.0	4.0	0.0	6.4	0.0	4.7	0.0	3.3				
Intersection Summary												
HCM 2010 Ctrl Delay			33.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
1: Ridge Road & Dell Range Boulevard

2022 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	35	290	71	65	598	160	89	223	53	135	212	120
Future Volume (veh/h)	35	290	71	65	598	160	89	223	53	135	212	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	51	312	0	82	720	225	139	279	69	155	233	148
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.93	0.64	0.79	0.83	0.71	0.64	0.80	0.77	0.87	0.91	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	1268	567	521	969	303	335	400	340	309	413	351
Arrive On Green	0.04	0.43	0.00	0.03	0.29	0.29	0.09	0.26	0.26	0.09	0.26	0.26
Sat Flow, veh/h	1494	2980	1333	1494	2237	699	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	51	312	0	82	480	465	139	279	69	155	233	148
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1445	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	1.9	6.7	0.0	3.1	29.1	29.1	6.8	16.1	4.1	7.5	12.9	9.2
Cycle Q Clear(g_c), s	1.9	6.7	0.0	3.1	29.1	29.1	6.8	16.1	4.1	7.5	12.9	9.2
Prop In Lane	1.00		1.00	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	1268	567	521	645	626	335	400	340	309	413	351
V/C Ratio(X)	0.24	0.25	0.00	0.16	0.74	0.74	0.42	0.70	0.20	0.50	0.56	0.42
Avail Cap(c_a), veh/h	238	1268	567	548	645	626	345	400	340	310	413	351
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.52	0.52	0.52	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	18.4	0.0	15.3	30.5	30.5	24.8	33.8	29.3	25.2	31.9	30.5
Incr Delay (d2), s/veh	0.6	0.5	0.0	0.1	4.1	4.2	0.8	9.7	1.3	1.3	5.5	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.9	0.0	1.3	12.7	12.4	2.9	8.1	1.6	3.2	6.2	3.8
LnGrp Delay(d),s/veh	19.9	18.9	0.0	15.4	34.5	34.7	25.6	43.4	30.6	26.4	37.4	34.2
LnGrp LOS	B	B		B	C	C	C	D	C	C	D	C
Approach Vol, veh/h		363			1027			487			536	
Approach Delay, s/veh		19.0			33.1			36.5			33.3	
Approach LOS		B			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	30.0	9.1	47.0	13.1	30.8	8.3	47.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	25.5	6.4	40.6	9.3	25.7	5.5	41.5				
Max Q Clear Time (g_c+I1), s	9.5	18.1	5.1	8.7	8.8	14.9	3.9	31.1				
Green Ext Time (p_c), s	0.0	2.3	0.0	10.4	0.0	2.9	0.0	5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			31.7									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	89	796	180	93	641	150	146	311	129	97	226	92
Future Volume (veh/h)	89	796	180	93	641	150	146	311	129	97	226	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	101	812	0	124	689	188	176	420	159	115	269	115
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.88	0.98	0.88	0.75	0.93	0.80	0.83	0.74	0.81	0.84	0.84	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	1076	481	256	860	235	362	525	447	231	463	393
Arrive On Green	0.06	0.36	0.00	0.02	0.12	0.12	0.09	0.34	0.34	0.05	0.29	0.29
Sat Flow, veh/h	1494	2980	1333	1494	2316	632	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	101	812	0	124	443	434	176	420	159	115	269	115
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1457	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	4.2	23.9	0.0	5.1	28.9	29.0	7.9	24.3	9.0	5.4	14.6	6.7
Cycle Q Clear(g_c), s	4.2	23.9	0.0	5.1	28.9	29.0	7.9	24.3	9.0	5.4	14.6	6.7
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	211	1076	481	256	554	541	362	525	447	231	463	393
V/C Ratio(X)	0.48	0.75	0.00	0.48	0.80	0.80	0.49	0.80	0.36	0.50	0.58	0.29
Avail Cap(c_a), veh/h	227	1076	481	266	554	541	362	525	447	231	463	393
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	28.1	0.0	22.3	40.3	40.3	21.6	30.2	25.1	25.3	30.0	27.2
Incr Delay (d2), s/veh	1.7	4.9	0.0	0.8	6.5	6.6	1.0	12.0	2.2	1.7	5.3	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	10.5	0.0	2.1	13.0	12.7	3.3	12.3	3.6	2.3	7.0	2.6
LnGrp Delay(d),s/veh	24.4	33.0	0.0	23.1	46.7	46.9	22.6	42.2	27.3	26.9	35.2	29.1
LnGrp LOS	C	C		C	D	D	C	D	C	C	D	C
Approach Vol, veh/h		913			1001			755			499	
Approach Delay, s/veh		32.0			43.9			34.5			31.9	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	38.0	11.4	40.6	14.0	34.0	10.3	41.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	33.5	7.5	35.5	9.5	29.5	6.9	36.1
Max Q Clear Time (g_c+I1), s	7.4	26.3	7.1	25.9	9.9	16.6	6.2	31.0
Green Ext Time (p_c), s	0.0	3.1	0.0	6.8	0.0	4.4	0.0	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	44	347	89	55	703	192	112	279	57	166	265	150
Future Volume (veh/h)	44	347	89	55	703	192	112	279	57	166	265	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	48	377	0	60	764	209	122	303	62	180	288	163
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	1250	559	469	979	268	293	401	341	306	478	407
Arrive On Green	0.04	0.42	0.00	0.03	0.28	0.28	0.05	0.26	0.26	0.10	0.31	0.31
Sat Flow, veh/h	1494	2980	1333	1494	2314	633	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	48	377	0	60	492	481	122	303	62	180	288	163
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1457	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	1.8	8.4	0.0	2.3	30.4	30.4	5.5	17.8	3.6	8.5	15.6	9.7
Cycle Q Clear(g_c), s	1.8	8.4	0.0	2.3	30.4	30.4	5.5	17.8	3.6	8.5	15.6	9.7
Prop In Lane	1.00		1.00	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	1250	559	469	631	617	293	401	341	306	478	407
V/C Ratio(X)	0.25	0.30	0.00	0.13	0.78	0.78	0.42	0.76	0.18	0.59	0.60	0.40
Avail Cap(c_a), veh/h	217	1250	559	487	631	617	293	401	341	307	478	407
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.41	0.41	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	19.3	0.0	15.8	31.5	31.5	27.4	34.3	29.0	24.2	29.6	27.5
Incr Delay (d2), s/veh	0.6	0.6	0.0	0.0	4.0	4.1	0.9	12.4	1.2	2.9	5.5	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.6	0.0	0.9	13.2	12.9	0.8	9.1	1.4	3.7	7.5	3.9
LnGrp Delay(d),s/veh	20.8	19.9	0.0	15.8	35.5	35.6	28.4	46.8	30.2	27.1	35.1	30.4
LnGrp LOS	C	B		B	D	D	C	D	C	C	D	C
Approach Vol, veh/h		425			1033			487			631	
Approach Delay, s/veh		20.0			34.4			40.0			31.6	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	30.1	8.6	46.4	10.0	35.0	8.2	46.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	25.5	5.3	40.7	5.5	30.5	5.1	40.9
Max Q Clear Time (g_c+I1), s	10.5	19.8	4.3	10.4	7.5	17.6	3.8	32.4
Green Ext Time (p_c), s	0.0	2.2	0.0	11.1	0.0	3.7	0.0	5.3

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	112	946	225	100	774	182	182	389	133	112	282	114
Future Volume (veh/h)	112	946	225	100	774	182	182	389	133	112	282	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	122	1028	0	109	841	198	198	423	145	122	307	124
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	1261	564	213	981	231	276	463	393	177	409	348
Arrive On Green	0.06	0.42	0.00	0.03	0.27	0.27	0.09	0.29	0.29	0.05	0.26	0.26
Sat Flow, veh/h	1494	2980	1333	1494	2395	564	1494	1569	1333	1494	1569	1333
Grp Volume(v), veh/h	122	1028	0	109	523	516	198	423	145	122	307	124
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1469	1494	1569	1333	1494	1569	1333
Q Serve(g_s), s	4.7	30.4	0.0	4.2	33.3	33.3	8.5	26.0	8.6	5.1	18.0	7.6
Cycle Q Clear(g_c), s	4.7	30.4	0.0	4.2	33.3	33.3	8.5	26.0	8.6	5.1	18.0	7.6
Prop In Lane	1.00		1.00	1.00		0.38	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	210	1261	564	213	610	602	276	463	393	177	409	348
V/C Ratio(X)	0.58	0.82	0.00	0.51	0.86	0.86	0.72	0.91	0.37	0.69	0.75	0.36
Avail Cap(c_a), veh/h	210	1261	564	213	610	602	276	463	393	177	409	348
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.12	0.12	0.12	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	25.4	0.0	21.3	33.5	33.5	28.4	34.0	27.9	31.7	34.0	30.1
Incr Delay (d2), s/veh	4.0	5.9	0.0	0.2	2.0	2.1	8.6	25.1	2.6	10.6	11.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	13.5	0.0	1.7	14.1	13.9	2.5	14.5	3.5	1.8	9.1	3.1
LnGrp Delay(d),s/veh	26.2	31.3	0.0	21.6	35.5	35.6	37.0	59.1	30.5	42.3	45.9	32.9
LnGrp LOS	C	C		C	D	D	D	E	C	D	D	C
Approach Vol, veh/h		1150			1148			766			553	
Approach Delay, s/veh		30.8			34.2			48.0			42.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	34.0	9.6	46.8	13.0	30.6	11.0	45.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	29.5	5.1	42.3	8.5	26.1	6.5	40.9
Max Q Clear Time (g_c+I1), s	7.1	28.0	6.2	32.4	10.5	20.0	6.7	35.3
Green Ext Time (p_c), s	0.0	0.8	0.0	8.0	0.0	2.8	0.0	4.8

Intersection Summary			
HCM 2010 Ctrl Delay			37.3
HCM 2010 LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑	↱
Traffic Volume (veh/h)	44	494	89	180	953	192	112	279	130	166	265	150
Future Volume (veh/h)	44	494	89	180	953	192	112	279	130	166	265	150
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	48	537	0	196	1036	209	122	303	141	180	288	163
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	1215	544	450	1380	618	251	625	280	350	400	340
Arrive On Green	0.04	0.41	0.00	0.03	0.15	0.15	0.06	0.21	0.21	0.11	0.25	0.25
Sat Flow, veh/h	1494	2980	1333	1494	2980	1333	1494	2980	1333	1494	1569	1333
Grp Volume(v), veh/h	48	537	0	196	1036	209	122	303	141	180	288	163
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1333	1494	1490	1333	1494	1569	1333
Q Serve(g_s), s	1.8	13.0	0.0	7.0	33.3	14.0	6.5	8.9	9.3	9.0	16.8	10.4
Cycle Q Clear(g_c), s	1.8	13.0	0.0	7.0	33.3	14.0	6.5	8.9	9.3	9.0	16.8	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	1215	544	450	1380	618	251	625	280	350	400	340
V/C Ratio(X)	0.26	0.44	0.00	0.44	0.75	0.34	0.49	0.48	0.50	0.51	0.72	0.48
Avail Cap(c_a), veh/h	212	1215	544	525	1380	618	251	625	280	372	400	340
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.62	0.62	0.62	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	21.4	0.0	15.7	36.8	28.7	29.5	34.8	34.9	25.5	34.0	31.6
Incr Delay (d2), s/veh	0.7	1.2	0.0	0.4	2.4	0.9	1.5	2.7	6.4	1.2	10.7	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.6	0.0	2.9	14.2	5.3	2.7	3.9	3.9	3.8	8.5	4.3
LnGrp Delay(d),s/veh	21.0	22.6	0.0	16.1	39.2	29.6	31.0	37.5	41.3	26.7	44.7	36.4
LnGrp LOS	C	C		B	D	C	C	D	D	C	D	D
Approach Vol, veh/h		585			1441			566			631	
Approach Delay, s/veh		22.4			34.7			37.0			37.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	25.5	13.7	45.3	11.0	30.0	8.2	50.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	19.5	14.3	35.7	6.5	25.5	5.5	44.5
Max Q Clear Time (g_c+I1), s	11.0	11.3	9.0	15.0	8.5	18.8	3.8	35.3
Green Ext Time (p_c), s	0.1	3.1	0.2	12.3	0.0	2.7	0.0	6.8

Intersection Summary			
HCM 2010 Ctrl Delay			33.4
HCM 2010 LOS			C

HCM 2010 Signalized Intersection Summary
1: Ridge Road & Dell Range Boulevard

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑	↱
Traffic Volume (veh/h)	112	1323	225	256	1086	182	182	389	321	112	282	114
Future Volume (veh/h)	112	1323	225	256	1086	182	182	389	321	112	282	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	122	1438	0	278	1180	81	198	423	153	122	307	46
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	1371	613	229	1503	673	184	608	272	209	282	240
Arrive On Green	0.06	0.46	0.00	0.21	1.00	1.00	0.08	0.20	0.20	0.05	0.18	0.18
Sat Flow, veh/h	1494	2980	1333	1494	2980	1333	1494	2980	1333	1494	1569	1333
Grp Volume(v), veh/h	122	1438	0	278	1180	81	198	423	153	122	307	46
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1333	1494	1490	1333	1494	1569	1333
Q Serve(g_s), s	4.3	46.0	0.0	10.5	0.0	0.0	7.5	13.2	10.3	5.1	18.0	2.9
Cycle Q Clear(g_c), s	4.3	46.0	0.0	10.5	0.0	0.0	7.5	13.2	10.3	5.1	18.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	364	1371	613	229	1503	673	184	608	272	209	282	240
V/C Ratio(X)	0.34	1.05	0.00	1.21	0.78	0.12	1.08	0.70	0.56	0.59	1.09	0.19
Avail Cap(c_a), veh/h	369	1371	613	229	1503	673	184	608	272	209	282	240
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.39	0.39	0.39	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.5	27.0	0.0	24.8	0.0	0.0	36.8	36.9	35.8	35.5	41.0	34.8
Incr Delay (d2), s/veh	0.5	38.2	0.0	111.8	1.7	0.1	88.0	6.5	8.2	4.2	78.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	26.1	0.0	13.3	0.4	0.0	4.5	6.0	4.4	1.4	13.9	1.2
LnGrp Delay(d),s/veh	13.1	65.2	0.0	136.6	1.7	0.1	124.7	43.4	44.0	39.7	119.8	36.6
LnGrp LOS	B	F		F	A	A	F	D	D	D	F	D
Approach Vol, veh/h		1560			1539			774			475	
Approach Delay, s/veh		61.1			26.0			64.3			91.2	
Approach LOS		E			C			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	24.9	15.0	50.5	12.0	22.5	10.6	54.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	20.4	10.5	46.0	7.5	18.0	6.4	50.1
Max Q Clear Time (g_c+I1), s	7.1	15.2	12.5	48.0	9.5	20.0	6.3	2.0
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.0	0.0	0.0	35.4

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
2: College Drive & Dell Range Boulevard

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	23	113	264	115	443	166	265	214	77	101	322	76
Future Volume (veh/h)	23	113	264	115	443	166	265	214	77	101	322	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	28	120	0	151	487	193	358	306	143	125	362	104
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.82	0.94	0.92	0.76	0.91	0.86	0.74	0.70	0.54	0.81	0.89	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	427	363	452	649	256	453	672	307	420	550	156
Arrive On Green	0.01	0.09	0.00	0.07	0.31	0.31	0.18	0.34	0.34	0.08	0.24	0.24
Sat Flow, veh/h	1494	1569	1333	1494	2090	823	1494	1989	909	1494	2294	650
Grp Volume(v), veh/h	28	120	0	151	346	334	358	227	222	125	234	232
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1423	1494	1490	1408	1494	1490	1454
Q Serve(g_s), s	1.0	5.4	0.0	5.1	15.7	15.8	13.1	8.9	9.3	4.6	10.6	10.8
Cycle Q Clear(g_c), s	1.0	5.4	0.0	5.1	15.7	15.8	13.1	8.9	9.3	4.6	10.6	10.8
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.65	1.00		0.45
Lane Grp Cap(c), veh/h	215	427	363	452	463	442	453	503	475	420	358	349
V/C Ratio(X)	0.13	0.28	0.00	0.33	0.75	0.75	0.79	0.45	0.47	0.30	0.65	0.67
Avail Cap(c_a), veh/h	271	427	363	452	463	442	453	503	475	450	358	349
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	27.3	0.0	18.5	23.2	23.3	16.9	19.4	19.5	18.8	25.7	25.8
Incr Delay (d2), s/veh	0.3	1.6	0.0	0.4	10.6	11.4	9.2	2.9	3.3	0.4	9.0	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.5	0.0	0.5	7.8	7.6	6.4	4.1	4.0	1.9	5.2	5.3
LnGrp Delay(d),s/veh	20.5	28.9	0.0	18.9	33.8	34.7	26.1	22.3	22.8	19.2	34.6	35.5
LnGrp LOS	C	C		B	C	C	C	C	C	B	C	D
Approach Vol, veh/h		148			831			807			591	
Approach Delay, s/veh		27.3			31.4			24.1			31.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	29.8	9.6	24.9	18.0	22.5	6.7	27.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.7	23.8	5.1	20.4	13.5	18.0	5.0	20.5
Max Q Clear Time (g_c+I1), s	6.6	11.3	7.1	7.4	15.1	12.8	3.0	17.8
Green Ext Time (p_c), s	0.0	4.6	0.0	4.2	0.0	2.5	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
2: College Drive & Dell Range Boulevard

2017 Existing PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	93	438	353	57	339	120	401	401	144	196	240	64
Future Volume (veh/h)	93	438	353	57	339	120	401	401	144	196	240	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	127	456	0	72	365	132	427	501	197	215	261	76
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.73	0.96	0.88	0.79	0.93	0.91	0.94	0.80	0.73	0.91	0.92	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	486	413	193	626	223	478	626	245	302	550	157
Arrive On Green	0.02	0.10	0.00	0.05	0.29	0.29	0.16	0.30	0.30	0.10	0.24	0.24
Sat Flow, veh/h	1494	1569	1333	1494	2155	768	1494	2095	819	1494	2290	653
Grp Volume(v), veh/h	127	456	0	72	251	246	427	356	342	215	168	169
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1433	1494	1490	1424	1494	1490	1453
Q Serve(g_s), s	4.4	21.7	0.0	2.5	10.8	11.0	11.9	16.5	16.6	7.5	7.2	7.5
Cycle Q Clear(g_c), s	4.4	21.7	0.0	2.5	10.8	11.0	11.9	16.5	16.6	7.5	7.2	7.5
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.58	1.00		0.45
Lane Grp Cap(c), veh/h	330	486	413	193	433	417	478	445	425	302	358	349
V/C Ratio(X)	0.38	0.94	0.00	0.37	0.58	0.59	0.89	0.80	0.80	0.71	0.47	0.48
Avail Cap(c_a), veh/h	330	486	413	215	433	417	478	445	425	302	358	349
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	33.0	0.0	20.0	22.7	22.8	21.4	24.2	24.3	21.6	24.4	24.5
Incr Delay (d2), s/veh	0.6	23.6	0.0	1.2	5.6	6.0	18.7	13.9	14.9	7.6	4.4	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	12.6	0.0	1.1	5.1	5.1	6.3	8.4	8.2	2.0	3.4	3.5
LnGrp Delay(d),s/veh	19.1	56.6	0.0	21.2	28.2	28.8	40.1	38.2	39.2	29.2	28.8	29.3
LnGrp LOS	B	E		C	C	C	D	D	D	C	C	C
Approach Vol, veh/h		583			569			1125			552	
Approach Delay, s/veh		48.4			27.6			39.2			29.1	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	26.9	8.4	27.7	16.4	22.5	9.8	26.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	22.4	5.0	22.1	11.9	18.0	5.3	21.8
Max Q Clear Time (g_c+I1), s	9.5	18.6	4.5	23.7	13.9	9.5	6.4	13.0
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	4.1	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
2: College Drive & Dell Range Boulevard

2022 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	24	120	281	122	471	177	282	228	82	107	343	81
Future Volume (veh/h)	24	120	281	122	471	177	282	228	82	107	343	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	29	128	0	161	518	206	381	326	152	132	385	111
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.82	0.94	0.92	0.76	0.91	0.86	0.74	0.70	0.54	0.81	0.89	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	314	267	376	571	226	526	880	402	488	763	217
Arrive On Green	0.01	0.07	0.00	0.10	0.27	0.27	0.19	0.44	0.44	0.08	0.33	0.33
Sat Flow, veh/h	1494	1569	1333	1494	2087	826	1494	1989	909	1494	2291	653
Grp Volume(v), veh/h	29	128	0	161	369	355	381	243	235	132	249	247
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1423	1494	1490	1408	1494	1490	1453
Q Serve(g_s), s	1.5	7.8	0.0	8.2	23.9	24.1	15.8	10.8	11.2	5.7	13.4	13.7
Cycle Q Clear(g_c), s	1.5	7.8	0.0	8.2	23.9	24.1	15.8	10.8	11.2	5.7	13.4	13.7
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.65	1.00		0.45
Lane Grp Cap(c), veh/h	137	314	267	376	408	389	526	660	623	488	496	484
V/C Ratio(X)	0.21	0.41	0.00	0.43	0.91	0.91	0.72	0.37	0.38	0.27	0.50	0.51
Avail Cap(c_a), veh/h	172	347	295	397	425	406	629	660	623	537	496	484
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	41.0	0.0	26.4	35.1	35.1	16.4	18.6	18.7	19.1	26.7	26.8
Incr Delay (d2), s/veh	0.7	0.8	0.0	0.8	22.2	23.9	3.3	1.6	1.7	0.3	3.6	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	0.0	3.4	12.4	12.0	6.8	4.7	4.6	2.4	6.0	6.0
LnGrp Delay(d),s/veh	33.2	41.8	0.0	27.1	57.2	59.0	19.8	20.1	20.4	19.4	30.3	30.6
LnGrp LOS	C	D		C	E	E	B	C	C	B	C	C
Approach Vol, veh/h		157			885			859			628	
Approach Delay, s/veh		40.3			52.5			20.0			28.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	48.8	14.6	24.5	23.1	37.8	7.3	31.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.9	37.5	11.5	22.1	25.5	22.9	5.1	28.5
Max Q Clear Time (g_c+I1), s	7.7	13.2	10.2	9.8	17.8	15.7	3.5	26.1
Green Ext Time (p_c), s	0.1	6.6	0.1	4.3	0.8	3.4	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	99	466	376	61	361	128	427	427	153	209	255	68
Future Volume (veh/h)	99	466	376	61	361	128	427	427	153	209	255	68
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	136	485	0	77	388	141	449	534	210	230	277	81
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.73	0.96	0.88	0.79	0.93	0.91	0.95	0.80	0.73	0.91	0.92	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	517	439	166	641	230	520	661	259	317	473	136
Arrive On Green	0.03	0.11	0.00	0.05	0.30	0.30	0.23	0.32	0.32	0.13	0.21	0.21
Sat Flow, veh/h	1494	1569	1333	1494	2151	772	1494	2094	820	1494	2287	656
Grp Volume(v), veh/h	136	485	0	77	267	262	449	380	364	230	179	179
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1432	1494	1490	1424	1494	1490	1453
Q Serve(g_s), s	6.1	30.7	0.0	3.5	15.3	15.7	23.1	23.4	23.5	12.1	10.8	11.2
Cycle Q Clear(g_c), s	6.1	30.7	0.0	3.5	15.3	15.7	23.1	23.4	23.5	12.1	10.8	11.2
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.58	1.00		0.45
Lane Grp Cap(c), veh/h	315	517	439	166	444	427	520	470	449	317	308	300
V/C Ratio(X)	0.43	0.94	0.00	0.47	0.60	0.61	0.86	0.81	0.81	0.72	0.58	0.60
Avail Cap(c_a), veh/h	364	525	447	167	444	427	520	470	449	317	308	300
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	43.6	0.0	26.6	30.0	30.1	22.3	31.4	31.5	27.5	35.8	35.9
Incr Delay (d2), s/veh	0.6	18.9	0.0	2.0	2.3	2.6	14.1	13.8	14.7	8.0	7.8	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.1	0.0	1.5	6.6	6.5	11.5	11.4	11.0	5.7	5.1	5.2
LnGrp Delay(d),s/veh	24.4	62.4	0.0	28.6	32.3	32.7	36.3	45.2	46.1	35.5	43.5	44.4
LnGrp LOS	C	E		C	C	C	D	D	D	D	D	D
Approach Vol, veh/h		621			606			1193			588	
Approach Delay, s/veh		54.1			32.0			42.1			40.6	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.1	36.1	9.4	37.4	28.0	25.2	12.5	34.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	12.6	30.9	5.0	33.5	23.5	20.0	11.3	27.2				
Max Q Clear Time (g_c+I1), s	14.1	25.5	5.5	32.7	25.1	13.2	8.1	17.7				
Green Ext Time (p_c), s	0.0	3.0	0.0	0.3	0.0	3.7	0.1	4.4				
Intersection Summary												
HCM 2010 Ctrl Delay			42.3									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	24	141	281	150	535	184	282	228	91	109	343	81
Future Volume (veh/h)	24	141	281	150	535	184	282	228	91	109	343	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	29	150	0	197	588	214	381	326	169	135	385	111
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.82	0.94	0.92	0.76	0.91	0.86	0.74	0.70	0.54	0.81	0.89	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	851	381	531	788	286	436	643	327	380	478	136
Arrive On Green	0.01	0.09	0.00	0.11	0.37	0.37	0.22	0.34	0.34	0.09	0.21	0.21
Sat Flow, veh/h	1494	2980	1333	1494	2143	778	1494	1915	972	1494	2291	653
Grp Volume(v), veh/h	29	150	0	197	409	393	381	252	243	135	249	247
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1431	1494	1490	1397	1494	1490	1453
Q Serve(g_s), s	1.4	4.6	0.0	8.9	23.9	24.0	19.0	13.5	14.0	7.0	15.9	16.2
Cycle Q Clear(g_c), s	1.4	4.6	0.0	8.9	23.9	24.0	19.0	13.5	14.0	7.0	15.9	16.2
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.70	1.00		0.45
Lane Grp Cap(c), veh/h	200	851	381	531	548	527	436	501	469	380	311	304
V/C Ratio(X)	0.14	0.18	0.00	0.37	0.75	0.75	0.87	0.50	0.52	0.35	0.80	0.81
Avail Cap(c_a), veh/h	235	851	381	578	548	527	495	501	469	419	311	304
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	34.4	0.0	19.9	27.5	27.5	23.1	26.5	26.7	27.2	37.6	37.7
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.4	7.6	7.9	14.5	3.6	4.0	0.6	19.1	20.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.0	0.0	3.7	10.9	10.6	9.6	6.0	5.9	2.9	8.1	8.3
LnGrp Delay(d),s/veh	26.1	34.9	0.0	20.3	35.1	35.5	37.6	30.1	30.7	27.7	56.6	58.5
LnGrp LOS	C	C		C	D	D	D	C	C	C	E	E
Approach Vol, veh/h		179			999			876			631	
Approach Delay, s/veh		33.5			32.3			33.5			51.2	
Approach LOS		C			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	38.1	15.5	33.1	26.1	25.4	7.3	41.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.4	33.6	14.1	22.9	25.5	19.5	5.1	31.9				
Max Q Clear Time (g_c+I1), s	9.0	16.0	10.9	6.6	21.0	18.2	3.4	26.0				
Green Ext Time (p_c), s	0.1	6.0	0.2	5.7	0.5	0.8	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			37.2									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
2: College Drive & Dell Range Boulevard

2022 Total PM.syn
12/14/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	99	535	376	79	401	132	427	427	184	217	255	68
Future Volume (veh/h)	99	535	376	79	401	132	427	427	184	217	255	68
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	136	557	0	100	431	145	449	534	252	238	277	81
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.73	0.96	0.88	0.79	0.93	0.91	0.95	0.80	0.73	0.91	0.92	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	919	411	264	620	207	543	614	289	326	468	134
Arrive On Green	0.03	0.10	0.00	0.05	0.28	0.28	0.25	0.31	0.31	0.14	0.20	0.20
Sat Flow, veh/h	1494	2980	1333	1494	2197	732	1494	1969	926	1494	2287	656
Grp Volume(v), veh/h	136	557	0	100	291	285	449	404	382	238	179	179
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1439	1494	1490	1405	1494	1490	1453
Q Serve(g_s), s	6.3	17.9	0.0	4.8	17.4	17.7	22.5	25.6	25.7	12.3	10.8	11.2
Cycle Q Clear(g_c), s	6.3	17.9	0.0	4.8	17.4	17.7	22.5	25.6	25.7	12.3	10.8	11.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.66	1.00		0.45
Lane Grp Cap(c), veh/h	281	919	411	264	420	406	543	465	438	326	305	297
V/C Ratio(X)	0.48	0.61	0.00	0.38	0.69	0.70	0.83	0.87	0.87	0.73	0.59	0.60
Avail Cap(c_a), veh/h	286	919	411	264	420	406	608	465	438	356	305	297
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	39.1	0.0	24.9	32.0	32.1	21.1	32.5	32.5	26.9	36.0	36.1
Incr Delay (d2), s/veh	0.9	2.1	0.0	0.8	8.3	9.0	8.4	19.3	20.6	6.8	8.0	8.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	7.7	0.0	2.0	8.2	8.1	10.4	12.9	12.5	5.6	5.1	5.2
LnGrp Delay(d),s/veh	26.4	41.2	0.0	25.7	40.4	41.1	29.6	51.7	53.1	33.7	44.0	44.9
LnGrp LOS	C	D		C	D	D	C	D	D	C	D	D
Approach Vol, veh/h		693			676			1235			596	
Approach Delay, s/veh		38.3			38.5			44.1			40.1	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	35.7	10.0	35.3	29.7	24.9	12.6	32.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	16.5	31.2	5.5	28.8	29.6	18.1	8.5	25.8				
Max Q Clear Time (g_c+I1), s	14.3	27.7	6.8	19.9	24.5	13.2	8.3	19.7				
Green Ext Time (p_c), s	0.2	2.2	0.0	4.7	0.7	2.9	0.0	3.5				
Intersection Summary												
HCM 2010 Ctrl Delay			40.9									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
2: College Drive & Dell Range Boulevard

2040 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	31	150	351	153	590	221	353	285	102	134	428	101
Future Volume (veh/h)	31	150	351	153	590	221	353	285	102	134	428	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	34	163	0	166	641	240	384	310	111	146	465	110
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	476	404	462	776	290	409	712	250	411	491	115
Arrive On Green	0.01	0.10	0.00	0.09	0.37	0.37	0.22	0.33	0.33	0.09	0.21	0.21
Sat Flow, veh/h	1494	1569	1333	1494	2124	795	1494	2164	760	1494	2396	563
Grp Volume(v), veh/h	34	163	0	166	450	431	384	212	209	146	288	287
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1428	1494	1490	1434	1494	1490	1469
Q Serve(g_s), s	1.6	9.7	0.0	7.3	27.4	27.5	19.6	11.1	11.5	7.6	19.0	19.3
Cycle Q Clear(g_c), s	1.6	9.7	0.0	7.3	27.4	27.5	19.6	11.1	11.5	7.6	19.0	19.3
Prop In Lane	1.00		1.00	1.00		0.56	1.00		0.53	1.00		0.38
Lane Grp Cap(c), veh/h	175	476	404	462	545	522	409	490	472	411	305	301
V/C Ratio(X)	0.19	0.34	0.00	0.36	0.83	0.83	0.94	0.43	0.44	0.36	0.94	0.95
Avail Cap(c_a), veh/h	205	476	404	492	545	522	433	490	472	442	305	301
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	35.7	0.0	20.0	28.8	28.8	24.2	26.2	26.4	27.2	39.2	39.3
Incr Delay (d2), s/veh	0.5	1.8	0.0	0.5	13.4	13.9	27.6	2.8	3.0	0.5	38.7	41.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	0.0	3.0	13.3	12.8	13.5	5.0	4.9	3.2	11.1	11.3
LnGrp Delay(d),s/veh	26.1	37.5	0.0	20.4	42.2	42.8	51.8	29.0	29.4	27.7	77.9	80.4
LnGrp LOS	C	D		C	D	D	D	C	C	C	E	F
Approach Vol, veh/h		197			1047			805			721	
Approach Delay, s/veh		35.6			39.0			40.0			68.7	
Approach LOS		D			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	37.4	13.8	34.8	26.4	25.0	7.6	41.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.6	32.4	11.3	26.7	23.5	20.5	5.1	32.9				
Max Q Clear Time (g_c+I1), s	9.6	13.5	9.3	11.7	21.6	21.3	3.6	29.5				
Green Ext Time (p_c), s	0.1	6.1	0.1	6.0	0.3	0.0	0.0	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			46.8									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	583	470	76	451	160	534	534	192	261	319	85
Future Volume (veh/h)	124	583	470	76	451	160	534	534	192	261	319	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	135	634	0	83	490	174	580	580	209	284	347	92
Adj No. of Lanes	1	1	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	557	473	147	713	252	456	572	206	295	421	110
Arrive On Green	0.02	0.12	0.00	0.05	0.33	0.33	0.23	0.27	0.27	0.15	0.18	0.18
Sat Flow, veh/h	1494	1569	1333	1494	2161	763	1494	2150	773	1494	2339	612
Grp Volume(v), veh/h	135	634	0	83	337	327	580	402	387	284	219	220
Grp Sat Flow(s),veh/h/ln	1494	1569	1333	1494	1490	1434	1494	1490	1432	1494	1490	1461
Q Serve(g_s), s	5.8	35.5	0.0	3.6	19.6	19.8	23.5	26.6	26.6	14.9	14.2	14.5
Cycle Q Clear(g_c), s	5.8	35.5	0.0	3.6	19.6	19.8	23.5	26.6	26.6	14.9	14.2	14.5
Prop In Lane	1.00		1.00	1.00		0.53	1.00		0.54	1.00		0.42
Lane Grp Cap(c), veh/h	286	557	473	147	492	473	456	396	381	295	268	263
V/C Ratio(X)	0.47	1.14	0.00	0.57	0.69	0.69	1.27	1.01	1.02	0.96	0.82	0.84
Avail Cap(c_a), veh/h	286	557	473	147	492	473	456	396	381	295	268	263
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	44.1	0.0	25.8	29.0	29.1	25.4	36.7	36.7	30.1	39.4	39.6
Incr Delay (d2), s/veh	0.7	75.2	0.0	5.0	7.6	8.0	138.5	48.6	50.4	42.6	23.4	25.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	27.0	0.0	1.7	9.1	8.9	17.6	16.3	15.8	5.2	7.5	7.7
LnGrp Delay(d),s/veh	23.7	119.3	0.0	30.8	36.6	37.1	164.0	85.4	87.1	72.6	62.9	65.3
LnGrp LOS	C	F		C	D	D	F	F	F	E	E	E
Approach Vol, veh/h		769			747			1369			723	
Approach Delay, s/veh		102.5			36.2			119.2			67.4	
Approach LOS		F			D			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.4	31.1	9.5	40.0	28.0	22.5	12.0	37.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	14.9	26.6	5.0	35.5	23.5	18.0	7.5	33.0				
Max Q Clear Time (g_c+I1), s	16.9	28.6	5.6	37.5	25.5	16.5	7.8	21.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.0	0.0	6.2				
Intersection Summary												
HCM 2010 Ctrl Delay			88.1									
HCM 2010 LOS			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	297	351	278	840	221	353	322	175	134	491	226
Future Volume (veh/h)	104	297	351	278	840	221	353	322	175	134	491	226
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	113	323	0	302	913	240	384	350	190	146	534	246
Adj No. of Lanes	1	2	1	1	2	1	2	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	941	421	557	1199	536	568	769	344	347	700	313
Arrive On Green	0.09	0.42	0.00	0.15	0.40	0.40	0.12	0.26	0.26	0.09	0.23	0.23
Sat Flow, veh/h	1494	2980	1333	1494	2980	1333	2898	2980	1333	1494	2980	1333
Grp Volume(v), veh/h	113	323	0	302	913	240	384	350	190	146	534	246
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1333	1449	1490	1333	1494	1490	1333
Q Serve(g_s), s	5.1	7.3	0.0	12.9	26.4	13.1	9.9	9.9	12.3	7.3	16.7	17.3
Cycle Q Clear(g_c), s	5.1	7.3	0.0	12.9	26.4	13.1	9.9	9.9	12.3	7.3	16.7	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	240	941	421	557	1199	536	568	769	344	347	700	313
V/C Ratio(X)	0.47	0.34	0.00	0.54	0.76	0.45	0.68	0.46	0.55	0.42	0.76	0.79
Avail Cap(c_a), veh/h	251	941	421	648	1199	536	568	769	344	381	700	313
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.00	0.62	0.62	0.62	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	22.0	0.0	16.9	25.7	21.8	26.3	31.2	32.1	25.4	35.6	35.9
Incr Delay (d2), s/veh	1.3	0.9	0.0	0.5	2.9	1.7	3.2	1.9	6.3	0.8	7.7	17.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.1	0.0	5.4	11.3	5.0	4.2	4.3	5.1	3.0	7.6	7.9
LnGrp Delay(d),s/veh	23.3	22.9	0.0	17.4	28.6	23.4	29.5	33.1	38.4	26.3	43.3	53.6
LnGrp LOS	C	C		B	C	C	C	C	D	C	D	D
Approach Vol, veh/h		436			1455			924			926	
Approach Delay, s/veh		23.0			25.4			32.7			43.4	
Approach LOS		C			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.7	30.3	19.9	36.1	16.0	28.0	11.3	44.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.5	23.5	21.5	25.5	11.5	23.5	7.5	39.5				
Max Q Clear Time (g_c+I1), s	9.3	14.3	14.9	9.3	11.9	19.3	7.1	28.4				
Green Ext Time (p_c), s	0.1	4.9	0.5	8.6	0.0	2.7	0.0	6.7				
Intersection Summary												
HCM 2010 Ctrl Delay			31.4									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	960	470	232	763	160	534	628	380	261	397	241
Future Volume (veh/h)	312	960	470	232	763	160	534	628	380	261	397	241
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	339	1043	0	252	829	57	580	683	217	284	432	105
Adj No. of Lanes	1	2	1	1	2	1	2	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	338	1037	464	248	897	401	700	647	289	277	590	264
Arrive On Green	0.22	0.46	0.00	0.12	0.30	0.30	0.16	0.22	0.22	0.14	0.20	0.20
Sat Flow, veh/h	1494	2980	1333	1494	2980	1333	2898	2980	1333	1494	2980	1333
Grp Volume(v), veh/h	339	1043	0	252	829	57	580	683	217	284	432	105
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1333	1449	1490	1333	1494	1490	1333
Q Serve(g_s), s	16.5	34.8	0.0	11.8	26.9	3.1	15.6	21.7	15.2	13.7	13.6	6.9
Cycle Q Clear(g_c), s	16.5	34.8	0.0	11.8	26.9	3.1	15.6	21.7	15.2	13.7	13.6	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	1037	464	248	897	401	700	647	289	277	590	264
V/C Ratio(X)	1.00	1.01	0.00	1.01	0.92	0.14	0.83	1.06	0.75	1.03	0.73	0.40
Avail Cap(c_a), veh/h	338	1037	464	248	897	401	700	647	289	277	590	264
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.00	0.64	0.64	0.64	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	26.9	0.0	25.5	33.8	25.5	27.9	39.2	36.6	30.3	37.6	34.9
Incr Delay (d2), s/veh	16.5	10.5	0.0	49.4	11.6	0.5	8.2	51.1	16.3	61.1	7.8	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	15.7	0.0	10.2	12.5	1.2	2.5	13.5	6.9	6.6	6.2	2.8
LnGrp Delay(d),s/veh	39.3	37.4	0.0	75.1	45.5	26.0	36.1	90.3	52.9	91.4	45.4	39.3
LnGrp LOS	F	F		F	D	C	D	F	D	F	D	D
Approach Vol, veh/h		1382			1138			1480			821	
Approach Delay, s/veh		37.9			51.0			63.6			60.6	
Approach LOS		D			D			E			E	
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.2	26.2	16.3	39.3	20.1	24.3	21.0	34.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.7	21.7	11.8	34.8	15.6	19.8	16.5	30.1				
Max Q Clear Time (g_c+I1), s	15.7	23.7	13.8	36.8	17.6	15.6	18.5	28.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	2.9	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			52.7									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	161	76	17	377	0	43	4	6	0	8	1
Future Volume (Veh/h)	1	161	76	17	377	0	43	4	6	0	8	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.84	0.49	0.53	0.90	0.92	0.67	0.25	0.38	0.92	0.40	0.25
Hourly flow rate (vph)	4	192	155	32	419	0	64	16	16	0	20	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	419			347			774	760	270	707	838	419
vC1, stage 1 conf vol							278	278		483	483	
vC2, stage 2 conf vol							497	483		224	355	
vCu, unblocked vol	419			347			774	760	270	707	838	419
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			86	97	98	100	96	99
cM capacity (veh/h)	1140			1212			470	485	769	498	462	634

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	347	32	419	96	24
Volume Left	4	0	32	0	64	0
Volume Right	0	155	0	0	16	4
cSH	1140	1700	1212	1700	505	484
Volume to Capacity	0.00	0.20	0.03	0.25	0.19	0.05
Queue Length 95th (ft)	0	0	2	0	17	4
Control Delay (s)	8.2	0.0	8.1	0.0	13.8	12.8
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.6		13.8	12.8
Approach LOS					B	B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Van Buren Avenue & Dell Range Boulevard

2017 Existing PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	458	65	1	331	0	38	5	10	0	3	1
Future Volume (Veh/h)	2	458	65	1	331	0	38	5	10	0	3	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.90	0.85	0.25	0.85	0.92	0.63	0.62	0.42	0.92	0.38	0.25
Hourly flow rate (vph)	4	509	76	4	389	0	60	8	24	0	8	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	389			585			960	952	547	942	990	389
vC1, stage 1 conf vol							555	555		397	397	
vC2, stage 2 conf vol							405	397		545	593	
vCu, unblocked vol	389			585			960	952	547	942	990	389
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			86	98	96	100	98	99
cM capacity (veh/h)	1170			990			434	439	537	423	425	659

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	585	4	389	92	12
Volume Left	4	0	4	0	60	0
Volume Right	0	76	0	0	24	4
cSH	1170	1700	990	1700	457	482
Volume to Capacity	0.00	0.34	0.00	0.23	0.20	0.02
Queue Length 95th (ft)	0	0	0	0	19	2
Control Delay (s)	8.1	0.0	8.7	0.0	14.9	12.7
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.1		14.9	12.7
Approach LOS					B	B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Van Buren Avenue & Dell Range Boulevard

2022 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	171	81	18	401	0	46	4	6	0	9	1
Future Volume (Veh/h)	1	171	81	18	401	0	46	4	6	0	9	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.84	0.49	0.53	0.90	0.92	0.67	0.25	0.38	0.92	0.40	0.25
Hourly flow rate (vph)	4	204	165	34	446	0	69	16	16	0	23	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	446			369			824	808	286	750	891	446
vC1, stage 1 conf vol							294	294		514	514	
vC2, stage 2 conf vol							530	514		236	377	
vCu, unblocked vol	446			369			824	808	286	750	891	446
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			85	97	98	100	95	99
cM capacity (veh/h)	1114			1190			447	467	753	478	444	612

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	369	34	446	101	27
Volume Left	4	0	34	0	69	0
Volume Right	0	165	0	0	16	4
cSH	1114	1700	1190	1700	481	463
Volume to Capacity	0.00	0.22	0.03	0.26	0.21	0.06
Queue Length 95th (ft)	0	0	2	0	20	5
Control Delay (s)	8.2	0.0	8.1	0.0	14.5	13.3
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.6		14.5	13.3
Approach LOS					B	B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	2	487	69	1	352	0	40	5	11	0	3	1
Future Volume (Veh/h)	2	487	69	1	352	0	40	5	11	0	3	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.90	0.85	0.25	0.85	0.92	0.63	0.62	0.42	0.92	0.38	0.25
Hourly flow rate (vph)	4	541	81	4	414	0	63	8	26	0	8	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	414			622			1020	1012	582	1001	1052	414
vC1, stage 1 conf vol							590	590		422	422	
vC2, stage 2 conf vol							430	422		579	630	
vCu, unblocked vol	414			622			1020	1012	582	1001	1052	414
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			85	98	95	100	98	99
cM capacity (veh/h)	1145			959			413	422	513	401	407	638

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	622	4	414	97	12
Volume Left	4	0	4	0	63	0
Volume Right	0	81	0	0	26	4
cSH	1145	1700	959	1700	437	463
Volume to Capacity	0.00	0.37	0.00	0.24	0.22	0.03
Queue Length 95th (ft)	0	0	0	0	21	2
Control Delay (s)	8.2	0.0	8.8	0.0	15.6	13.0
Lane LOS	A		A		C	B
Approach Delay (s)	0.1		0.1		15.6	13.0
Approach LOS					C	B

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		52.5%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	24	180	81	25	429	2	46	9	8	7	23	72
Future Volume (veh/h)	24	180	81	25	429	2	46	9	8	7	23	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	96	214	165	47	477	2	69	36	21	8	58	288
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.25	0.84	0.49	0.53	0.90	0.92	0.67	0.25	0.38	0.92	0.40	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	457	352	470	866	4	213	330	193	513	81	404
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	912	823	634	1000	1561	7	1031	930	543	1341	229	1138
Grp Volume(v), veh/h	96	0	379	47	0	479	69	0	57	8	0	346
Grp Sat Flow(s),veh/h/ln	912	0	1457	1000	0	1567	1031	0	1473	1341	0	1368
Q Serve(g_s), s	7.5	0.0	15.6	3.0	0.0	19.6	6.2	0.0	2.6	0.4	0.0	21.8
Cycle Q Clear(g_c), s	27.1	0.0	15.6	18.6	0.0	19.6	28.0	0.0	2.6	3.0	0.0	21.8
Prop In Lane	1.00		0.44	1.00		0.00	1.00		0.37	1.00		0.83
Lane Grp Cap(c), veh/h	400	0	808	470	0	870	213	0	523	513	0	486
V/C Ratio(X)	0.24	0.00	0.47	0.10	0.00	0.55	0.32	0.00	0.11	0.02	0.00	0.71
Avail Cap(c_a), veh/h	400	0	808	470	0	870	213	0	523	513	0	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	1.00	0.00	1.00	0.96	0.00	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	13.4	19.0	0.0	14.3	40.0	0.0	21.6	22.6	0.0	27.8
Incr Delay (d2), s/veh	1.3	0.0	1.8	0.4	0.0	2.5	3.9	0.0	0.4	0.1	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	6.6	0.9	0.0	9.0	2.0	0.0	1.1	0.2	0.0	9.4
LnGrp Delay(d),s/veh	24.3	0.0	15.2	19.4	0.0	16.8	43.8	0.0	22.0	22.7	0.0	36.5
LnGrp LOS	C		B	B		B	D		C	C		D
Approach Vol, veh/h		475			526			126			354	
Approach Delay, s/veh		17.0			17.0			34.0			36.2	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		60.0		40.0		60.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		35.5		55.5		35.5		55.5
Max Q Clear Time (g_c+I1), s		30.0		29.1		23.8		21.6
Green Ext Time (p_c), s		1.4		7.1		2.3		7.6

Intersection Summary		
HCM 2010 Ctrl Delay		23.0
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
3: Van Buren Avenue & Dell Range Boulevard

2022 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	79	518	69	5	370	8	40	20	19	4	12	46
Future Volume (veh/h)	79	518	69	5	370	8	40	20	19	4	12	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	158	576	81	20	435	9	63	32	45	4	32	184
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.50	0.90	0.85	0.25	0.85	0.92	0.63	0.62	0.42	0.92	0.38	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	586	909	128	406	1034	21	178	139	195	324	47	273
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	942	1346	189	773	1531	32	1161	591	831	1317	202	1162
Grp Volume(v), veh/h	158	0	657	20	0	444	63	0	77	4	0	216
Grp Sat Flow(s),veh/h/ln	942	0	1535	773	0	1563	1161	0	1422	1317	0	1364
Q Serve(g_s), s	9.2	0.0	24.3	1.5	0.0	12.9	5.2	0.0	4.4	0.2	0.0	14.4
Cycle Q Clear(g_c), s	22.0	0.0	24.3	25.8	0.0	12.9	19.6	0.0	4.4	4.6	0.0	14.4
Prop In Lane	1.00		0.12	1.00		0.02	1.00		0.58	1.00		0.85
Lane Grp Cap(c), veh/h	586	0	1036	406	0	1055	178	0	334	324	0	320
V/C Ratio(X)	0.27	0.00	0.63	0.05	0.00	0.42	0.35	0.00	0.23	0.01	0.00	0.67
Avail Cap(c_a), veh/h	586	0	1036	406	0	1055	178	0	334	324	0	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	1.00	0.00	1.00	0.96	0.00	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	9.2	16.6	0.0	7.4	43.7	0.0	30.9	32.8	0.0	34.8
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.2	0.0	1.2	5.3	0.0	1.5	0.1	0.0	10.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	10.3	0.3	0.0	5.8	1.9	0.0	1.9	0.1	0.0	6.4
LnGrp Delay(d),s/veh	12.5	0.0	9.5	16.8	0.0	8.6	49.0	0.0	32.5	32.9	0.0	45.6
LnGrp LOS	B		A	B		A	D		C	C		D
Approach Vol, veh/h		815			464			140			220	
Approach Delay, s/veh		10.1			9.0			39.9			45.4	
Approach LOS		B			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.0		72.0		28.0		72.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		23.5		67.5		23.5		67.5
Max Q Clear Time (g_c+I1), s		21.6		26.3		16.4		27.8
Green Ext Time (p_c), s		0.4		11.3		1.2		11.2

Intersection Summary		
HCM 2010 Ctrl Delay		17.0
HCM 2010 LOS		B

HCM Unsignalized Intersection Capacity Analysis
3: Van Buren Avenue & Dell Range Boulevard

2040 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	1	214	101	23	502	0	57	5	8	0	11	1
Future Volume (Veh/h)	1	214	101	23	502	0	57	5	8	0	11	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	233	110	25	546	0	62	5	9	0	12	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	546			343			893	886	288	842	941	546
vC1, stage 1 conf vol							290	290		596	596	
vC2, stage 2 conf vol							603	596		246	345	
vCu, unblocked vol	546			343			893	886	288	842	941	546
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			85	99	99	100	97	100
cM capacity (veh/h)	1023			1216			426	440	751	443	427	538

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1	343	25	546	76	13
Volume Left	1	0	25	0	62	0
Volume Right	0	110	0	0	9	1
cSH	1023	1700	1216	1700	450	434
Volume to Capacity	0.00	0.20	0.02	0.32	0.17	0.03
Queue Length 95th (ft)	0	0	2	0	15	2
Control Delay (s)	8.5	0.0	8.0	0.0	14.6	13.6
Lane LOS	A		A		B	B
Approach Delay (s)	0.0		0.4		14.6	13.6
Approach LOS					B	B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Van Buren Avenue & Dell Range Boulevard

2040 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	3	609	86	1	440	0	51	7	13	0	4	1
Future Volume (Veh/h)	3	609	86	1	440	0	51	7	13	0	4	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	662	93	1	478	0	55	8	14	0	4	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	478			755			1198	1194	708	1166	1241	478
vC1, stage 1 conf vol							714	714		480	480	
vC2, stage 2 conf vol							483	480		686	761	
vCu, unblocked vol	478			755			1198	1194	708	1166	1241	478
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			85	98	97	100	99	100
cM capacity (veh/h)	1084			855			358	371	434	356	357	587

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	3	755	1	478	77	5
Volume Left	3	0	1	0	55	0
Volume Right	0	93	0	0	14	1
cSH	1084	1700	855	1700	371	387
Volume to Capacity	0.00	0.44	0.00	0.28	0.21	0.01
Queue Length 95th (ft)	0	0	0	0	19	1
Control Delay (s)	8.3	0.0	9.2	0.0	17.2	14.4
Lane LOS	A		A		C	B
Approach Delay (s)	0.0		0.0		17.2	14.4
Approach LOS					C	B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

HCM 2010 Signalized Intersection Summary
3: Van Buren Avenue & Dell Range Boulevard

2040 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	111	324	101	73	690	15	57	49	37	25	86	189
Future Volume (veh/h)	111	324	101	73	690	15	57	49	37	25	86	189
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	121	352	110	79	750	16	62	53	40	27	93	205
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	1027	873	586	1002	21	129	212	160	337	111	245
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	699	1569	1333	926	1530	33	1077	831	627	1298	437	962
Grp Volume(v), veh/h	121	352	110	79	0	766	62	0	93	27	0	298
Grp Sat Flow(s),veh/h/ln	699	1569	1333	926	0	1563	1077	0	1458	1298	0	1399
Q Serve(g_s), s	14.2	10.0	3.1	4.1	0.0	33.2	5.3	0.0	5.1	1.7	0.0	20.2
Cycle Q Clear(g_c), s	47.3	10.0	3.1	14.1	0.0	33.2	25.5	0.0	5.1	6.8	0.0	20.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.43	1.00		0.69
Lane Grp Cap(c), veh/h	298	1027	873	586	0	1024	129	0	372	337	0	357
V/C Ratio(X)	0.41	0.34	0.13	0.13	0.00	0.75	0.48	0.00	0.25	0.08	0.00	0.84
Avail Cap(c_a), veh/h	298	1027	873	586	0	1024	129	0	372	337	0	357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	0.00	1.00	0.58	0.00	0.58	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	7.7	6.5	10.8	0.0	11.7	47.5	0.0	29.6	32.3	0.0	35.3
Incr Delay (d2), s/veh	3.8	0.8	0.3	0.5	0.0	5.0	7.2	0.0	0.9	0.5	0.0	20.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.5	1.2	1.1	0.0	15.5	2.0	0.0	2.1	0.7	0.0	9.8
LnGrp Delay(d),s/veh	31.5	8.5	6.8	11.3	0.0	16.7	54.7	0.0	30.6	32.8	0.0	55.4
LnGrp LOS	C	A	A	B		B	D		C	C		E
Approach Vol, veh/h		583			845			155			325	
Approach Delay, s/veh		12.9			16.2			40.2			53.5	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.0		70.0		30.0		70.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		25.5		65.5		25.5		65.5
Max Q Clear Time (g_c+I1), s		27.5		49.3		22.2		35.2
Green Ext Time (p_c), s		0.0		8.7		0.9		12.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Van Buren Avenue & Dell Range Boulevard

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	891	86	63	674	38	51	120	88	31	98	235
Future Volume (veh/h)	285	891	86	63	674	38	51	120	88	31	98	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	310	968	93	68	733	41	55	130	96	34	107	255
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	1118	951	205	1049	59	72	165	122	129	81	194
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	694	1569	1333	530	1472	82	1016	839	620	1150	412	983
Grp Volume(v), veh/h	310	968	93	68	0	774	55	0	226	34	0	362
Grp Sat Flow(s),veh/h/ln	694	1569	1333	530	0	1554	1016	0	1459	1150	0	1395
Q Serve(g_s), s	42.8	46.3	2.2	11.0	0.0	28.5	0.0	0.0	14.7	2.9	0.0	19.7
Cycle Q Clear(g_c), s	71.3	46.3	2.2	57.3	0.0	28.5	19.7	0.0	14.7	17.6	0.0	19.7
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.42	1.00		0.70
Lane Grp Cap(c), veh/h	369	1118	951	205	0	1108	72	0	287	129	0	275
V/C Ratio(X)	0.84	0.87	0.10	0.33	0.00	0.70	0.76	0.00	0.79	0.26	0.00	1.32
Avail Cap(c_a), veh/h	369	1118	951	205	0	1108	72	0	287	129	0	275
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	0.16	1.00	0.00	1.00	0.44	0.00	0.44	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.5	10.8	4.4	32.2	0.0	8.2	50.0	0.0	38.1	46.5	0.0	40.2
Incr Delay (d2), s/veh	3.8	1.6	0.0	4.3	0.0	3.7	28.4	0.0	9.3	4.9	0.0	166.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	20.1	0.8	1.9	0.0	13.2	2.1	0.0	6.6	1.1	0.0	20.2
LnGrp Delay(d),s/veh	33.3	12.3	4.5	36.5	0.0	11.9	78.4	0.0	47.5	51.4	0.0	206.2
LnGrp LOS	C	B	A	D		B	E		D	D		F
Approach Vol, veh/h		1371			842			281			396	
Approach Delay, s/veh		16.5			13.9			53.5			192.9	
Approach LOS		B			B			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.2		75.8		24.2		75.8
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.7		71.3		19.7		71.3
Max Q Clear Time (g_c+I1), s		21.7		73.3		21.7		59.3
Green Ext Time (p_c), s		0.0		0.0		0.0		10.3

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2017 Existing AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	135	22	1	379	0	48	0	0	0	0	0
Future Volume (Veh/h)	0	135	22	1	379	0	48	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.75	0.79	0.25	0.97	0.92	0.63	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	180	28	4	391	0	76	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	391			208			593	593	194	579	607	391
vC1, stage 1 conf vol							194	194		399	399	
vC2, stage 2 conf vol							399	399		180	208	
vCu, unblocked vol	391			208			593	593	194	579	607	391
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			87	100	100	100	100	100
cM capacity (veh/h)	1168			1363			578	556	847	582	552	658

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	208	4	391	76	0
Volume Left	0	0	4	0	76	0
Volume Right	0	28	0	0	0	0
cSH	1700	1700	1363	1700	578	1700
Volume to Capacity	0.00	0.12	0.00	0.23	0.13	0.00
Queue Length 95th (ft)	0	0	0	0	11	0
Control Delay (s)	0.0	0.0	7.6	0.0	12.2	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		0.1		12.2	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2017 Existing PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	1	416	51	1	292	0	38	0	0	0	0	1
Future Volume (Veh/h)	1	416	51	1	292	0	38	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.85	0.25	0.80	0.92	0.73	0.92	0.92	0.92	0.92	0.25
Hourly flow rate (vph)	4	478	60	4	365	0	52	0	0	0	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	365			538			893	889	508	859	919	365
vC1, stage 1 conf vol							516	516		373	373	
vC2, stage 2 conf vol							377	373		486	546	
vCu, unblocked vol	365			538			893	889	508	859	919	365
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			89	100	100	100	100	99
cM capacity (veh/h)	1194			1030			461	459	565	475	447	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	538	4	365	52	4
Volume Left	4	0	4	0	52	0
Volume Right	0	60	0	0	0	4
cSH	1194	1700	1030	1700	461	680
Volume to Capacity	0.00	0.32	0.00	0.21	0.11	0.01
Queue Length 95th (ft)	0	0	0	0	9	0
Control Delay (s)	8.0	0.0	8.5	0.0	13.8	10.3
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.1		13.8	10.3
Approach LOS					B	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2022 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	0	144	23	1	403	0	51	0	0	0	0	0
Future Volume (Veh/h)	0	144	23	1	403	0	51	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.75	0.79	0.25	0.97	0.92	0.63	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	192	29	4	415	0	81	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	415			221			630	630	206	615	644	415
vC1, stage 1 conf vol							206	206		423	423	
vC2, stage 2 conf vol							423	423		192	221	
vCu, unblocked vol	415			221			630	630	206	615	644	415
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			86	100	100	100	100	100
cM capacity (veh/h)	1144			1348			560	541	834	563	537	637

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	221	4	415	81	0
Volume Left	0	0	4	0	81	0
Volume Right	0	29	0	0	0	0
cSH	1700	1700	1348	1700	560	1700
Volume to Capacity	0.00	0.13	0.00	0.24	0.14	0.00
Queue Length 95th (ft)	0	0	0	0	13	0
Control Delay (s)	0.0	0.0	7.7	0.0	12.5	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		0.1		12.5	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2022 Background PM.syn
4: El Camino Drive/Gysel Place & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Volume (veh/h)	1	443	54	1	311	0	40	0	0	0	0	1
Future Volume (Veh/h)	1	443	54	1	311	0	40	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.85	0.25	0.80	0.92	0.73	0.92	0.92	0.92	0.92	0.25
Hourly flow rate (vph)	4	509	64	4	389	0	55	0	0	0	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	389			573			950	946	541	914	978	389
vC1, stage 1 conf vol							549	549		397	397	
vC2, stage 2 conf vol							401	397		517	581	
vCu, unblocked vol	389			573			950	946	541	914	978	389
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			87	100	100	100	100	99
cM capacity (veh/h)	1170			1000			440	441	541	455	429	659

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	4	573	4	389	55	4
Volume Left	4	0	4	0	55	0
Volume Right	0	64	0	0	0	4
cSH	1170	1700	1000	1700	440	659
Volume to Capacity	0.00	0.34	0.00	0.23	0.13	0.01
Queue Length 95th (ft)	0	0	0	0	11	0
Control Delay (s)	8.1	0.0	8.6	0.0	14.4	10.5
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.1		14.4	10.5
Approach LOS					B	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2022 Total AM.syn
4: El Camino Drive/Gysel Place & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Volume (veh/h)	12	151	23	1	405	2	51	2	0	7	7	36
Future Volume (Veh/h)	12	151	23	1	405	2	51	2	0	7	7	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.75	0.79	0.25	0.97	0.92	0.63	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	201	29	4	418	2	81	2	0	8	8	39
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		840										
pX, platoon unblocked												
vC, conflicting volume	420			230			710	670	216	655	683	419
vC1, stage 1 conf vol							242	242		427	427	
vC2, stage 2 conf vol							469	428		228	256	
vCu, unblocked vol	420			230			710	670	216	655	683	419
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			83	100	100	99	98	94
cM capacity (veh/h)	1139			1338			481	521	824	549	524	634

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	13	230	4	420	83	55
Volume Left	13	0	4	0	81	8
Volume Right	0	29	0	2	0	39
cSH	1139	1700	1338	1700	482	602
Volume to Capacity	0.01	0.14	0.00	0.25	0.17	0.09
Queue Length 95th (ft)	1	0	0	0	15	8
Control Delay (s)	8.2	0.0	7.7	0.0	14.0	11.6
Lane LOS	A		A		B	B
Approach Delay (s)	0.4		0.1		14.0	11.6
Approach LOS					B	B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

2022 Total PM.syn

4: El Camino Drive/Gysel Place & Dell Range Boulevard

12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Volume (veh/h)	40	447	54	1	319	8	40	8	0	4	4	23
Future Volume (Veh/h)	40	447	54	1	319	8	40	8	0	4	4	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.87	0.85	0.25	0.80	0.92	0.73	0.92	0.92	0.92	0.92	0.25
Hourly flow rate (vph)	160	514	64	4	399	9	55	9	0	4	4	92
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		840										
pX, platoon unblocked				0.93			0.93	0.93	0.93	0.93	0.93	
vC, conflicting volume	408			578			1367	1282	546	1250	1310	404
vC1, stage 1 conf vol							866	866		412	412	
vC2, stage 2 conf vol							501	416		838	898	
vCu, unblocked vol	408			506			1357	1265	471	1230	1295	404
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			76	97	100	99	99	86
cM capacity (veh/h)	1151			982			225	273	550	274	275	647

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	160	578	4	408	64	100
Volume Left	160	0	4	0	55	4
Volume Right	0	64	0	9	0	92
cSH	1151	1700	982	1700	231	584
Volume to Capacity	0.14	0.34	0.00	0.24	0.28	0.17
Queue Length 95th (ft)	12	0	0	0	27	15
Control Delay (s)	8.6	0.0	8.7	0.0	26.5	12.4
Lane LOS	A		A		D	B
Approach Delay (s)	1.9		0.1		26.5	12.4
Approach LOS					D	B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

2040 Background AM.syn

4: El Camino Drive/Gysel Place & Dell Range Boulevard

12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Volume (veh/h)	0	180	29	1	504	0	64	0	0	0	0	0
Future Volume (Veh/h)	0	180	29	1	504	0	64	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	196	32	1	548	0	70	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	548			228			762	762	212	746	778	548
vC1, stage 1 conf vol							212	212		550	550	
vC2, stage 2 conf vol							550	550		196	228	
vCu, unblocked vol	548			228			762	762	212	746	778	548
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			86	100	100	100	100	100
cM capacity (veh/h)	1021			1340			485	481	828	488	478	536

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	228	1	548	70	0
Volume Left	0	0	1	0	70	0
Volume Right	0	32	0	0	0	0
cSH	1700	1700	1340	1700	485	1700
Volume to Capacity	0.00	0.13	0.00	0.32	0.14	0.00
Queue Length 95th (ft)	0	0	0	0	13	0
Control Delay (s)	0.0	0.0	7.7	0.0	13.7	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		0.0		13.7	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2040 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	1	554	68	1	389	0	51	0	0	0	0	1
Future Volume (Veh/h)	1	554	68	1	389	0	51	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	602	74	1	423	0	55	0	0	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	423			676			1067	1066	639	1029	1103	423
vC1, stage 1 conf vol							641	641		425	425	
vC2, stage 2 conf vol							426	425		604	678	
vCu, unblocked vol	423			676			1067	1066	639	1029	1103	423
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			86	100	100	100	100	100
cM capacity (veh/h)	1136			915			399	406	476	414	393	631

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	1	676	1	423	55	1
Volume Left	1	0	1	0	55	0
Volume Right	0	74	0	0	0	1
cSH	1136	1700	915	1700	399	631
Volume to Capacity	0.00	0.40	0.00	0.25	0.14	0.00
Queue Length 95th (ft)	0	0	0	0	12	0
Control Delay (s)	8.2	0.0	8.9	0.0	15.5	10.7
Lane LOS	A		A		C	B
Approach Delay (s)	0.0		0.0		15.5	10.7
Approach LOS					C	B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2040 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	7	337	29	14	744	7	64	0	7	13	0	13
Future Volume (Veh/h)	7	337	29	14	744	7	64	0	7	13	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	366	32	15	809	8	70	0	8	14	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		840										
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	817			398			1251	1245	382	1233	1257	813
vC1, stage 1 conf vol							398	398		843	843	
vC2, stage 2 conf vol							853	847		390	414	
vCu, unblocked vol	817			334			1237	1230	317	1218	1243	813
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			77	100	99	96	100	96
cM capacity (veh/h)	811			1158			302	332	684	321	335	378

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	8	398	15	817	78	28
Volume Left	8	0	15	0	70	14
Volume Right	0	32	0	8	8	14
cSH	811	1700	1158	1700	321	347
Volume to Capacity	0.01	0.23	0.01	0.48	0.24	0.08
Queue Length 95th (ft)	1	0	1	0	23	7
Control Delay (s)	9.5	0.0	8.1	0.0	19.8	16.3
Lane LOS	A		A		C	C
Approach Delay (s)	0.2		0.1		19.8	16.3
Approach LOS					C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: El Camino Drive/Gysel Place & Dell Range Boulevard

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Volume (veh/h)	20	924	68	17	708	19	51	0	19	16	0	17
Future Volume (Veh/h)	20	924	68	17	708	19	51	0	19	16	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	1004	74	18	770	21	55	0	21	17	0	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		840										
pX, platoon unblocked				0.46			0.46	0.46	0.46	0.46	0.46	
vC, conflicting volume	791			1078			1909	1912	1041	1886	1938	780
vC1, stage 1 conf vol							1085	1085		816	816	
vC2, stage 2 conf vol							824	827		1069	1122	
vCu, unblocked vol	791			573			2398	2405	492	2347	2463	780
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			68	100	92	89	100	95
cM capacity (veh/h)	829			455			169	176	263	161	158	395

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	1078	18	791	76	35
Volume Left	22	0	18	0	55	17
Volume Right	0	74	0	21	21	18
cSH	829	1700	455	1700	188	231
Volume to Capacity	0.03	0.63	0.04	0.47	0.40	0.15
Queue Length 95th (ft)	2	0	3	0	45	13
Control Delay (s)	9.5	0.0	13.2	0.0	36.6	23.3
Lane LOS	A		B		E	C
Approach Delay (s)	0.2		0.3		36.6	23.3
Approach LOS					E	C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2017 Existing AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	0	134	0	0	381	0	0	0	0	1	0	1
Future Volume (Veh/h)	0	134	0	0	381	0	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.71	0.92	0.92	0.96	0.92	0.92	0.92	0.92	0.25	0.92	0.25
Hourly flow rate (vph)	0	189	0	0	397	0	0	0	0	4	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	397			189			590	586	189	586	586	397
vC1, stage 1 conf vol							189	189		397	397	
vC2, stage 2 conf vol							401	397		189	189	
vCu, unblocked vol	397			189			590	586	189	586	586	397
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	99
cM capacity (veh/h)	1162			1385			577	559	853	582	559	652

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	189	397	0	8
Volume Left	0	0	0	4
Volume Right	0	0	0	4
cSH	1162	1385	1700	615
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	10.9
Lane LOS			A	B
Approach Delay (s)	0.0	0.0	0.0	10.9
Approach LOS			A	B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2017 Existing PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Volume (veh/h)	1	412	0	0	294	0	1	0	0	0	0	0
Future Volume (Veh/h)	1	412	0	0	294	0	1	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.90	0.92	0.92	0.75	0.92	0.25	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	458	0	0	392	0	4	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	392			458			858	858	458	858	858	392
vC1, stage 1 conf vol							466	466		392	392	
vC2, stage 2 conf vol							392	392		466	466	
vCu, unblocked vol	392			458			858	858	458	858	858	392
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1167			1103			480	473	603	481	474	657

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	462	392	4	0
Volume Left	4	0	4	0
Volume Right	0	0	0	0
cSH	1167	1103	480	1700
Volume to Capacity	0.00	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.1	0.0	12.6	0.0
Lane LOS	A		B	A
Approach Delay (s)	0.1	0.0	12.6	0.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2022 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Volume (veh/h)	0	143	0	0	405	0	0	0	0	1	0	1
Future Volume (Veh/h)	0	143	0	0	405	0	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.71	0.92	0.92	0.96	0.92	0.92	0.92	0.92	0.25	0.92	0.25
Hourly flow rate (vph)	0	201	0	0	422	0	0	0	0	4	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	422			201			627	623	201	623	623	422
vC1, stage 1 conf vol							201	201		422	422	
vC2, stage 2 conf vol							426	422		201	201	
vCu, unblocked vol	422			201			627	623	201	623	623	422
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	99
cM capacity (veh/h)	1137			1371			558	544	840	563	544	632

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	201	422	0	8
Volume Left	0	0	0	4
Volume Right	0	0	0	4
cSH	1137	1371	1700	596
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	11.1
Lane LOS			A	B
Approach Delay (s)	0.0	0.0	0.0	11.1
Approach LOS			A	B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2022 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	1	438	0	0	313	0	1	0	0	0	0	0
Future Volume (Veh/h)	1	438	0	0	313	0	1	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.90	0.92	0.92	0.75	0.92	0.25	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	487	0	0	417	0	4	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	417			487			912	912	487	912	912	417
vC1, stage 1 conf vol							495	495		417	417	
vC2, stage 2 conf vol							417	417		495	495	
vCu, unblocked vol	417			487			912	912	487	912	912	417
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1142			1076			459	456	581	460	457	636

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	491	417	4	0
Volume Left	4	0	4	0
Volume Right	0	0	0	0
cSH	1142	1076	459	1700
Volume to Capacity	0.00	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.1	0.0	12.9	0.0
Lane LOS	A		B	A
Approach Delay (s)	0.1	0.0	12.9	0.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2022 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	0	157	0	0	410	0	0	0	0	1	0	1
Future Volume (Veh/h)	0	157	0	0	410	0	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.71	0.92	0.92	0.96	0.92	0.92	0.92	0.92	0.25	0.92	0.25
Hourly flow rate (vph)	0	221	0	0	427	0	0	0	0	4	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	427			221			652	648	221	648	648	427
vC1, stage 1 conf vol							221	221		427	427	
vC2, stage 2 conf vol							431	427		221	221	
vCu, unblocked vol	427			221			652	648	221	648	648	427
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	99
cM capacity (veh/h)	1132			1348			550	537	819	555	537	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	221	427	0	8
Volume Left	0	0	0	4
Volume Right	0	0	0	4
cSH	1132	1348	1700	589
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	11.2
Lane LOS			A	B
Approach Delay (s)	0.0	0.0	0.0	11.2
Approach LOS			A	B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Volume (veh/h)	1	447	0	0	328	0	1	0	0	0	0	0
Future Volume (Veh/h)	1	447	0	0	328	0	1	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.90	0.92	0.92	0.75	0.92	0.25	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	497	0	0	437	0	4	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	437			497			942	942	497	942	942	437
vC1, stage 1 conf vol							505	505		437	437	
vC2, stage 2 conf vol							437	437		505	505	
vCu, unblocked vol	437			497			942	942	497	942	942	437
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1123			1067			449	447	573	450	448	620

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	501	437	4	0
Volume Left	4	0	4	0
Volume Right	0	0	0	0
cSH	1123	1067	449	1700
Volume to Capacity	0.00	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	0.1	0.0	13.1	0.0
Lane LOS	A		B	A
Approach Delay (s)	0.1	0.0	13.1	0.0
Approach LOS			B	A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Volume (veh/h)	0	178	0	0	507	5	0	0	0	2	0	1
Future Volume (Veh/h)	0	178	0	0	507	5	0	0	0	2	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	193	0	0	551	5	0	0	0	2	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	556			193			748	749	193	746	746	554
vC1, stage 1 conf vol							193	193		554	554	
vC2, stage 2 conf vol							554	556		193	193	
vCu, unblocked vol	556			193			748	749	193	746	746	554
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1015			1380			485	481	849	487	482	532

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	193	556	0	3
Volume Left	0	0	0	2
Volume Right	0	5	0	1
cSH	1015	1380	1700	501
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	12.2
Lane LOS			A	B
Approach Delay (s)	0.0	0.0	0.0	12.2
Approach LOS			A	B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 2040 Background PM.syn
5: Dell Range Boulevard & James Drive 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	1	548	0	0	391	10	1	0	0	4	0	0
Future Volume (Veh/h)	1	548	0	0	391	10	1	0	0	4	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	596	0	0	425	11	1	0	0	4	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	436			596			1028	1034	596	1028	1028	430
vC1, stage 1 conf vol							598	598		430	430	
vC2, stage 2 conf vol							430	436		598	598	
vCu, unblocked vol	436			596			1028	1034	596	1028	1028	430
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1124			980			416	418	504	416	419	625

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	597	436	1	4
Volume Left	1	0	1	4
Volume Right	0	11	0	0
cSH	1124	980	416	416
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	13.7	13.7
Lane LOS	A		B	B
Approach Delay (s)	0.0	0.0	13.7	13.7
Approach LOS			B	B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 2040 Total AM.syn
5: Dell Range Boulevard & James Drive 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Volume (veh/h)	7	348	0	0	754	5	0	0	0	2	0	14
Future Volume (Veh/h)	7	348	0	0	754	5	0	0	0	2	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	378	0	0	820	5	0	0	0	2	0	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	825			378			1229	1219	378	1216	1216	822
vC1, stage 1 conf vol							394	394		822	822	
vC2, stage 2 conf vol							835	825		394	394	
vCu, unblocked vol	825			378			1229	1219	378	1216	1216	822
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	99	100	96
cM capacity (veh/h)	805			1180			312	344	669	334	350	374

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	8	378	0	825	0	17
Volume Left	8	0	0	0	0	2
Volume Right	0	0	0	5	0	15
cSH	805	1700	1700	1700	1700	368
Volume to Capacity	0.01	0.22	0.00	0.49	0.00	0.05
Queue Length 95th (ft)	1	0	0	0	0	4
Control Delay (s)	9.5	0.0	0.0	0.0	0.0	15.2
Lane LOS	A				A	C
Approach Delay (s)	0.2		0.0		0.0	15.2
Approach LOS					A	C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Dell Range Boulevard & James Drive

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Volume (veh/h)	20	934	0	0	728	10	1	0	0	4	0	16
Future Volume (Veh/h)	20	934	0	0	728	10	1	0	0	4	0	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	1015	0	0	791	11	1	0	0	4	0	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	802			1015			1867	1861	1015	1856	1856	796
vC1, stage 1 conf vol							1059	1059		796	796	
vC2, stage 2 conf vol							808	802		1059	1059	
vCu, unblocked vol	802			1015			1867	1861	1015	1856	1856	796
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	98	100	96
cM capacity (veh/h)	822			683			208	235	289	217	240	387

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	22	1015	0	802	1	21
Volume Left	22	0	0	0	1	4
Volume Right	0	0	0	11	0	17
cSH	822	1700	1700	1700	208	337
Volume to Capacity	0.03	0.60	0.00	0.47	0.00	0.06
Queue Length 95th (ft)	2	0	0	0	0	5
Control Delay (s)	9.5	0.0	0.0	0.0	22.4	16.4
Lane LOS	A				C	C
Approach Delay (s)	0.2		0.0		22.4	16.4
Approach LOS					C	C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Whitney Road & Dell Range Boulevard

2017 Existing AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Volume (veh/h)	11	64	44	4	208	3	81	22	2	2	110	80
Future Volume (Veh/h)	11	64	44	4	208	3	81	22	2	2	110	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.80	0.61	0.50	0.84	0.25	0.72	0.79	0.25	0.50	0.79	0.80
Hourly flow rate (vph)	16	80	72	8	248	12	113	28	8	4	139	100
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	260			152			588	424	116	404	454	254
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	260			152			588	424	116	404	454	254
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			60	95	99	99	72	87
cM capacity (veh/h)	1304			1429			283	513	936	522	493	785

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	16	152	268	149	243
Volume Left	16	0	8	113	4
Volume Right	0	72	12	8	100
cSH	1304	1700	1429	323	583
Volume to Capacity	0.01	0.09	0.01	0.46	0.42
Queue Length 95th (ft)	1	0	0	58	51
Control Delay (s)	7.8	0.0	0.3	25.4	15.5
Lane LOS	A		A	D	C
Approach Delay (s)	0.7		0.3	25.4	15.5
Approach LOS				D	C

Intersection Summary			
Average Delay	9.4		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2017 Existing PM.syn

6: Whitney Road & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Volume (veh/h)	62	224	110	3	139	4	94	78	3	2	36	44
Future Volume (Veh/h)	62	224	110	3	139	4	94	78	3	2	36	44
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.92	0.79	0.75	0.83	0.50	0.78	0.81	0.38	0.50	0.69	0.73
Hourly flow rate (vph)	72	243	139	4	167	8	121	96	8	4	52	60
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	175			382			722	640	312	622	705	171
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	175			382			722	640	312	622	705	171
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			55	74	99	99	85	93
cM capacity (veh/h)	1401			1176			270	372	728	304	341	873

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	72	382	179	225	116
Volume Left	72	0	4	121	4
Volume Right	0	139	8	8	60
cSH	1401	1700	1176	314	495
Volume to Capacity	0.05	0.22	0.00	0.72	0.23
Queue Length 95th (ft)	4	0	0	130	23
Control Delay (s)	7.7	0.0	0.2	40.9	14.5
Lane LOS	A		A	E	B
Approach Delay (s)	1.2		0.2	40.9	14.5
Approach LOS				E	B

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2022 Background AM.syn

6: Whitney Road & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Volume (veh/h)	12	68	47	4	221	3	86	23	2	2	117	85
Future Volume (Veh/h)	12	68	47	4	221	3	86	23	2	2	117	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.80	0.61	0.50	0.84	0.25	0.72	0.79	0.25	0.50	0.79	0.80
Hourly flow rate (vph)	17	85	77	8	263	12	119	29	8	4	148	106
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	275			162			622	448	124	426	481	269
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			162			622	448	124	426	481	269
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			54	94	99	99	69	86
cM capacity (veh/h)	1288			1417			257	496	927	503	475	770

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	17	162	283	156	258
Volume Left	17	0	8	119	4
Volume Right	0	77	12	8	106
cSH	1288	1700	1417	295	565
Volume to Capacity	0.01	0.10	0.01	0.53	0.46
Queue Length 95th (ft)	1	0	0	72	59
Control Delay (s)	7.8	0.0	0.3	30.2	16.6
Lane LOS	A		A	D	C
Approach Delay (s)	0.7		0.3	30.2	16.6
Approach LOS				D	C

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Whitney Road & Dell Range Boulevard

2022 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱			✥			✥			✥	
Traffic Volume (veh/h)	66	238	117	3	148	4	100	83	3	2	38	47
Future Volume (Veh/h)	66	238	117	3	148	4	100	83	3	2	38	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.92	0.79	0.75	0.83	0.50	0.78	0.81	0.38	0.50	0.69	0.73
Hourly flow rate (vph)	77	259	148	4	178	8	128	102	8	4	55	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	186			407			768	681	333	662	751	182
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186			407			768	681	333	662	751	182
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			48	71	99	99	83	93
cM capacity (veh/h)	1388			1152			245	351	709	275	320	861

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	77	407	190	238	123
Volume Left	77	0	4	128	4
Volume Right	0	148	8	8	64
cSH	1388	1700	1152	288	471
Volume to Capacity	0.06	0.24	0.00	0.83	0.26
Queue Length 95th (ft)	4	0	0	170	26
Control Delay (s)	7.7	0.0	0.2	56.8	15.3
Lane LOS	A		A	F	C
Approach Delay (s)	1.2		0.2	56.8	15.3
Approach LOS				F	C

Intersection Summary			
Average Delay	15.5		
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Whitney Road & Dell Range Boulevard

2022 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱			✥		↰	↑↱			✥	
Traffic Volume (veh/h)	12	82	47	4	226	3	86	23	2	2	117	85
Future Volume (Veh/h)	12	82	47	4	226	3	86	23	2	2	117	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.80	0.61	0.50	0.84	0.25	0.72	0.79	0.25	0.50	0.79	0.80
Hourly flow rate (vph)	17	103	77	8	269	12	119	29	8	4	148	106
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	281			180			646	472	142	450	505	275
vC1, stage 1 conf vol							176	176		291	291	
vC2, stage 2 conf vol							471	297		160	214	
vCu, unblocked vol	281			180			646	472	142	450	505	275
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			66	95	99	99	75	86
cM capacity (veh/h)	1282			1396			354	600	906	642	596	764

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	17	180	289	119	37	258
Volume Left	17	0	8	119	0	4
Volume Right	0	77	12	0	8	106
cSH	1282	1700	1396	354	647	656
Volume to Capacity	0.01	0.11	0.01	0.34	0.06	0.39
Queue Length 95th (ft)	1	0	0	36	5	47
Control Delay (s)	7.8	0.0	0.3	20.3	10.9	14.0
Lane LOS	A		A	C	B	B
Approach Delay (s)	0.7		0.3	18.0		14.0
Approach LOS				C		B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Whitney Road & Dell Range Boulevard

2022 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥		↰	↱			✥	
Traffic Volume (veh/h)	66	247	117	3	163	4	100	83	3	2	38	47
Future Volume (Veh/h)	66	247	117	3	163	4	100	83	3	2	38	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.92	0.79	0.75	0.83	0.50	0.78	0.81	0.38	0.50	0.69	0.73
Hourly flow rate (vph)	77	268	148	4	196	8	128	102	8	4	55	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	204			416			796	708	342	689	778	200
vC1, stage 1 conf vol							496	496		208	208	
vC2, stage 2 conf vol							300	212		481	570	
vCu, unblocked vol	204			416			796	708	342	689	778	200
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			70	78	99	99	88	92
cM capacity (veh/h)	1368			1143			421	473	701	402	446	841

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total	77	416	208	128	110	123
Volume Left	77	0	4	128	0	4
Volume Right	0	148	8	0	8	64
cSH	1368	1700	1143	421	484	587
Volume to Capacity	0.06	0.24	0.00	0.30	0.23	0.21
Queue Length 95th (ft)	4	0	0	32	22	20
Control Delay (s)	7.8	0.0	0.2	17.2	14.6	12.7
Lane LOS	A		A	C	B	B
Approach Delay (s)	1.2		0.2	16.0		12.7
Approach LOS				C		B

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

HCM 2010 Roundabout
6: Whitney Road & Dell Range Boulevard

2022 Total AM Roundabout_6.syn
12/12/2017

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	197	289	156	258
Demand Flow Rate, veh/h	201	294	159	263
Vehicles Circulating, veh/h	163	168	126	403
Vehicles Exiting, veh/h	503	117	238	59
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.9	7.1	5.2	9.2
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	201	294	159	263
Cap Entry Lane, veh/h	960	955	996	755
Entry HV Adj Factor	0.980	0.982	0.984	0.981
Flow Entry, veh/h	197	289	156	258
Cap Entry, veh/h	941	938	980	741
V/C Ratio	0.209	0.308	0.160	0.348
Control Delay, s/veh	5.9	7.1	5.2	9.2
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	2

HCM 2010 Roundabout — 2022 Total PM Roundabout_6.syn
6: Whitney Road & Dell Range Boulevard — 12/12/2017

Intersection				
Intersection Delay, s/veh	7.3			
Intersection LOS	A			

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	162	283	143	290
Demand Flow Rate, veh/h	165	288	146	295
Vehicles Circulating, veh/h	182	155	109	394
Vehicles Exiting, veh/h	507	100	238	49
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.6	6.9	4.9	9.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	165	288	146	295
Cap Entry Lane, veh/h	942	968	1013	762
Entry HV Adj Factor	0.983	0.981	0.982	0.982
Flow Entry, veh/h	162	283	143	290
Cap Entry, veh/h	926	949	995	748
V/C Ratio	0.175	0.298	0.144	0.387
Control Delay, s/veh	5.6	6.9	4.9	9.8
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	2

HCM Unsignalized Intersection Capacity Analysis — 2040 Background AM.syn
6: Whitney Road & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Volume (veh/h)	15	85	59	5	277	4	108	29	3	3	146	106
Future Volume (Veh/h)	15	85	59	5	277	4	108	29	3	3	146	106
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	92	64	5	301	4	117	32	3	3	159	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	305			156			664	471	124	456	501	303
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	305			156			664	471	124	456	501	303
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			49	93	100	99	66	84
cM capacity (veh/h)	1256			1424			229	483	927	481	464	737

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	16	156	310	152	277
Volume Left	16	0	5	117	3
Volume Right	0	64	4	3	115
cSH	1256	1700	1424	262	549
Volume to Capacity	0.01	0.09	0.00	0.58	0.50
Queue Length 95th (ft)	1	0	0	83	71
Control Delay (s)	7.9	0.0	0.2	36.1	18.1
Lane LOS	A		A	E	C
Approach Delay (s)	0.7		0.2	36.1	18.1
Approach LOS				E	C

Intersection Summary			
Average Delay	11.7		
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2040 Background PM.syn
6: Whitney Road & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱			✣			✣			✣	
Traffic Volume (veh/h)	83	298	146	4	185	5	125	104	4	3	48	59
Future Volume (Veh/h)	83	298	146	4	185	5	125	104	4	3	48	59
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	90	324	159	4	201	5	136	113	4	3	52	64
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	206			483			885	798	404	776	874	204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	206			483			885	798	404	776	874	204
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			31	62	99	99	81	92
cM capacity (veh/h)	1365			1080			198	297	647	209	268	837

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	90	483	210	253	119
Volume Left	90	0	4	136	3
Volume Right	0	159	5	4	64
cSH	1365	1700	1080	236	418
Volume to Capacity	0.07	0.28	0.00	1.07	0.28
Queue Length 95th (ft)	5	0	0	272	29
Control Delay (s)	7.8	0.0	0.2	124.3	17.0
Lane LOS	A		A	F	C
Approach Delay (s)	1.2		0.2	124.3	17.0
Approach LOS				F	C

Intersection Summary			
Average Delay	29.6		
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

HCM 2010 Signalized Intersection Summary — 2040 Total AM.syn
6: Whitney Road & Dell Range Boulevard — 12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	15	148	59	5	314	41	108	168	3	66	384	106
Future Volume (veh/h)	15	148	59	5	314	41	108	168	3	66	384	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	16	161	64	5	341	45	117	183	3	72	417	115
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	329	131	333	418	55	375	834	14	693	642	177
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	993	1069	425	1151	1358	179	868	1539	25	1193	1184	327
Grp Volume(v), veh/h	16	0	225	5	0	386	117	0	186	72	0	532
Grp Sat Flow(s),veh/h/ln	993	0	1494	1151	0	1537	868	0	1564	1193	0	1511
Q Serve(g_s), s	0.9	0.0	7.4	0.2	0.0	13.9	6.6	0.0	3.7	2.0	0.0	14.9
Cycle Q Clear(g_c), s	14.8	0.0	7.4	7.6	0.0	13.9	21.5	0.0	3.7	5.7	0.0	14.9
Prop In Lane	1.00		0.28	1.00		0.12	1.00		0.02	1.00		0.22
Lane Grp Cap(c), veh/h	195	0	460	333	0	473	375	0	848	693	0	819
V/C Ratio(X)	0.08	0.00	0.49	0.02	0.00	0.82	0.31	0.00	0.22	0.10	0.00	0.65
Avail Cap(c_a), veh/h	245	0	535	391	0	551	375	0	848	693	0	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.87	0.00	0.87	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	16.9	20.0	0.0	19.2	17.3	0.0	7.1	8.6	0.0	9.7
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.0	0.0	8.1	1.9	0.0	0.5	0.3	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.1	0.1	0.0	7.0	1.8	0.0	1.7	0.7	0.0	7.0
LnGrp Delay(d),s/veh	26.2	0.0	17.7	20.0	0.0	27.3	19.2	0.0	7.7	8.9	0.0	13.7
LnGrp LOS	C		B	C		C	B		A	A		B
Approach Vol, veh/h		241			391			303			604	
Approach Delay, s/veh		18.3			27.2			12.1			13.1	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.0		23.0		37.0		23.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		29.5		21.5		29.5		21.5
Max Q Clear Time (g_c+I1), s		23.5		16.8		16.9		15.9
Green Ext Time (p_c), s		2.8		1.6		4.6		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	376	146	4	279	99	125	462	4	81	345	59
Future Volume (veh/h)	83	376	146	4	279	99	125	462	4	81	345	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	90	409	159	4	303	108	136	502	4	88	375	64
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	447	174	167	459	163	316	676	5	267	568	97
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	971	1076	418	840	1105	394	946	1554	12	889	1306	223
Grp Volume(v), veh/h	90	0	568	4	0	411	136	0	506	88	0	439
Grp Sat Flow(s),veh/h/ln	971	0	1495	840	0	1499	946	0	1566	889	0	1529
Q Serve(g_s), s	4.9	0.0	21.5	0.3	0.0	13.3	8.0	0.0	16.2	5.5	0.0	13.6
Cycle Q Clear(g_c), s	18.2	0.0	21.5	21.8	0.0	13.3	21.6	0.0	16.2	21.7	0.0	13.6
Prop In Lane	1.00		0.28	1.00		0.26	1.00		0.01	1.00		0.15
Lane Grp Cap(c), veh/h	308	0	620	167	0	622	316	0	681	267	0	665
V/C Ratio(X)	0.29	0.00	0.92	0.02	0.00	0.66	0.43	0.00	0.74	0.33	0.00	0.66
Avail Cap(c_a), veh/h	318	0	635	176	0	637	316	0	681	267	0	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.45	0.00	0.45	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	16.6	26.8	0.0	14.1	22.0	0.0	14.1	23.2	0.0	13.4
Incr Delay (d2), s/veh	0.5	0.0	17.9	0.1	0.0	2.5	1.9	0.0	3.3	3.3	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	11.9	0.1	0.0	5.9	2.2	0.0	7.5	1.6	0.0	6.7
LnGrp Delay(d),s/veh	22.0	0.0	34.4	26.9	0.0	16.6	23.9	0.0	17.4	26.5	0.0	18.5
LnGrp LOS	C		C	C		B	C		B	C		B
Approach Vol, veh/h		658			415			642			527	
Approach Delay, s/veh		32.7			16.7			18.8			19.8	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.6		29.4		30.6		29.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		25.5		25.5		25.5		25.5
Max Q Clear Time (g_c+I1), s		23.6		23.5		23.7		23.8
Green Ext Time (p_c), s		1.3		1.3		1.2		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	19.5
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	241	391	303	604
Demand Flow Rate, veh/h	245	399	309	615
Vehicles Circulating, veh/h	503	322	253	472
Vehicles Exiting, veh/h	584	240	495	249
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.1	11.1	8.2	34.4
Approach LOS	B	B	A	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	245	399	309	615
Cap Entry Lane, veh/h	683	819	877	705
Entry HV Adj Factor	0.983	0.980	0.982	0.982
Flow Entry, veh/h	241	391	303	604
Cap Entry, veh/h	672	803	861	692
V/C Ratio	0.359	0.487	0.352	0.873
Control Delay, s/veh	10.1	11.1	8.2	34.4
LOS	B	B	A	D
95th %tile Queue, veh	2	3	2	11

HCM 2010 Roundabout
6: Whitney Road & Dell Range Boulevard

2040 Total PM_Roundabout 6_18_19_20.syn
12/12/2017

Intersection				
Intersection Delay, s/veh	47.6			
Intersection LOS	E			

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	658	415	642	527
Demand Flow Rate, veh/h	671	423	655	537
Vehicles Circulating, veh/h	476	743	599	452
Vehicles Exiting, veh/h	513	511	548	714
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	48.5	31.5	77.8	22.3
Approach LOS	E	D	F	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	671	423	655	537
Cap Entry Lane, veh/h	702	537	621	719
Entry HV Adj Factor	0.980	0.981	0.980	0.980
Flow Entry, veh/h	658	415	642	527
Cap Entry, veh/h	688	527	608	705
V/C Ratio	0.956	0.787	1.055	0.747
Control Delay, s/veh	48.5	31.5	77.8	22.3
LOS	E	D	F	C
95th %tile Queue, veh	14	7	18	7

HCM 2010 TWSC
7: Dell Range Boulevard & US-30

2017 Existing AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	91	0	1	378	198	0	2	0	62	0	10
Future Vol, veh/h	7	91	0	1	378	198	0	2	0	62	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	29	81	92	25	79	87	92	50	92	78	92	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	112	0	4	478	228	0	4	0	79	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	478	0	0	112	0	0	657	647	112	649	647	478
Stage 1	-	-	-	-	-	-	161	161	-	486	486	-
Stage 2	-	-	-	-	-	-	496	486	-	163	161	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1084	-	-	1478	-	0	378	390	941	383	390	587
Stage 1	-	-	-	-	-	0	841	765	-	563	551	-
Stage 2	-	-	-	-	-	0	556	551	-	839	765	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1084	-	-	1478	-	-	358	380	941	373	380	587
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	380	-	373	380	-
Stage 1	-	-	-	-	-	-	822	748	-	551	550	-
Stage 2	-	-	-	-	-	-	536	550	-	816	748	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	14.6	16.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	380	1084	-	-	1478	-	402
HCM Lane V/C Ratio	0.011	0.022	-	-	0.003	-	0.247
HCM Control Delay (s)	14.6	8.4	-	-	7.4	-	16.9
HCM Lane LOS	B	A	-	-	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	1

Intersection												
Int Delay, s/veh	7.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↑	↱		✥			✥	
Traffic Vol, veh/h	7	306	0	0	147	140	1	1	0	209	4	5
Future Vol, veh/h	7	306	0	0	147	140	1	1	0	209	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	89	92	25	83	78	25	25	92	86	50	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	344	0	0	177	179	4	4	0	243	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	344	0	0	553	545	344	547	545	177
Stage 1	-	-	-	-	-	-	368	368	-	177	177	-
Stage 2	-	-	-	-	-	-	185	177	-	370	368	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1399	-	-	1215	-	0	444	446	699	448	446	866
Stage 1	-	-	-	-	-	0	652	621	-	825	753	-
Stage 2	-	-	-	-	-	0	817	753	-	650	621	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1399	-	-	1215	-	-	431	442	699	442	442	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	431	442	-	442	442	-
Stage 1	-	-	-	-	-	-	646	616	-	818	753	-
Stage 2	-	-	-	-	-	-	801	753	-	640	616	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	13.4	23.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	436	1399	-	-	1215	-	449
HCM Lane V/C Ratio	0.018	0.009	-	-	-	-	0.577
HCM Control Delay (s)	13.4	7.6	-	-	0	-	23.4
HCM Lane LOS	B	A	-	-	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	7	97	0	1	402	211	0	2	0	66	0	11
Future Volume (veh/h)	7	97	0	1	402	211	0	2	0	66	0	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	24	120	0	4	509	243	0	4	0	85	0	22
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.29	0.81	0.92	0.25	0.79	0.87	0.92	0.50	0.92	0.78	0.92	0.50
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	410	1773	0	809	1129	537	0	416	0	352	6	76
Arrive On Green	0.02	0.59	0.00	0.01	0.58	0.58	0.00	0.26	0.00	0.26	0.00	0.26
Sat Flow, veh/h	1494	3059	0	1494	1962	933	0	1569	0	1083	23	286
Grp Volume(v), veh/h	24	120	0	4	386	366	0	4	0	107	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1404	0	1569	0	1393	0	0
Q Serve(g_s), s	0.7	1.7	0.0	0.1	14.8	15.0	0.0	0.2	0.0	5.6	0.0	0.0
Cycle Q Clear(g_c), s	0.7	1.7	0.0	0.1	14.8	15.0	0.0	0.2	0.0	6.1	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.66	0.00		0.00	0.79		0.21
Lane Grp Cap(c), veh/h	410	1773	0	809	858	808	0	416	0	434	0	0
V/C Ratio(X)	0.06	0.07	0.00	0.00	0.45	0.45	0.00	0.01	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	486	1773	0	913	858	808	0	416	0	434	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.3	8.6	0.0	8.8	12.2	12.2	0.0	27.1	0.0	29.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	1.7	1.8	0.0	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.0	0.0	6.5	6.2	0.0	0.1	0.0	2.5	0.0	0.0
LnGrp Delay(d),s/veh	9.3	8.6	0.0	8.8	13.9	14.0	0.0	27.1	0.0	30.6	0.0	0.0
LnGrp LOS	A	A		A	B	B		C		C		
Approach Vol, veh/h		144			756			4			107	
Approach Delay, s/veh		8.7			13.9			27.1			30.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	5.0	64.0		31.0	6.9	62.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		26.5	7.5	52.5		26.5	7.5	52.5
Max Q Clear Time (g_c+I1), s		2.2	2.1	3.7		8.1	2.7	17.0
Green Ext Time (p_c), s		0.6	0.0	6.9		0.5	0.0	6.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	7	326	0	0	156	149	1	1	0	222	4	5
Future Volume (veh/h)	7	326	0	0	156	149	1	1	0	222	4	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	12	366	0	0	188	191	4	4	0	258	8	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.89	0.92	0.92	0.83	0.78	0.25	0.25	0.92	0.86	0.50	0.62
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	1207	0	399	515	461	414	391	0	738	23	21
Arrive On Green	0.01	0.41	0.00	0.00	0.35	0.35	0.50	0.50	0.00	0.50	0.50	0.50
Sat Flow, veh/h	1494	3059	0	1494	1490	1333	713	775	0	1323	45	41
Grp Volume(v), veh/h	12	366	0	0	188	191	8	0	0	274	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1333	1488	0	0	1409	0	0
Q Serve(g_s), s	0.5	8.3	0.0	0.0	9.4	10.9	0.0	0.0	0.0	11.7	0.0	0.0
Cycle Q Clear(g_c), s	0.5	8.3	0.0	0.0	9.4	10.9	0.3	0.0	0.0	11.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.50		0.00	0.94		0.03
Lane Grp Cap(c), veh/h	330	1207	0	399	515	461	805	0	0	782	0	0
V/C Ratio(X)	0.04	0.30	0.00	0.00	0.36	0.41	0.01	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	406	1207	0	472	515	461	805	0	0	782	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.2	20.2	0.0	0.0	24.5	25.0	12.3	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	2.0	2.7	0.0	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.5	0.0	0.0	4.1	4.4	0.1	0.0	0.0	4.9	0.0	0.0
LnGrp Delay(d),s/veh	20.3	20.8	0.0	0.0	26.5	27.7	12.3	0.0	0.0	16.4	0.0	0.0
LnGrp LOS	C	C			C	C	B			B		
Approach Vol, veh/h		378			379			8			274	
Approach Delay, s/veh		20.8			27.1			12.3			16.4	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.0	0.0	45.0		55.0	5.9	39.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		50.5	5.0	31.0		50.5	6.5	29.5				
Max Q Clear Time (g_c+I1), s		2.3	0.0	10.3		13.9	2.5	12.9				
Green Ext Time (p_c), s		1.8	0.0	4.9		1.8	0.0	4.5				
Intersection Summary												
HCM 2010 Ctrl Delay			21.9									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	7	97	0	1	402	216	0	2	0	80	0	11
Future Volume (veh/h)	7	97	0	1	402	216	0	2	0	80	0	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	24	120	0	4	509	248	0	4	0	103	0	22
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.29	0.81	0.92	0.25	0.79	0.87	0.92	0.50	0.92	0.78	0.92	0.50
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	1773	0	809	1121	544	0	416	0	365	5	65
Arrive On Green	0.02	0.59	0.00	0.01	0.58	0.58	0.00	0.26	0.00	0.26	0.00	0.26
Sat Flow, veh/h	1494	3059	0	1494	1947	945	0	1569	0	1129	20	246
Grp Volume(v), veh/h	24	120	0	4	389	368	0	4	0	125	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1402	0	1569	0	1395	0	0
Q Serve(g_s), s	0.7	1.7	0.0	0.1	15.0	15.1	0.0	0.2	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	1.7	0.0	0.1	15.0	15.1	0.0	0.2	0.0	7.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.67	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	408	1773	0	809	858	807	0	416	0	435	0	0
V/C Ratio(X)	0.06	0.07	0.00	0.00	0.45	0.46	0.00	0.01	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	483	1773	0	913	858	807	0	416	0	435	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.3	8.6	0.0	8.8	12.2	12.2	0.0	27.1	0.0	29.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	1.7	1.9	0.0	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.0	0.0	6.6	6.2	0.0	0.1	0.0	3.0	0.0	0.0
LnGrp Delay(d),s/veh	9.4	8.6	0.0	8.8	13.9	14.1	0.0	27.1	0.0	31.3	0.0	0.0
LnGrp LOS	A	A		A	B	B		C		C		
Approach Vol, veh/h		144			761			4			125	
Approach Delay, s/veh		8.8			14.0			27.1			31.3	
Approach LOS		A			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		31.0	5.0	64.0		31.0	6.9	62.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	7.5	52.5		26.5	7.5	52.5				
Max Q Clear Time (g_c+I1), s		2.2	2.1	3.7		9.2	2.7	17.1				
Green Ext Time (p_c), s		0.7	0.0	7.0		0.6	0.0	6.7				
Intersection Summary												
HCM 2010 Ctrl Delay			15.4									
HCM 2010 LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	7	326	0	0	156	164	1	1	0	231	4	5
Future Volume (veh/h)	7	326	0	0	156	164	1	1	0	231	4	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	12	366	0	0	188	210	4	4	0	269	8	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.58	0.89	0.92	0.92	0.83	0.78	0.25	0.25	0.92	0.86	0.50	0.62
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	1177	0	387	500	448	422	399	0	753	22	20
Arrive On Green	0.01	0.40	0.00	0.00	0.34	0.34	0.51	0.51	0.00	0.51	0.51	0.51
Sat Flow, veh/h	1494	3059	0	1494	1490	1333	714	775	0	1327	43	40
Grp Volume(v), veh/h	12	366	0	0	188	210	8	0	0	285	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1333	1488	0	0	1409	0	0
Q Serve(g_s), s	0.5	8.5	0.0	0.0	9.6	12.4	0.0	0.0	0.0	12.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	8.5	0.0	0.0	9.6	12.4	0.2	0.0	0.0	12.3	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.50		0.00	0.94		0.03
Lane Grp Cap(c), veh/h	301	1177	0	387	500	448	820	0	0	796	0	0
V/C Ratio(X)	0.04	0.31	0.00	0.00	0.38	0.47	0.01	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	377	1177	0	461	500	448	820	0	0	796	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.1	20.9	0.0	0.0	25.2	26.2	11.8	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.0	0.0	2.1	3.5	0.0	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.6	0.0	0.0	4.2	5.0	0.1	0.0	0.0	5.0	0.0	0.0
LnGrp Delay(d),s/veh	21.1	21.6	0.0	0.0	27.4	29.7	11.8	0.0	0.0	16.0	0.0	0.0
LnGrp LOS	C	C			C	C	B			B		
Approach Vol, veh/h		378			398			8			285	
Approach Delay, s/veh		21.5			28.6			11.8			16.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		56.0	0.0	44.0		56.0	5.9	38.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		51.5	5.0	30.0		51.5	6.5	28.5
Max Q Clear Time (g_c+I1), s		2.2	0.0	10.5		14.3	2.5	14.4
Green Ext Time (p_c), s		1.9	0.0	4.9		1.9	0.0	4.3

Intersection Summary		
HCM 2010 Ctrl Delay		22.6
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	9	121	0	1	503	263	0	3	0	83	0	13
Future Volume (veh/h)	9	121	0	1	503	263	0	3	0	83	0	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	10	132	0	1	547	286	0	3	0	90	0	14
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	384	1844	0	827	1152	601	0	384	0	360	4	46
Arrive On Green	0.01	0.62	0.00	0.00	0.61	0.61	0.00	0.25	0.00	0.25	0.00	0.25
Sat Flow, veh/h	1494	3059	0	1494	1895	989	0	1569	0	1194	17	188
Grp Volume(v), veh/h	10	132	0	1	430	403	0	3	0	104	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1394	0	1569	0	1399	0	0
Q Serve(g_s), s	0.3	1.8	0.0	0.0	15.9	16.0	0.0	0.1	0.0	5.7	0.0	0.0
Cycle Q Clear(g_c), s	0.3	1.8	0.0	0.0	15.9	16.0	0.0	0.1	0.0	6.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.71	0.00		0.00	0.87		0.13
Lane Grp Cap(c), veh/h	384	1844	0	827	906	847	0	384	0	410	0	0
V/C Ratio(X)	0.03	0.07	0.00	0.00	0.47	0.48	0.00	0.01	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	478	1844	0	922	906	847	0	384	0	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.6	7.6	0.0	7.6	10.8	10.8	0.0	28.6	0.0	30.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	1.8	1.9	0.0	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.7	0.0	0.0	6.9	6.5	0.0	0.1	0.0	2.5	0.0	0.0
LnGrp Delay(d),s/veh	8.6	7.7	0.0	7.6	12.6	12.7	0.0	28.6	0.0	32.3	0.0	0.0
LnGrp LOS	A	A		A	B	B		C		C		
Approach Vol, veh/h		142			834			3			104	
Approach Delay, s/veh		7.7			12.6			28.6			32.3	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.0	4.6	66.4		29.0	5.7	65.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		24.5	6.5	55.5		24.5	7.5	54.5
Max Q Clear Time (g_c+I1), s		2.1	2.0	3.8		8.0	2.3	18.0
Green Ext Time (p_c), s		0.5	0.0	8.0		0.4	0.0	7.7

Intersection Summary		
HCM 2010 Ctrl Delay		13.9
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	9	407	0	0	196	186	1	1	0	278	5	7
Future Volume (veh/h)	9	407	0	0	196	186	1	1	0	278	5	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	10	442	0	0	213	202	1	1	0	302	5	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	1177	0	347	503	450	423	400	0	767	12	18
Arrive On Green	0.01	0.39	0.00	0.00	0.34	0.34	0.51	0.51	0.00	0.51	0.51	0.51
Sat Flow, veh/h	1494	3059	0	1494	1490	1333	716	777	0	1353	22	36
Grp Volume(v), veh/h	10	442	0	0	213	202	2	0	0	315	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1333	1493	0	0	1411	0	0
Q Serve(g_s), s	0.4	10.5	0.0	0.0	11.0	11.8	0.0	0.0	0.0	13.9	0.0	0.0
Cycle Q Clear(g_c), s	0.4	10.5	0.0	0.0	11.0	11.8	0.1	0.0	0.0	13.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.50		0.00	0.96		0.03
Lane Grp Cap(c), veh/h	303	1177	0	347	503	450	823	0	0	797	0	0
V/C Ratio(X)	0.03	0.38	0.00	0.00	0.42	0.45	0.00	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	367	1177	0	420	503	450	823	0	0	797	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.9	21.5	0.0	0.0	25.6	25.8	11.8	0.0	0.0	15.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	2.6	3.2	0.0	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.4	0.0	0.0	4.9	4.7	0.0	0.0	0.0	5.7	0.0	0.0
LnGrp Delay(d),s/veh	21.0	22.4	0.0	0.0	28.2	29.0	11.8	0.0	0.0	16.6	0.0	0.0
LnGrp LOS	C	C			C	C	B			B		
Approach Vol, veh/h		452			415			2			315	
Approach Delay, s/veh		22.4			28.6			11.8			16.6	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		56.0	0.0	44.0		56.0	5.7	38.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		51.5	5.0	30.0		51.5	5.5	29.5
Max Q Clear Time (g_c+I1), s		2.1	0.0	12.5		15.9	2.4	13.8
Green Ext Time (p_c), s		2.1	0.0	5.3		2.1	0.0	5.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	9	121	0	1	503	336	0	3	0	208	0	13
Future Volume (veh/h)	9	121	0	1	503	336	0	3	0	208	0	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	10	132	0	1	547	365	0	3	0	226	0	14
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	1546	0	696	870	581	0	541	0	524	2	28
Arrive On Green	0.01	0.52	0.00	0.00	0.51	0.51	0.00	0.34	0.00	0.34	0.00	0.34
Sat Flow, veh/h	1494	3059	0	1494	1714	1143	0	1569	0	1317	5	82
Grp Volume(v), veh/h	10	132	0	1	476	436	0	3	0	240	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1367	0	1569	0	1404	0	0
Q Serve(g_s), s	0.3	2.2	0.0	0.0	23.1	23.1	0.0	0.1	0.0	13.4	0.0	0.0
Cycle Q Clear(g_c), s	0.3	2.2	0.0	0.0	23.1	23.1	0.0	0.1	0.0	13.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.84	0.00		0.00	0.94		0.06
Lane Grp Cap(c), veh/h	259	1546	0	696	757	694	0	541	0	554	0	0
V/C Ratio(X)	0.04	0.09	0.00	0.00	0.63	0.63	0.00	0.01	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	323	1546	0	776	757	694	0	541	0	554	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.3	12.1	0.0	12.1	17.8	17.8	0.0	21.5	0.0	25.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	3.9	4.3	0.0	0.0	0.0	2.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.9	0.0	0.0	10.2	9.4	0.0	0.1	0.0	5.6	0.0	0.0
LnGrp Delay(d),s/veh	14.4	12.2	0.0	12.1	21.7	22.1	0.0	21.5	0.0	28.3	0.0	0.0
LnGrp LOS	B	B		B	C	C		C		C		
Approach Vol, veh/h		142			913			3			240	
Approach Delay, s/veh		12.4			21.9			21.5			28.3	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		39.0	4.6	56.4		39.0	5.7	55.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		34.5	5.5	46.5		34.5	5.5	46.5
Max Q Clear Time (g_c+I1), s		2.1	2.0	4.2		15.5	2.3	25.1
Green Ext Time (p_c), s		1.5	0.0	8.9		1.3	0.0	7.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: Dell Range Boulevard & US-30

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Volume (veh/h)	9	407	0	0	196	374	1	1	0	434	5	7
Future Volume (veh/h)	9	407	0	0	196	374	1	1	0	434	5	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	10	442	0	0	213	407	1	1	0	472	5	8
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	1058	0	302	444	397	455	432	0	833	8	13
Arrive On Green	0.01	0.35	0.00	0.00	0.30	0.30	0.56	0.56	0.00	0.56	0.56	0.56
Sat Flow, veh/h	1494	3059	0	1494	1490	1333	722	779	0	1373	15	23
Grp Volume(v), veh/h	10	442	0	0	213	407	2	0	0	485	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	0	1494	1490	1333	1501	0	0	1411	0	0
Q Serve(g_s), s	0.5	11.2	0.0	0.0	11.7	29.8	0.0	0.0	0.0	23.3	0.0	0.0
Cycle Q Clear(g_c), s	0.5	11.2	0.0	0.0	11.7	29.8	0.1	0.0	0.0	23.3	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	0.50		0.00	0.97		0.02
Lane Grp Cap(c), veh/h	90	1058	0	302	444	397	887	0	0	854	0	0
V/C Ratio(X)	0.11	0.42	0.00	0.00	0.48	1.02	0.00	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	151	1058	0	376	444	397	887	0	0	854	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.6	24.4	0.0	0.0	28.8	35.1	9.9	0.0	0.0	15.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	1.2	0.0	0.0	3.7	51.6	0.0	0.0	0.0	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.8	0.0	0.0	5.2	16.6	0.0	0.0	0.0	9.7	0.0	0.0
LnGrp Delay(d),s/veh	28.2	25.6	0.0	0.0	32.4	86.7	9.9	0.0	0.0	17.8	0.0	0.0
LnGrp LOS	C	C			C	F	A			B		
Approach Vol, veh/h		452			620			2			485	
Approach Delay, s/veh		25.7			68.1			9.9			17.8	
Approach LOS		C			E			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		60.0	0.0	40.0		60.0	5.7	34.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		55.5	5.0	26.0		55.5	5.3	25.7
Max Q Clear Time (g_c+I1), s		2.1	0.0	13.2		25.3	2.5	31.8
Green Ext Time (p_c), s		3.6	0.0	5.8		3.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		40.1
HCM 2010 LOS		D

HCM 2010 TWSC
8: US-30 & Van Buren Avenue

2017 Existing AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		Y	
Traffic Vol, veh/h	64	228	859	10	9	134
Future Vol, veh/h	64	228	859	10	9	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	90	62	56	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	285	954	16	16	176

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	971	0	-	0	1266	485
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	303	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	706	-	-	-	161	528
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	706	-	-	-	143	528
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	706	-	-	-	485
HCM Lane V/C Ratio	0.113	-	-	-	0.397
HCM Control Delay (s)	10.8	-	-	-	17.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	1.9

Intersection						
Int Delay, s/veh	1.9					
Movement	**EBL**	**EBT**	**WBT**	**WBR**	**SBL**	**SBR**
Lane Configurations	↰	↑↑	↑↑↱		Y	
Traffic Vol, veh/h	143	716	353	15	16	75
Future Vol, veh/h	143	716	353	15	16	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	85	89	54	80	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	161	842	397	28	20	100

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	424	0	-	0	1154	212
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	743	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1132	-	-	-	190	793
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1132	-	-	-	163	793
Mov Cap-2 Maneuver	-	-	-	-	280	-
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	370	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1132	-	-	-	607
HCM Lane V/C Ratio	0.142	-	-	-	0.198
HCM Control Delay (s)	8.7	-	-	-	12.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱		Y	
Traffic Volume (veh/h)	68	243	914	11	10	143
Future Volume (veh/h)	68	243	914	11	10	143
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	85	304	1016	18	18	188
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.80	0.80	0.90	0.62	0.56	0.76
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	463	2042	1782	32	26	275
Arrive On Green	0.05	0.69	1.00	1.00	0.22	0.22
Sat Flow, veh/h	1494	3059	3075	53	117	1223
Grp Volume(v), veh/h	85	304	505	529	207	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1559	1347	0
Q Serve(g_s), s	2.1	3.6	0.0	0.0	14.1	0.0
Cycle Q Clear(g_c), s	2.1	3.6	0.0	0.0	14.1	0.0
Prop In Lane	1.00			0.03	0.09	0.91
Lane Grp Cap(c), veh/h	463	2042	886	927	303	0
V/C Ratio(X)	0.18	0.15	0.57	0.57	0.68	0.00
Avail Cap(c_a), veh/h	522	2042	886	927	303	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.83	0.83	1.00	0.00
Uniform Delay (d), s/veh	6.2	5.5	0.0	0.0	35.5	0.0
Incr Delay (d2), s/veh	0.2	0.2	2.2	2.1	11.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.5	0.5	0.5	6.2	0.0
LnGrp Delay(d),s/veh	6.3	5.7	2.2	2.1	47.3	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		389	1034		207	
Approach Delay, s/veh		5.8	2.2		47.3	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				73.0		27.0	9.0	64.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				68.5		22.5	8.5	55.5
Max Q Clear Time (g_c+I1), s				5.6		16.1	4.1	2.0
Green Ext Time (p_c), s				12.6		0.3	0.1	12.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
8: US-30 & Van Buren Avenue

2022 Background PM.syn
12/12/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱		Y	
Traffic Volume (veh/h)	152	762	376	16	17	80
Future Volume (veh/h)	152	762	376	16	17	80
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	171	896	422	30	21	107
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.85	0.89	0.54	0.80	0.75
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	673	1922	1490	106	59	299
Arrive On Green	0.07	0.64	1.00	1.00	0.26	0.26
Sat Flow, veh/h	1494	3059	2902	200	221	1127
Grp Volume(v), veh/h	171	896	222	230	129	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1533	1359	0
Q Serve(g_s), s	4.9	15.3	0.0	0.0	7.7	0.0
Cycle Q Clear(g_c), s	4.9	15.3	0.0	0.0	7.7	0.0
Prop In Lane	1.00			0.13	0.16	0.83
Lane Grp Cap(c), veh/h	673	1922	786	809	360	0
V/C Ratio(X)	0.25	0.47	0.28	0.28	0.36	0.00
Avail Cap(c_a), veh/h	887	1922	786	809	360	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	0.00
Uniform Delay (d), s/veh	8.2	9.0	0.0	0.0	29.8	0.0
Incr Delay (d2), s/veh	0.2	0.8	0.9	0.9	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	6.4	0.2	0.2	3.2	0.0
LnGrp Delay(d),s/veh	8.4	9.8	0.9	0.9	32.6	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		1067	452		129	
Approach Delay, s/veh		9.6	0.9		32.6	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				69.0		31.0	11.7	57.3
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				64.5		26.5	21.5	38.5
Max Q Clear Time (g_c+I1), s				17.3		9.7	6.9	2.0
Green Ext Time (p_c), s				12.7		0.3	0.4	11.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
8: US-30 & Van Buren Avenue

2022 Total AM.syn
12/12/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↑↱		Y	
Traffic Volume (veh/h)	175	770	380	16	17	93
Future Volume (veh/h)	175	770	380	16	17	93
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	197	906	427	30	21	124
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.85	0.89	0.54	0.80	0.75
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	792	2329	1907	134	25	148
Arrive On Green	0.06	0.78	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1494	3059	2904	198	195	1151
Grp Volume(v), veh/h	197	906	224	233	146	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1534	1356	0
Q Serve(g_s), s	3.7	9.5	0.0	0.0	10.5	0.0
Cycle Q Clear(g_c), s	3.7	9.5	0.0	0.0	10.5	0.0
Prop In Lane	1.00			0.13	0.14	0.85
Lane Grp Cap(c), veh/h	792	2329	1006	1035	174	0
V/C Ratio(X)	0.25	0.39	0.22	0.22	0.84	0.00
Avail Cap(c_a), veh/h	1051	2329	1006	1035	346	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.83	0.83	0.88	0.00
Uniform Delay (d), s/veh	3.4	3.4	0.0	0.0	42.6	0.0
Incr Delay (d2), s/veh	0.2	0.5	0.4	0.4	9.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.1	0.1	0.1	4.4	0.0
LnGrp Delay(d),s/veh	3.6	3.9	0.4	0.4	51.6	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		1103	457		146	
Approach Delay, s/veh		3.9	0.4		51.6	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				82.6		17.4	10.7	72.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				65.5		25.5	23.5	37.5
Max Q Clear Time (g_c+I1), s				11.5		12.5	5.7	2.0
Green Ext Time (p_c), s				13.2		0.3	0.5	12.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		↲↳	
Traffic Volume (veh/h)	175	770	380	16	17	93
Future Volume (veh/h)	175	770	380	16	17	93
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	197	906	427	30	21	124
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.89	0.85	0.89	0.54	0.80	0.75
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	792	2329	1907	134	25	148
Arrive On Green	0.06	0.78	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1494	3059	2904	198	195	1151
Grp Volume(v), veh/h	197	906	224	233	146	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1534	1356	0
Q Serve(g_s), s	3.7	9.5	0.0	0.0	10.5	0.0
Cycle Q Clear(g_c), s	3.7	9.5	0.0	0.0	10.5	0.0
Prop In Lane	1.00			0.13	0.14	0.85
Lane Grp Cap(c), veh/h	792	2329	1006	1035	174	0
V/C Ratio(X)	0.25	0.39	0.22	0.22	0.84	0.00
Avail Cap(c_a), veh/h	1051	2329	1006	1035	346	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	0.90	0.00
Uniform Delay (d), s/veh	3.4	3.4	0.0	0.0	42.6	0.0
Incr Delay (d2), s/veh	0.2	0.5	0.5	0.5	9.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.1	0.1	0.1	4.4	0.0
LnGrp Delay(d),s/veh	3.6	3.9	0.5	0.5	51.8	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		1103	457		146	
Approach Delay, s/veh		3.9	0.5		51.8	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				82.6		17.4	10.7	72.0
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				65.5		25.5	23.5	37.5
Max Q Clear Time (g_c+I1), s				11.5		12.5	5.7	2.0
Green Ext Time (p_c), s				13.2		0.3	0.5	12.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		↲↳	
Traffic Volume (veh/h)	85	303	1143	13	12	178
Future Volume (veh/h)	85	303	1143	13	12	178
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	92	329	1242	14	13	193
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	298	2122	1874	21	17	248
Arrive On Green	0.05	0.71	0.62	0.62	0.20	0.20
Sat Flow, veh/h	1494	3059	3097	34	84	1253
Grp Volume(v), veh/h	92	329	613	643	207	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1563	1343	0
Q Serve(g_s), s	2.1	3.6	26.5	26.5	14.6	0.0
Cycle Q Clear(g_c), s	2.1	3.6	26.5	26.5	14.6	0.0
Prop In Lane	1.00			0.02	0.06	0.93
Lane Grp Cap(c), veh/h	298	2122	925	970	266	0
V/C Ratio(X)	0.31	0.16	0.66	0.66	0.78	0.00
Avail Cap(c_a), veh/h	374	2122	925	970	266	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.4	4.7	12.2	12.2	38.0	0.0
Incr Delay (d2), s/veh	0.6	0.2	3.7	3.6	19.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.5	11.7	12.2	6.9	0.0
LnGrp Delay(d),s/veh	10.9	4.8	15.9	15.8	57.8	0.0
LnGrp LOS	B	A	B	B	E	
Approach Vol, veh/h		421	1256		207	
Approach Delay, s/veh		6.2	15.9		57.8	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				75.7		24.3	9.1	66.6
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				71.2		19.8	9.7	57.0
Max Q Clear Time (g_c+I1), s				5.6		16.6	4.1	28.5
Green Ext Time (p_c), s				17.3		0.2	0.1	13.4

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		↲↱	
Traffic Volume (veh/h)	190	953	470	20	21	100
Future Volume (veh/h)	190	953	470	20	21	100
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1600
Adj Flow Rate, veh/h	207	1036	511	22	23	109
Adj No. of Lanes	1	2	2	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	586	2012	1599	69	55	262
Arrive On Green	0.08	0.68	0.55	0.55	0.23	0.23
Sat Flow, veh/h	1494	3059	2990	125	235	1115
Grp Volume(v), veh/h	207	1036	261	272	133	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1547	1360	0
Q Serve(g_s), s	5.6	17.3	9.6	9.6	8.3	0.0
Cycle Q Clear(g_c), s	5.6	17.3	9.6	9.6	8.3	0.0
Prop In Lane	1.00			0.08	0.17	0.82
Lane Grp Cap(c), veh/h	586	2012	818	849	320	0
V/C Ratio(X)	0.35	0.51	0.32	0.32	0.42	0.00
Avail Cap(c_a), veh/h	786	2012	818	849	320	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.0	8.1	12.3	12.3	32.4	0.0
Incr Delay (d2), s/veh	0.4	0.9	1.0	1.0	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.3	4.2	4.3	3.5	0.0
LnGrp Delay(d),s/veh	8.4	9.0	13.3	13.3	36.4	0.0
LnGrp LOS	A	A	B	B	D	
Approach Vol, veh/h		1243	533		133	
Approach Delay, s/veh		8.9	13.3		36.4	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				72.0		28.0	12.6	59.4
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				67.5		23.5	21.5	41.5
Max Q Clear Time (g_c+I1), s				19.3		10.3	7.6	11.6
Green Ext Time (p_c), s				16.1		0.3	0.5	13.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		↲↱	↱
Traffic Volume (veh/h)	158	450	1393	13	12	303
Future Volume (veh/h)	158	450	1393	13	12	303
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	172	489	1514	14	13	0
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	373	2167	1881	17	273	244
Arrive On Green	0.06	0.73	1.00	1.00	0.18	0.00
Sat Flow, veh/h	1494	3059	3104	28	1494	1333
Grp Volume(v), veh/h	172	489	745	783	13	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1564	1494	1333
Q Serve(g_s), s	3.9	5.4	0.0	0.0	0.7	0.0
Cycle Q Clear(g_c), s	3.9	5.4	0.0	0.0	0.7	0.0
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	373	2167	926	972	273	244
V/C Ratio(X)	0.46	0.23	0.80	0.81	0.05	0.00
Avail Cap(c_a), veh/h	455	2167	926	972	273	244
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.63	0.63	0.80	0.00
Uniform Delay (d), s/veh	5.1	4.5	0.0	0.0	33.7	0.0
Incr Delay (d2), s/veh	0.9	0.2	4.8	4.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.2	1.2	1.2	0.3	0.0
LnGrp Delay(d),s/veh	5.9	4.7	4.8	4.6	33.9	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		661	1528		13	
Approach Delay, s/veh		5.0	4.7		33.9	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				77.2		22.8	10.5	66.7
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				72.7		18.3	11.5	56.7
Max Q Clear Time (g_c+I1), s				7.4		2.7	5.9	2.0
Green Ext Time (p_c), s				27.6		0.0	0.2	25.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑	↑↱		↰	↱
Traffic Volume (veh/h)	378	1330	782	20	21	256
Future Volume (veh/h)	378	1330	782	20	21	256
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	411	1446	850	22	23	0
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	628	2161	1586	41	276	247
Arrive On Green	0.15	0.73	1.00	1.00	0.19	0.00
Sat Flow, veh/h	1494	3059	3047	77	1494	1333
Grp Volume(v), veh/h	411	1446	427	445	23	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1490	1555	1494	1333
Q Serve(g_s), s	11.4	25.9	0.0	0.0	1.3	0.0
Cycle Q Clear(g_c), s	11.4	25.9	0.0	0.0	1.3	0.0
Prop In Lane	1.00			0.05	1.00	1.00
Lane Grp Cap(c), veh/h	628	2161	796	831	276	247
V/C Ratio(X)	0.65	0.67	0.54	0.54	0.08	0.00
Avail Cap(c_a), veh/h	851	2161	796	831	276	247
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	0.58	0.00
Uniform Delay (d), s/veh	6.3	7.3	0.0	0.0	33.7	0.0
Incr Delay (d2), s/veh	1.2	1.7	2.3	2.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	10.9	0.5	0.5	0.6	0.0
LnGrp Delay(d),s/veh	7.4	9.0	2.3	2.3	34.1	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		1857	872		23	
Approach Delay, s/veh		8.7	2.3		34.1	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				77.0		23.0	19.1	57.9
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				72.5		18.5	29.5	38.5
Max Q Clear Time (g_c+I1), s				27.9		3.3	13.4	2.0
Green Ext Time (p_c), s				27.9		0.0	1.2	24.6

Intersection Summary		
HCM 2010 Ctrl Delay		6.9
HCM 2010 LOS		A

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	23	206	20	4	685	1	75	16	7	2	4	106
Future Vol, veh/h	23	206	20	4	685	1	75	16	7	2	4	106
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	79	62	33	87	25	69	67	44	50	100	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	261	32	12	787	4	109	24	16	4	4	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	791	0	0	261	0	0	745	1141	130	1020	1139	396
Stage 1	-	-	-	-	-	-	325	325	-	814	814	-
Stage 2	-	-	-	-	-	-	420	816	-	206	325	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	825	-	-	1300	-	-	302	199	896	191	200	603
Stage 1	-	-	-	-	-	-	661	648	-	338	390	-
Stage 2	-	-	-	-	-	-	581	389	-	777	648	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	825	-	-	1300	-	-	226	190	896	163	190	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	190	-	163	190	-
Stage 1	-	-	-	-	-	-	635	623	-	325	386	-
Stage 2	-	-	-	-	-	-	449	385	-	705	623	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	42.3	14.2
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	238	825	-	-	1300	-	-	527
HCM Lane V/C Ratio	0.624	0.039	-	-	0.009	-	-	0.258
HCM Control Delay (s)	42.3	9.5	-	-	7.8	-	-	14.2
HCM Lane LOS	E	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0	-	-	1

Intersection												
Int Delay, s/veh	9.6											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✣			✣	
Traffic Vol, veh/h	91	566	82	6	278	6	41	17	7	6	20	50
Future Vol, veh/h	91	566	82	6	278	6	41	17	7	6	20	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	87	77	38	88	75	68	42	58	38	71	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	651	106	16	316	8	60	40	12	16	28	60
Major/Minor	**Major1**			**Major2**			**Minor1**			**Minor2**		
Conflicting Flow All	324	0	0	651	0	0	1111	1262	325	953	1258	162
Stage 1	-	-	-	-	-	-	907	907	-	351	351	-
Stage 2	-	-	-	-	-	-	204	355	-	602	907	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1233	-	-	931	-	-	164	169	671	214	170	854
Stage 1	-	-	-	-	-	-	297	353	-	639	631	-
Stage 2	-	-	-	-	-	-	779	628	-	453	353	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1233	-	-	931	-	-	119	149	671	152	150	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	149	-	152	150	-
Stage 1	-	-	-	-	-	-	266	316	-	573	620	-
Stage 2	-	-	-	-	-	-	679	617	-	348	316	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	90	24.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	142	1233	-	-	931	-	-	288
HCM Lane V/C Ratio	0.795	0.104	-	-	0.017	-	-	0.362
HCM Control Delay (s)	90	8.3	-	-	8.9	-	-	24.4
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	4.9	0.3	-	-	0.1	-	-	1.6

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✣			✣	
Traffic Volume (veh/h)	24	219	21	4	729	1	80	17	7	2	4	113
Future Volume (veh/h)	24	219	21	4	729	1	80	17	7	2	4	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	33	277	34	12	838	4	116	25	16	4	4	136
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.79	0.62	0.33	0.87	0.25	0.69	0.67	0.44	0.50	1.00	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	1597	714	647	1582	8	334	68	39	40	20	400
Arrive On Green	0.06	1.00	1.00	0.01	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1494	2980	1333	1494	3042	15	863	217	123	10	65	1269
Grp Volume(v), veh/h	33	277	34	12	411	431	157	0	0	144	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1566	1202	0	0	1343	0	0
Q Serve(g_s), s	1.0	0.0	0.0	0.4	18.3	18.3	3.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.4	18.3	18.3	12.0	0.0	0.0	8.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.74		0.10	0.03		0.94
Lane Grp Cap(c), veh/h	336	1597	714	647	775	814	441	0	0	460	0	0
V/C Ratio(X)	0.10	0.17	0.05	0.02	0.53	0.53	0.36	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	377	1597	714	707	775	814	441	0	0	460	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.7	0.0	0.0	10.9	15.9	15.9	27.8	0.0	0.0	26.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	2.6	2.5	2.2	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.0	0.2	8.1	8.5	3.8	0.0	0.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	11.9	0.2	0.1	10.9	18.5	18.4	30.1	0.0	0.0	28.0	0.0	0.0
LnGrp LOS	B	A	A	B	B	B	C			C		
Approach Vol, veh/h		344			854			157			144	
Approach Delay, s/veh		1.3			18.3			30.1			28.0	
Approach LOS		A			B			C			C	
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		36.0	5.9	58.1		36.0	7.5	56.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		31.5	5.5	49.5		31.5	5.7	49.3				
Max Q Clear Time (g_c+I1), s		14.0	2.4	2.0		10.2	3.0	20.3				
Green Ext Time (p_c), s		1.7	0.0	9.4		1.9	0.0	8.5				
Intersection Summary												
HCM 2010 Ctrl Delay			16.6									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
9: Hayes Avenue & US-30

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Volume (veh/h)	97	602	87	6	296	6	44	18	7	6	21	53
Future Volume (veh/h)	97	602	87	6	296	6	44	18	7	6	21	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	137	692	110	16	336	8	65	43	12	16	30	64
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.71	0.87	0.79	0.38	0.88	0.75	0.68	0.42	0.58	0.38	0.71	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	659	1735	776	463	1604	38	242	147	37	74	123	216
Arrive On Green	0.12	1.00	1.00	0.02	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1494	2980	1333	1494	2976	71	705	555	140	124	463	817
Grp Volume(v), veh/h	137	692	110	16	168	176	120	0	0	110	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1556	1399	0	0	1404	0	0
Q Serve(g_s), s	4.0	0.0	0.0	0.5	5.9	5.9	0.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	0.5	5.9	5.9	6.7	0.0	0.0	6.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	0.54		0.10	0.15		0.58
Lane Grp Cap(c), veh/h	659	1735	776	463	803	839	426	0	0	413	0	0
V/C Ratio(X)	0.21	0.40	0.14	0.03	0.21	0.21	0.28	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	814	1735	776	548	803	839	426	0	0	413	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	0.0	0.0	9.9	12.0	12.0	29.4	0.0	0.0	29.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.3	0.0	0.6	0.6	1.6	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.1	0.1	0.2	2.5	2.6	2.9	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	8.0	0.6	0.3	10.0	12.6	12.6	31.1	0.0	0.0	30.8	0.0	0.0
LnGrp LOS	A	A	A	A	B	B	C			C		
Approach Vol, veh/h		939			360			120			110	
Approach Delay, s/veh		1.7			12.4			31.1			30.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	6.3	62.7		31.0	10.6	58.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		26.5	7.5	52.5		26.5	16.5	43.5
Max Q Clear Time (g_c+I1), s		8.7	2.5	2.0		8.2	6.0	7.9
Green Ext Time (p_c), s		1.2	0.0	9.3		1.2	0.2	8.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
9: Hayes Avenue & US-30

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Volume (veh/h)	26	219	21	4	729	1	80	17	7	2	4	120
Future Volume (veh/h)	26	219	21	4	729	1	80	17	7	2	4	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	36	277	34	12	838	4	116	25	16	4	4	145
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.79	0.62	0.33	0.87	0.25	0.69	0.67	0.44	0.50	1.00	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	337	1597	714	645	1577	8	328	67	38	40	19	401
Arrive On Green	0.06	1.00	1.00	0.01	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1494	2980	1333	1494	3042	15	842	213	120	9	61	1272
Grp Volume(v), veh/h	36	277	34	12	411	431	157	0	0	153	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1566	1175	0	0	1343	0	0
Q Serve(g_s), s	1.1	0.0	0.0	0.4	18.3	18.3	3.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.4	18.3	18.3	12.6	0.0	0.0	8.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.74		0.10	0.03		0.95
Lane Grp Cap(c), veh/h	337	1597	714	645	773	812	433	0	0	460	0	0
V/C Ratio(X)	0.11	0.17	0.05	0.02	0.53	0.53	0.36	0.00	0.00	0.33	0.00	0.00
Avail Cap(c_a), veh/h	375	1597	714	706	773	812	433	0	0	460	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.7	0.0	0.0	11.0	16.0	16.0	28.1	0.0	0.0	26.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	2.6	2.5	2.4	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.2	8.1	8.5	3.8	0.0	0.0	3.5	0.0	0.0
LnGrp Delay(d),s/veh	11.9	0.2	0.1	11.0	18.6	18.5	30.4	0.0	0.0	28.4	0.0	0.0
LnGrp LOS	B	A	A	B	B	B	C			C		
Approach Vol, veh/h		347			854			157			153	
Approach Delay, s/veh		1.4			18.4			30.4			28.4	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		36.0	5.9	58.1		36.0	7.7	56.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		31.5	5.5	49.5		31.5	5.7	49.3
Max Q Clear Time (g_c+I1), s		14.6	2.4	2.0		10.8	3.1	20.3
Green Ext Time (p_c), s		1.8	0.0	9.4		1.9	0.0	8.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✣			✣	
Traffic Volume (veh/h)	105	602	87	6	296	6	44	18	7	6	21	57
Future Volume (veh/h)	105	602	87	6	296	6	44	18	7	6	21	57
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	148	692	110	16	336	8	65	43	12	16	30	69
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.71	0.87	0.79	0.38	0.88	0.75	0.68	0.42	0.58	0.38	0.71	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	660	1735	776	460	1591	38	240	146	37	72	118	223
Arrive On Green	0.13	1.00	1.00	0.02	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1494	2980	1333	1494	2976	71	698	550	139	115	445	841
Grp Volume(v), veh/h	148	692	110	16	168	176	120	0	0	115	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1556	1387	0	0	1401	0	0
Q Serve(g_s), s	4.4	0.0	0.0	0.5	5.9	5.9	0.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	0.0	0.5	5.9	5.9	6.9	0.0	0.0	6.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	0.54		0.10	0.14		0.60
Lane Grp Cap(c), veh/h	660	1735	776	460	797	832	423	0	0	412	0	0
V/C Ratio(X)	0.22	0.40	0.14	0.03	0.21	0.21	0.28	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	824	1735	776	545	797	832	423	0	0	412	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	0.0	0.0	10.1	12.2	12.2	29.5	0.0	0.0	29.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.6	0.4	0.0	0.6	0.6	1.7	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.2	0.1	0.2	2.6	2.7	2.9	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	8.0	0.6	0.4	10.1	12.8	12.8	31.2	0.0	0.0	31.1	0.0	0.0
LnGrp LOS	A	A	A	B	B	B	C			C		
Approach Vol, veh/h		950			360			120			115	
Approach Delay, s/veh		1.7			12.7			31.2			31.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	6.3	62.7		31.0	11.0	58.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		26.5	7.5	52.5		26.5	17.5	42.5
Max Q Clear Time (g_c+I1), s		8.9	2.5	2.0		8.5	6.4	7.9
Green Ext Time (p_c), s		1.2	0.0	9.3		1.3	0.3	8.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✣			✣	
Traffic Volume (veh/h)	31	274	27	5	912	1	100	21	9	3	5	141
Future Volume (veh/h)	31	274	27	5	912	1	100	21	9	3	5	141
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	34	298	29	5	991	1	109	23	10	3	5	153
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	1679	751	622	1648	2	310	61	23	38	18	376
Arrive On Green	0.03	0.56	0.56	0.01	0.54	0.54	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1494	2980	1333	1494	3055	3	834	206	79	6	61	1276
Grp Volume(v), veh/h	34	298	29	5	483	509	142	0	0	161	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1568	1118	0	0	1343	0	0
Q Serve(g_s), s	1.0	4.8	1.0	0.2	22.1	22.1	3.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	4.8	1.0	0.2	22.1	22.1	12.9	0.0	0.0	9.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.77		0.07	0.02		0.95
Lane Grp Cap(c), veh/h	298	1679	751	622	804	846	393	0	0	433	0	0
V/C Ratio(X)	0.11	0.18	0.04	0.01	0.60	0.60	0.36	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	334	1679	751	694	804	846	393	0	0	433	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.1	10.6	9.7	10.4	15.7	15.7	29.8	0.0	0.0	28.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.1	0.0	3.3	3.2	2.6	0.0	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.0	0.4	0.1	9.7	10.2	3.6	0.0	0.0	3.8	0.0	0.0
LnGrp Delay(d),s/veh	12.2	10.8	9.8	10.4	19.0	18.9	32.4	0.0	0.0	30.7	0.0	0.0
LnGrp LOS	B	B	A	B	B	B	C			C		
Approach Vol, veh/h		361			997			142			161	
Approach Delay, s/veh		10.9			18.9			32.4			30.7	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	5.1	60.9		34.0	7.6	58.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		29.5	5.5	51.5		29.5	5.5	51.5
Max Q Clear Time (g_c+I1), s		14.9	2.2	6.8		11.6	3.0	24.1
Green Ext Time (p_c), s		1.6	0.0	11.5		1.8	0.0	10.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
9: Hayes Avenue & US-30

2040 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	121	753	109	8	370	8	55	23	9	8	27	67
Future Volume (veh/h)	121	753	109	8	370	8	55	23	9	8	27	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	132	818	118	9	402	9	60	25	10	9	29	73
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	637	1815	812	363	1684	38	254	98	34	50	106	226
Arrive On Green	0.06	0.61	0.61	0.01	0.56	0.56	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1494	2980	1333	1494	2980	67	798	398	141	45	434	920
Grp Volume(v), veh/h	132	818	118	9	201	210	95	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1557	1336	0	0	1400	0	0
Q Serve(g_s), s	3.5	14.8	3.8	0.3	6.8	6.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	14.8	3.8	0.3	6.8	6.8	6.0	0.0	0.0	6.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	0.63		0.11	0.08		0.66
Lane Grp Cap(c), veh/h	637	1815	812	363	842	880	386	0	0	382	0	0
V/C Ratio(X)	0.21	0.45	0.15	0.02	0.24	0.24	0.25	0.00	0.00	0.29	0.00	0.00
Avail Cap(c_a), veh/h	726	1815	812	459	842	880	386	0	0	382	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	10.5	8.4	9.6	10.9	10.9	30.7	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.8	0.4	0.0	0.7	0.6	1.5	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	6.2	1.5	0.1	2.9	3.1	2.3	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	7.7	11.4	8.8	9.6	11.6	11.6	32.2	0.0	0.0	32.9	0.0	0.0
LnGrp LOS	A	B	A	A	B	B	C			C		
Approach Vol, veh/h		1068			420			95			111	
Approach Delay, s/veh		10.6			11.6			32.2			32.9	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		29.0	5.6	65.4		29.0	10.0	61.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		24.5	7.5	54.5		24.5	11.5	50.5				
Max Q Clear Time (g_c+I1), s		8.0	2.3	16.8		8.5	5.5	8.8				
Green Ext Time (p_c), s		1.0	0.0	11.2		1.0	0.2	11.5				
Intersection Summary												
HCM 2010 Ctrl Delay			13.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
9: Hayes Avenue & US-30

2040 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	38	413	27	5	1150	1	100	21	9	3	5	154
Future Volume (veh/h)	38	413	27	5	1150	1	100	21	9	3	5	154
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	41	449	29	5	1250	1	109	23	10	3	5	167
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	1769	791	598	1730	1	266	51	19	38	15	339
Arrive On Green	0.07	1.00	1.00	0.01	0.57	0.57	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1494	2980	1333	1494	3056	2	762	194	72	6	56	1281
Grp Volume(v), veh/h	41	449	29	5	610	641	142	0	0	175	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1568	1029	0	0	1342	0	0
Q Serve(g_s), s	1.1	0.0	0.0	0.1	30.0	30.0	3.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.1	30.0	30.0	14.9	0.0	0.0	11.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.77		0.07	0.02		0.95
Lane Grp Cap(c), veh/h	240	1769	791	598	843	888	336	0	0	392	0	0
V/C Ratio(X)	0.17	0.25	0.04	0.01	0.72	0.72	0.42	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	266	1769	791	665	843	888	336	0	0	392	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	0.0	9.2	15.9	15.9	33.1	0.0	0.0	31.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.1	0.0	5.3	5.1	3.9	0.0	0.0	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	0.1	13.4	14.1	3.8	0.0	0.0	4.5	0.0	0.0
LnGrp Delay(d),s/veh	13.0	0.3	0.1	9.2	21.3	21.0	37.0	0.0	0.0	34.7	0.0	0.0
LnGrp LOS	B	A	A	A	C	C	D			C		
Approach Vol, veh/h		519			1256			142			175	
Approach Delay, s/veh		1.3			21.1			37.0			34.7	
Approach LOS		A			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		31.0	5.1	63.9		31.0	7.9	61.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	5.1	54.9		26.5	5.1	54.9				
Max Q Clear Time (g_c+I1), s		16.9	2.1	2.0		13.0	3.1	32.0				
Green Ext Time (p_c), s		1.4	0.0	18.7		1.6	0.0	12.9				
Intersection Summary												
HCM 2010 Ctrl Delay			18.4									
HCM 2010 LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Volume (veh/h)	140	1111	109	8	667	8	55	23	9	8	27	83
Future Volume (veh/h)	140	1111	109	8	667	8	55	23	9	8	27	83
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	152	1208	118	9	725	9	60	25	10	9	29	90
Adj No. of Lanes	1	2	1	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	511	1964	879	340	1845	23	200	75	25	46	73	191
Arrive On Green	0.12	1.00	1.00	0.01	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1494	2980	1333	1494	3015	37	723	384	130	39	373	978
Grp Volume(v), veh/h	152	1208	118	9	358	376	95	0	0	128	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1333	1494	1490	1562	1236	0	0	1390	0	0
Q Serve(g_s), s	3.7	0.0	0.0	0.2	12.3	12.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	0.2	12.3	12.3	7.7	0.0	0.0	8.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	0.63		0.11	0.07		0.70
Lane Grp Cap(c), veh/h	511	1964	879	340	912	956	300	0	0	310	0	0
V/C Ratio(X)	0.30	0.62	0.13	0.03	0.39	0.39	0.32	0.00	0.00	0.41	0.00	0.00
Avail Cap(c_a), veh/h	596	1964	879	406	912	956	300	0	0	310	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.2	0.0	0.0	7.2	9.9	9.9	35.3	0.0	0.0	35.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.0	0.2	0.0	1.3	1.2	2.8	0.0	0.0	4.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.3	0.1	0.1	5.3	5.5	2.6	0.0	0.0	3.5	0.0	0.0
LnGrp Delay(d),s/veh	6.5	1.0	0.2	7.2	11.2	11.1	38.0	0.0	0.0	39.7	0.0	0.0
LnGrp LOS	A	A	A	A	B	B	D			D		
Approach Vol, veh/h		1478			743			95			128	
Approach Delay, s/veh		1.5			11.1			38.0			39.7	
Approach LOS		A			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		24.0	5.6	70.4		24.0	10.3	65.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	5.5	61.5		19.5	11.5	55.5
Max Q Clear Time (g_c+I1), s		9.7	2.2	2.0		10.1	5.7	14.3
Green Ext Time (p_c), s		0.9	0.0	25.4		0.8	0.2	21.7

Intersection Summary		
HCM 2010 Ctrl Delay		7.9
HCM 2010 LOS		A

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱			✥	
Traffic Vol, veh/h	32	119	31	3	502	33	46	49	3	4	29	131
Future Vol, veh/h	32	119	31	3	502	33	46	49	3	4	29	131
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	68	48	38	85	59	77	68	75	50	60	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	175	65	8	591	56	60	72	4	8	48	177

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	591	0	0	175	0	0	974	861	175	899	861	591
Stage 1	-	-	-	-	-	-	255	255	-	606	606	-
Stage 2	-	-	-	-	-	-	719	606	-	293	255	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	985	-	-	1401	-	-	231	293	868	260	293	507
Stage 1	-	-	-	-	-	-	749	696	-	484	487	-
Stage 2	-	-	-	-	-	-	420	487	-	715	696	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	985	-	-	1401	-	-	126	279	868	200	279	507
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	279	-	200	279	-
Stage 1	-	-	-	-	-	-	719	668	-	464	484	-
Stage 2	-	-	-	-	-	-	245	484	-	609	668	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	37.3	24.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	126	289	985	-	-	1401	-	-	415
HCM Lane V/C Ratio	0.474	0.263	0.041	-	-	0.006	-	-	0.562
HCM Control Delay (s)	57	21.8	8.8	-	-	7.6	-	-	24.3
HCM Lane LOS	F	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.1	1	0.1	-	-	0	-	-	3.4

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱			✥	
Traffic Vol, veh/h	86	392	67	30	178	4	31	58	6	17	71	53
Future Vol, veh/h	86	392	67	30	178	4	31	58	6	17	71	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	93	93	33	97	68	78	81	50	61	74	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	422	72	91	184	6	40	72	12	28	96	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	184	0	0	422	0	0	1127	1043	422	1085	1043	184
Stage 1	-	-	-	-	-	-	678	678	-	365	365	-
Stage 2	-	-	-	-	-	-	449	365	-	720	678	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1391	-	-	1137	-	-	182	229	632	194	229	858
Stage 1	-	-	-	-	-	-	442	452	-	654	623	-
Stage 2	-	-	-	-	-	-	589	623	-	419	452	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1391	-	-	1137	-	-	89	191	632	119	191	858
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	191	-	119	191	-
Stage 1	-	-	-	-	-	-	401	410	-	594	573	-
Stage 2	-	-	-	-	-	-	413	573	-	308	410	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	2.7	46.2	64.8
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	89	212	1391	-	-	1137	-	-	238
HCM Lane V/C Ratio	0.447	0.394	0.092	-	-	0.08	-	-	0.821
HCM Control Delay (s)	74.7	32.6	7.9	-	-	8.4	-	-	64.8
HCM Lane LOS	F	D	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.9	1.8	0.3	-	-	0.3	-	-	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✥			✥	
Traffic Volume (veh/h)	34	127	33	3	534	35	49	52	3	4	31	139
Future Volume (veh/h)	34	127	33	3	534	35	49	52	3	4	31	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1600	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	42	187	69	8	628	59	64	76	4	8	52	188
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.80	0.68	0.48	0.38	0.85	0.59	0.77	0.68	0.75	0.50	0.60	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	384	1120	400	616	1365	128	207	222	11	42	107	351
Arrive On Green	0.03	0.52	0.52	0.01	0.50	0.50	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1494	2154	769	1494	2755	258	462	662	32	15	319	1047
Grp Volume(v), veh/h	42	127	129	8	339	348	144	0	0	248	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1433	1494	1490	1523	1157	0	0	1381	0	0
Q Serve(g_s), s	1.4	4.5	4.7	0.3	14.9	14.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.4	4.5	4.7	0.3	14.9	14.9	11.8	0.0	0.0	14.5	0.0	0.0
Prop In Lane	1.00		0.54	1.00		0.17	0.44		0.03	0.03		0.76
Lane Grp Cap(c), veh/h	384	775	745	616	738	755	440	0	0	500	0	0
V/C Ratio(X)	0.11	0.16	0.17	0.01	0.46	0.46	0.33	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	445	775	745	698	738	755	440	0	0	500	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.5	12.6	12.7	12.3	16.5	16.5	25.4	0.0	0.0	26.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.5	0.0	2.1	2.0	2.0	0.0	0.0	3.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.9	2.0	0.1	6.5	6.7	3.4	0.0	0.0	6.0	0.0	0.0
LnGrp Delay(d),s/veh	12.7	13.1	13.2	12.3	18.5	18.5	27.4	0.0	0.0	30.4	0.0	0.0
LnGrp LOS	B	B	B	B	B	B	C			C		
Approach Vol, veh/h		298			695			144			248	
Approach Delay, s/veh		13.0			18.4			27.4			30.4	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		38.0	5.5	56.5		38.0	7.9	54.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		33.5	6.5	46.5		33.5	7.5	45.5
Max Q Clear Time (g_c+I1), s		13.8	2.3	6.7		16.5	3.4	16.9
Green Ext Time (p_c), s		2.4	0.0	7.0		2.3	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱			↰↑↱	
Traffic Volume (veh/h)	92	417	71	32	189	4	33	62	6	18	76	56
Future Volume (veh/h)	92	417	71	32	189	4	33	62	6	18	76	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	137	448	76	97	195	6	42	77	12	30	103	76
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.67	0.93	0.93	0.33	0.97	0.68	0.78	0.81	0.50	0.61	0.74	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	573	1005	170	387	1107	34	463	550	86	88	263	177
Arrive On Green	0.07	0.39	0.39	0.06	0.38	0.38	0.03	0.41	0.41	0.34	0.34	0.34
Sat Flow, veh/h	1494	2552	430	1494	2952	91	1494	1326	207	138	783	526
Grp Volume(v), veh/h	137	260	264	97	98	103	42	0	89	209	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1493	1494	1490	1553	1494	0	1532	1448	0	0
Q Serve(g_s), s	5.6	12.8	13.0	3.9	4.4	4.4	1.8	0.0	3.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.6	12.8	13.0	3.9	4.4	4.4	1.8	0.0	3.6	11.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.06	1.00		0.13	0.14		0.36
Lane Grp Cap(c), veh/h	573	587	588	387	559	582	463	0	636	527	0	0
V/C Ratio(X)	0.24	0.44	0.45	0.25	0.18	0.18	0.09	0.00	0.14	0.40	0.00	0.00
Avail Cap(c_a), veh/h	633	587	588	460	559	582	508	0	636	527	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.8	22.3	22.3	18.0	20.9	20.9	19.1	0.0	18.2	25.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.4	2.5	0.3	0.7	0.7	0.1	0.0	0.5	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.7	5.7	1.7	1.9	2.0	0.7	0.0	1.6	4.8	0.0	0.0
LnGrp Delay(d),s/veh	17.0	24.7	24.8	18.3	21.6	21.6	19.2	0.0	18.6	27.9	0.0	0.0
LnGrp LOS	B	C	C	B	C	C	B		B	C		
Approach Vol, veh/h		661			298			131			209	
Approach Delay, s/veh		23.1			20.5			18.8			27.9	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		46.0	10.1	43.9	7.9	38.1	12.0	42.0
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		41.5	10.5	34.5	6.5	30.5	11.5	33.5
Max Q Clear Time (g_c+I1), s		5.6	5.9	15.0	3.8	13.0	7.6	6.4
Green Ext Time (p_c), s		1.9	0.1	4.3	0.0	1.6	0.1	4.7

Intersection Summary			
HCM 2010 Ctrl Delay			22.9
HCM 2010 LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱			↰↑↱	
Traffic Volume (veh/h)	34	127	33	3	534	35	49	52	3	4	31	139
Future Volume (veh/h)	34	127	33	3	534	35	49	52	3	4	31	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	42	187	69	8	628	59	64	76	4	8	52	188
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.80	0.68	0.48	0.38	0.85	0.59	0.77	0.68	0.75	0.50	0.60	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	325	991	354	542	1200	113	373	583	31	42	98	323
Arrive On Green	0.03	0.46	0.46	0.01	0.44	0.44	0.04	0.40	0.40	0.31	0.31	0.31
Sat Flow, veh/h	1494	2154	769	1494	2755	258	1494	1477	78	15	319	1047
Grp Volume(v), veh/h	42	127	129	8	339	348	64	0	80	248	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1433	1494	1490	1523	1494	0	1555	1381	0	0
Q Serve(g_s), s	1.5	5.0	5.3	0.3	16.6	16.7	2.8	0.0	3.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	5.0	5.3	0.3	16.6	16.7	2.8	0.0	3.3	15.1	0.0	0.0
Prop In Lane	1.00		0.54	1.00		0.17	1.00		0.05	0.03		0.76
Lane Grp Cap(c), veh/h	325	686	659	542	649	663	373	0	614	463	0	0
V/C Ratio(X)	0.13	0.19	0.20	0.01	0.52	0.52	0.17	0.00	0.13	0.54	0.00	0.00
Avail Cap(c_a), veh/h	359	686	659	609	649	663	423	0	614	463	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.9	15.9	16.0	15.5	20.6	20.6	20.7	0.0	19.3	29.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.6	0.7	0.0	3.0	2.9	0.2	0.0	0.4	4.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.2	2.2	0.1	7.3	7.5	1.2	0.0	1.5	6.4	0.0	0.0
LnGrp Delay(d),s/veh	16.1	16.5	16.7	15.5	23.6	23.6	20.9	0.0	19.7	33.5	0.0	0.0
LnGrp LOS	B	B	B	B	C	C	C		B	C		
Approach Vol, veh/h		298			695			144			248	
Approach Delay, s/veh		16.5			23.5			20.3			33.5	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		44.0	5.5	50.5	8.7	35.3	7.9	48.1
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		39.5	5.5	41.5	7.5	27.5	5.7	41.3
Max Q Clear Time (g_c+I1), s		5.3	2.3	7.3	4.8	17.1	3.5	18.7
Green Ext Time (p_c), s		2.2	0.0	6.8	0.0	1.4	0.0	6.2

Intersection Summary			
HCM 2010 Ctrl Delay			23.5
HCM 2010 LOS			C

HCM 2010 Signalized Intersection Summary
10: Whitney Road & US-30

2022 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱			✥	
Traffic Volume (veh/h)	92	417	71	32	189	4	33	62	6	18	76	56
Future Volume (veh/h)	92	417	71	32	189	4	33	62	6	18	76	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	137	448	76	97	195	6	42	77	12	30	103	76
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.67	0.93	0.93	0.33	0.97	0.68	0.78	0.81	0.50	0.61	0.74	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	573	1005	170	387	1107	34	463	550	86	88	263	177
Arrive On Green	0.07	0.39	0.39	0.06	0.38	0.38	0.03	0.41	0.41	0.34	0.34	0.34
Sat Flow, veh/h	1494	2552	430	1494	2952	91	1494	1326	207	138	783	526
Grp Volume(v), veh/h	137	260	264	97	98	103	42	0	89	209	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1493	1494	1490	1553	1494	0	1532	1448	0	0
Q Serve(g_s), s	5.6	12.8	13.0	3.9	4.4	4.4	1.8	0.0	3.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.6	12.8	13.0	3.9	4.4	4.4	1.8	0.0	3.6	11.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.06	1.00		0.13	0.14		0.36
Lane Grp Cap(c), veh/h	573	587	588	387	559	582	463	0	636	527	0	0
V/C Ratio(X)	0.24	0.44	0.45	0.25	0.18	0.18	0.09	0.00	0.14	0.40	0.00	0.00
Avail Cap(c_a), veh/h	633	587	588	460	559	582	508	0	636	527	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.8	22.3	22.3	18.0	20.9	20.9	19.1	0.0	18.2	25.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.4	2.5	0.3	0.7	0.7	0.1	0.0	0.5	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.7	5.7	1.7	1.9	2.0	0.7	0.0	1.6	4.8	0.0	0.0
LnGrp Delay(d),s/veh	17.0	24.7	24.8	18.3	21.6	21.6	19.2	0.0	18.6	27.9	0.0	0.0
LnGrp LOS	B	C	C	B	C	C	B		B	C		
Approach Vol, veh/h		661			298			131			209	
Approach Delay, s/veh		23.1			20.5			18.8			27.9	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		46.0	10.1	43.9	7.9	38.1	12.0	42.0
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		41.5	10.5	34.5	6.5	30.5	11.5	33.5
Max Q Clear Time (g_c+I1), s		5.6	5.9	15.0	3.8	13.0	7.6	6.4
Green Ext Time (p_c), s		1.9	0.1	4.3	0.0	1.6	0.1	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: Whitney Road & US-30

2040 Background AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱			✥	
Traffic Volume (veh/h)	43	158	41	4	668	44	61	65	4	5	39	174
Future Volume (veh/h)	43	158	41	4	668	44	61	65	4	5	39	174
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	47	172	45	4	726	48	66	71	4	5	42	189
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	1164	297	606	1316	87	340	537	30	39	73	305
Arrive On Green	0.04	0.49	0.49	0.01	0.46	0.46	0.04	0.37	0.37	0.28	0.28	0.28
Sat Flow, veh/h	1494	2353	600	1494	2838	188	1494	1471	83	8	265	1100
Grp Volume(v), veh/h	47	107	110	4	381	393	66	0	75	236	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1463	1494	1490	1536	1494	0	1554	1373	0	0
Q Serve(g_s), s	1.6	3.9	4.1	0.1	18.4	18.5	3.1	0.0	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	3.9	4.1	0.1	18.4	18.5	3.1	0.0	3.2	15.0	0.0	0.0
Prop In Lane	1.00		0.41	1.00		0.12	1.00		0.05	0.02		0.80
Lane Grp Cap(c), veh/h	320	737	724	606	691	712	340	0	567	418	0	0
V/C Ratio(X)	0.15	0.15	0.15	0.01	0.55	0.55	0.19	0.00	0.13	0.57	0.00	0.00
Avail Cap(c_a), veh/h	367	737	724	680	691	712	389	0	567	418	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	13.8	13.8	14.2	19.3	19.3	22.8	0.0	21.2	31.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.4	0.4	0.0	3.2	3.1	0.3	0.0	0.5	5.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	1.7	0.1	8.1	8.4	1.3	0.0	1.5	6.3	0.0	0.0
LnGrp Delay(d),s/veh	14.7	14.2	14.2	14.2	22.5	22.4	23.1	0.0	21.7	37.0	0.0	0.0
LnGrp LOS	B	B	B	B	C	C	C		C	D		
Approach Vol, veh/h		264			778			141			236	
Approach Delay, s/veh		14.3			22.4			22.3			37.0	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		41.0	5.0	54.0	8.8	32.2	8.1	50.9
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		36.5	5.5	44.5	7.5	24.5	6.8	43.2
Max Q Clear Time (g_c+I1), s		5.2	2.1	6.1	5.1	17.0	3.6	20.5
Green Ext Time (p_c), s		2.1	0.0	7.5	0.0	1.1	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: Whitney Road & US-30

2040 Background PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↱			↰↑↱	
Traffic Volume (veh/h)	114	522	89	40	237	5	41	77	8	23	94	71
Future Volume (veh/h)	114	522	89	40	237	5	41	77	8	23	94	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	124	567	97	43	258	5	45	84	9	25	102	77
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	569	1134	193	344	1240	24	423	536	57	72	243	167
Arrive On Green	0.07	0.45	0.45	0.03	0.41	0.41	0.04	0.38	0.38	0.30	0.30	0.30
Sat Flow, veh/h	1494	2548	435	1494	2991	58	1494	1393	149	105	798	547
Grp Volume(v), veh/h	124	331	333	43	128	135	45	0	93	204	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1492	1494	1490	1558	1494	0	1542	1450	0	0
Q Serve(g_s), s	4.7	15.8	15.9	1.6	5.5	5.5	2.0	0.0	3.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.7	15.8	15.9	1.6	5.5	5.5	2.0	0.0	3.9	11.2	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.04	1.00		0.10	0.12		0.38
Lane Grp Cap(c), veh/h	569	663	664	344	618	646	423	0	594	482	0	0
V/C Ratio(X)	0.22	0.50	0.50	0.13	0.21	0.21	0.11	0.00	0.16	0.42	0.00	0.00
Avail Cap(c_a), veh/h	628	663	664	389	618	646	467	0	594	482	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.6	19.8	19.8	16.5	18.7	18.8	21.1	0.0	20.1	28.1	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.7	2.7	0.2	0.8	0.7	0.1	0.0	0.6	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	7.0	7.1	0.7	2.4	2.5	0.8	0.0	1.8	4.9	0.0	0.0
LnGrp Delay(d),s/veh	14.8	22.5	22.5	16.6	19.5	19.5	21.2	0.0	20.7	30.8	0.0	0.0
LnGrp LOS	B	C	C	B	B	B	C		C	C		
Approach Vol, veh/h		788			306			138			204	
Approach Delay, s/veh		21.3			19.1			20.9			30.8	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		43.0	8.0	49.0	8.1	34.9	11.0	46.0
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		38.5	6.5	41.5	6.5	27.5	10.5	37.5
Max Q Clear Time (g_c+I1), s		5.9	3.6	17.9	4.0	13.2	6.7	7.5
Green Ext Time (p_c), s		1.9	0.0	6.1	0.0	1.5	0.1	6.5

Intersection Summary		
HCM 2010 Ctrl Delay		22.1
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
10: Whitney Road & US-30

2040 Total AM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↱			↰↑↱	
Traffic Volume (veh/h)	182	158	41	4	668	44	61	65	4	5	39	412
Future Volume (veh/h)	182	158	41	4	668	44	61	65	4	5	39	412
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	198	172	45	4	726	48	66	71	4	5	42	448
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	1164	297	549	1147	76	131	537	30	38	45	447
Arrive On Green	0.10	0.49	0.49	0.01	0.40	0.40	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1494	2353	600	1494	2838	188	903	1471	83	4	125	1224
Grp Volume(v), veh/h	198	107	110	4	381	393	66	0	75	495	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1463	1494	1490	1536	903	0	1554	1352	0	0
Q Serve(g_s), s	7.3	3.9	4.1	0.2	20.5	20.5	0.0	0.0	3.2	10.0	0.0	0.0
Cycle Q Clear(g_c), s	7.3	3.9	4.1	0.2	20.5	20.5	36.5	0.0	3.2	36.5	0.0	0.0
Prop In Lane	1.00		0.41	1.00		0.12	1.00		0.05	0.01		0.91
Lane Grp Cap(c), veh/h	353	737	724	549	602	621	131	0	567	530	0	0
V/C Ratio(X)	0.56	0.15	0.15	0.01	0.63	0.63	0.50	0.00	0.13	0.93	0.00	0.00
Avail Cap(c_a), veh/h	442	737	724	617	602	621	131	0	567	530	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.74	0.00	0.00
Uniform Delay (d), s/veh	16.8	13.8	13.8	17.5	23.8	23.8	33.7	0.0	21.2	31.8	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.4	0.4	0.0	5.0	4.9	13.1	0.0	0.5	20.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	1.7	1.7	0.1	9.2	9.5	2.3	0.0	1.5	16.7	0.0	0.0
LnGrp Delay(d),s/veh	18.2	14.2	14.2	17.5	28.8	28.7	46.8	0.0	21.7	52.7	0.0	0.0
LnGrp LOS	B	B	B	B	C	C	D		C	D		
Approach Vol, veh/h		415			778			141			495	
Approach Delay, s/veh		16.1			28.7			33.4			52.7	
Approach LOS		B			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		41.0	5.0	54.0		41.0	14.1	44.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		36.5	5.1	44.9		36.5	15.5	34.5
Max Q Clear Time (g_c+I1), s		38.5	2.2	6.1		38.5	9.3	22.5
Green Ext Time (p_c), s		0.0	0.0	7.5		0.0	0.3	4.9

Intersection Summary		
HCM 2010 Ctrl Delay		32.7
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
10: Whitney Road & US-30

2040 Total PM.syn
12/12/2017

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱			✥	
Traffic Volume (veh/h)	472	522	89	40	237	5	41	77	8	23	94	368
Future Volume (veh/h)	472	522	89	40	237	5	41	77	8	23	94	368
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1600	1569	1600
Adj Flow Rate, veh/h	513	567	97	43	258	5	45	84	9	25	102	400
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	590	1068	182	277	595	12	194	573	61	50	98	345
Arrive On Green	0.25	0.42	0.42	0.03	0.20	0.20	0.04	0.41	0.41	0.33	0.33	0.33
Sat Flow, veh/h	1494	2548	435	1494	2991	58	1494	1393	149	36	296	1045
Grp Volume(v), veh/h	513	331	333	43	128	135	45	0	93	527	0	0
Grp Sat Flow(s),veh/h/ln	1494	1490	1492	1494	1490	1558	1494	0	1542	1377	0	0
Q Serve(g_s), s	25.5	16.6	16.7	2.3	7.5	7.6	1.9	0.0	3.8	18.4	0.0	0.0
Cycle Q Clear(g_c), s	25.5	16.6	16.7	2.3	7.5	7.6	1.9	0.0	3.8	33.0	0.0	0.0
Prop In Lane	1.00		0.29	1.00		0.04	1.00		0.10	0.05		0.76
Lane Grp Cap(c), veh/h	590	625	625	277	297	310	194	0	634	492	0	0
V/C Ratio(X)	0.87	0.53	0.53	0.16	0.43	0.43	0.23	0.00	0.15	1.07	0.00	0.00
Avail Cap(c_a), veh/h	590	625	625	316	297	310	217	0	634	492	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.74	0.00	0.00
Uniform Delay (d), s/veh	22.6	21.7	21.7	30.2	35.1	35.1	19.4	0.0	18.5	34.7	0.0	0.0
Incr Delay (d2), s/veh	13.2	3.2	3.2	0.3	4.5	4.4	0.6	0.0	0.5	55.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	7.4	7.4	0.9	3.5	3.6	0.8	0.0	1.7	21.1	0.0	0.0
LnGrp Delay(d),s/veh	35.8	24.9	24.9	30.5	39.7	39.5	20.0	0.0	18.9	89.9	0.0	0.0
LnGrp LOS	D	C	C	C	D	D	C		B	F		
Approach Vol, veh/h		1177			306			138			527	
Approach Delay, s/veh		29.7			38.3			19.3			89.9	
Approach LOS		C			D			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		45.6	8.0	46.4	8.1	37.5	30.0	24.4
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s		41.1	6.1	39.3	5.1	31.5	25.5	19.9
Max Q Clear Time (g_c+I1), s		5.8	4.3	18.7	3.9	35.0	27.5	9.6
Green Ext Time (p_c), s		5.0	0.0	5.8	0.0	0.0	0.0	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	45.0
HCM 2010 LOS	D

HCM 2010 TWSC
11: Ridge Road & Storey Boulevard

2017 Existing AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	25.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑↱	
Traffic Vol, veh/h	5	165	96	8	222	3	202	67	9	1	85	41
Future Vol, veh/h	5	165	96	8	222	3	202	67	9	1	85	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	100	125	-	100	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	79	77	50	84	75	75	80	56	25	92	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	209	125	16	264	4	269	84	16	4	92	56

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	891	766	120	863	787	92	149	0	0	100	0	0
Stage 1	128	128	-	630	630	-	-	-	-	-	-	-
Stage 2	763	638	-	233	157	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	263	333	931	275	324	965	1432	-	-	1493	-	-
Stage 1	876	790	-	470	475	-	-	-	-	-	-	-
Stage 2	397	471	-	770	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	270	931	76	~ 262	965	1432	-	-	1493	-	-
Mov Cap-2 Maneuver	-	270	-	76	~ 262	-	-	-	-	-	-	-
Stage 1	711	788	-	382	386	-	-	-	-	-	-	-
Stage 2	101	383	-	489	766	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		96.4	5.9	0.2
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1432	-	-	-	270	931	76	262	965	1493	-	-
HCM Lane V/C Ratio	0.188	-	-	-	0.774	0.134	0.211	1.009	0.004	0.003	-	-
HCM Control Delay (s)	8.1	-	-	-	52.5	9.5	64.6	99.7	8.7	7.4	-	-
HCM Lane LOS	A	-	-	-	F	A	F	F	A	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-	5.8	0.5	0.7	10.1	0	0	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC
11: Ridge Road & Storey Boulevard

2017 Existing PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	37.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱		↰	↱	
Traffic Vol, veh/h	21	255	143	29	159	4	145	159	10	11	117	21
Future Vol, veh/h	21	255	143	29	159	4	145	159	10	11	117	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	100	125	-	100	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	92	73	33	81	72	64	72	62	55	79	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	277	196	88	196	6	227	221	16	20	148	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	984	894	164	1025	902	229	180	0	0	237	0	0
Stage 1	204	204	-	682	682	-	-	-	-	-	-	-
Stage 2	780	690	-	343	220	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	228	280	881	213	277	810	1396	-	-	1330	-	-
Stage 1	798	733	-	440	450	-	-	-	-	-	-	-
Stage 2	388	446	-	672	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	55	~ 231	881	-	228	810	1396	-	-	1330	-	-
Mov Cap-2 Maneuver	55	~ 231	-	-	228	-	-	-	-	-	-	-
Stage 1	668	722	-	368	377	-	-	-	-	-	-	-
Stage 2	155	373	-	317	710	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	103.8		3.9	0.8
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1396	-	-	55	231	881	-	228	810	1330	-	-
HCM Lane V/C Ratio	0.162	-	-	0.509	1.2	0.222	-	0.861	0.007	0.015	-	-
HCM Control Delay (s)	8.1	-	-	124.9	167.7	10.3	-	73.7	9.5	7.7	-	-
HCM Lane LOS	A	-	-	F	F	B	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	2	13.5	0.8	-	6.8	0	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC
11: Ridge Road & Storey Boulevard

2040 Background AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↱		↰	↱	
Traffic Vol, veh/h	7	220	128	11	295	4	269	89	12	1	113	55
Future Vol, veh/h	7	220	128	11	295	4	269	89	12	1	113	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	100	125	-	100	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	239	139	12	321	4	292	97	13	1	123	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1003	850	153	962	873	103	183	0	0	110	0	0
Stage 1	155	155	-	688	688	-	-	-	-	-	-	-
Stage 2	848	695	-	274	185	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	221	298	893	235	~ 289	952	1392	-	-	1480	-	-
Stage 1	847	769	-	436	447	-	-	-	-	-	-	-
Stage 2	356	444	-	732	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 235	893	-	~ 228	952	1392	-	-	1480	-	-
Mov Cap-2 Maneuver	-	~ 235	-	-	~ 228	-	-	-	-	-	-	-
Stage 1	669	768	-	345	353	-	-	-	-	-	-	-
Stage 2	26	351	-	425	746	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			6	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1392	-	-	-	235	893	-	228	952	1480	-	-
HCM Lane V/C Ratio	0.21	-	-	-	1.018	0.156	-	1.406	0.005	0.001	-	-
HCM Control Delay (s)	8.3	-	-	-	108.1	9.8	-	247.7	8.8	7.4	-	-
HCM Lane LOS	A	-	-	-	F	A	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	-	9.7	0.6	-	18.2	0	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	87.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑↱	
Traffic Vol, veh/h	28	339	190	39	212	5	193	212	13	15	156	28
Future Vol, veh/h	28	339	190	39	212	5	193	212	13	15	156	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	100	125	-	100	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	368	207	42	230	5	210	230	14	16	170	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	989	881	185	1059	890	238	200	0	0	245	0	0
Stage 1	217	217	-	657	657	-	-	-	-	-	-	-
Stage 2	772	664	-	402	233	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	226	~ 285	857	202	282	801	1372	-	-	1321	-	-
Stage 1	785	723	-	454	462	-	-	-	-	-	-	-
Stage 2	392	458	-	625	712	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	~ 20	~ 238	857	-	236	801	1372	-	-	1321	-	-
Mov Cap-2 Maneuver	~ 20	~ 238	-	-	236	-	-	-	-	-	-	-
Stage 1	665	714	-	385	391	-	-	-	-	-	-	-
Stage 2	135	388	-	227	703	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	222.4		3.7	0.6
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	20	238	857	-	236	801	1321	-	-
HCM Lane V/C Ratio	0.153	-	-	1.522	1.548	0.241	-	0.976	0.007	0.012	-	-
HCM Control Delay (s)	8.1	-	-	$ 672.6	$ 304	10.5	-	97	9.5	7.8	-	-
HCM Lane LOS	A	-	-	F	F	B	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	4.1	22.5	0.9	-	9	0	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	7	330	128	11	483	4	269	89	12	1	113	55
Future Volume (veh/h)	7	330	128	11	483	4	269	89	12	1	113	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	8	359	139	12	525	4	292	97	13	1	123	60
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	631	536	321	631	536	563	607	81	638	446	218
Arrive On Green	0.40	0.40	0.40	0.27	0.27	0.27	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	871	1569	1333	896	1569	1333	1196	1355	182	1278	997	486
Grp Volume(v), veh/h	8	359	139	12	525	4	292	0	110	1	0	183
Grp Sat Flow(s),veh/h/ln	871	1569	1333	896	1569	1333	1196	0	1537	1278	0	1483
Q Serve(g_s), s	0.5	10.6	4.2	0.7	18.9	0.1	12.2	0.0	2.6	0.0	0.0	4.7
Cycle Q Clear(g_c), s	19.4	10.6	4.2	11.3	18.9	0.1	16.9	0.0	2.6	2.6	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		0.33
Lane Grp Cap(c), veh/h	196	631	536	321	631	536	563	0	688	638	0	664
V/C Ratio(X)	0.04	0.57	0.26	0.04	0.83	0.01	0.52	0.00	0.16	0.00	0.00	0.28
Avail Cap(c_a), veh/h	230	693	589	357	693	589	563	0	688	638	0	664
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.79	0.79	0.47	0.00	0.47	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	13.9	12.0	21.8	20.0	13.2	15.7	0.0	9.9	10.6	0.0	10.4
Incr Delay (d2), s/veh	0.1	0.9	0.3	0.0	6.4	0.0	1.6	0.0	0.2	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.7	1.5	0.2	9.3	0.0	4.2	0.0	1.1	0.0	0.0	2.1
LnGrp Delay(d),s/veh	25.3	14.8	12.2	21.8	26.4	13.2	17.4	0.0	10.1	10.6	0.0	11.5
LnGrp LOS	C	B	B	C	C	B	B		B	B		B
Approach Vol, veh/h		506			541			402			184	
Approach Delay, s/veh		14.3			26.2			15.4			11.5	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		31.4		28.6		31.4		28.6
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5
Max Q Clear Time (g_c+I1), s		18.9		21.4		6.7		20.9
Green Ext Time (p_c), s		1.5		2.7		2.7		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
11: Ridge Road & Storey Boulevard

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	28	621	190	39	446	5	193	212	13	15	156	28
Future Volume (veh/h)	28	621	190	39	446	5	193	212	13	15	156	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	30	675	207	42	485	5	210	230	14	16	170	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	348	799	679	207	799	679	404	499	30	366	442	78
Arrive On Green	0.51	0.51	0.51	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	903	1569	1333	627	1569	1333	1178	1464	89	1131	1299	229
Grp Volume(v), veh/h	30	675	207	42	485	5	210	0	244	16	0	200
Grp Sat Flow(s),veh/h/ln	903	1569	1333	627	1569	1333	1178	0	1553	1131	0	1528
Q Serve(g_s), s	1.5	22.2	5.4	3.8	15.4	0.1	9.9	0.0	7.4	0.7	0.0	6.0
Cycle Q Clear(g_c), s	17.0	22.2	5.4	26.1	15.4	0.1	15.8	0.0	7.4	8.0	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.15
Lane Grp Cap(c), veh/h	348	799	679	207	799	679	404	0	529	366	0	521
V/C Ratio(X)	0.09	0.84	0.30	0.20	0.61	0.01	0.52	0.00	0.46	0.04	0.00	0.38
Avail Cap(c_a), veh/h	362	824	700	217	824	700	404	0	529	366	0	521
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.81	0.81	0.81	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.3	12.7	8.5	28.8	14.8	9.7	21.0	0.0	15.5	18.6	0.0	15.0
Incr Delay (d2), s/veh	0.1	7.9	0.3	0.4	1.0	0.0	4.7	0.0	2.9	0.2	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	11.3	2.0	0.7	6.9	0.1	3.7	0.0	3.5	0.2	0.0	2.8
LnGrp Delay(d),s/veh	17.4	20.6	8.8	29.2	15.8	9.7	25.7	0.0	18.4	18.8	0.0	17.1
LnGrp LOS	B	C	A	C	B	A	C		B	B		B
Approach Vol, veh/h		912			532			454			216	
Approach Delay, s/veh		17.8			16.8			21.8			17.3	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.9		35.1		24.9		35.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		19.5		31.5		19.5		31.5
Max Q Clear Time (g_c+I1), s		17.8		24.2		10.0		28.1
Green Ext Time (p_c), s		0.6		4.8		2.5		2.5

Intersection Summary		
HCM 2010 Ctrl Delay		18.3
HCM 2010 LOS		B

HCM 2010 TWSC
12: College Drive & Storey Boulevard

2017 Existing AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱		✥		↰	↑↱		↰	↑↱	
Traffic Vol, veh/h	5	2	164	7	1	0	217	145	2	0	179	9
Future Vol, veh/h	5	2	164	7	1	0	217	145	2	0	179	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	-	-	-	160	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	62	50	84	58	25	92	85	88	25	92	83	56
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	4	195	12	4	0	255	165	8	0	216	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	905	907	224	905	911	169	232	0	0	173	0	0
Stage 1	224	224	-	679	679	-	-	-	-	-	-	-
Stage 2	681	683	-	226	232	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	257	276	815	257	274	875	1336	-	-	1404	-	-
Stage 1	779	718	-	441	451	-	-	-	-	-	-	-
Stage 2	440	449	-	777	713	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	216	223	815	165	222	875	1336	-	-	1404	-	-
Mov Cap-2 Maneuver	216	223	-	165	222	-	-	-	-	-	-	-
Stage 1	630	718	-	357	365	-	-	-	-	-	-	-
Stage 2	352	363	-	588	713	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	27.5	5	0
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	216	223	815	176	1404	-	-
HCM Lane V/C Ratio	0.191	-	-	0.037	0.018	0.24	0.091	-	-	-
HCM Control Delay (s)	8.3	-	-	22.3	21.4	10.8	27.5	0	-	-
HCM Lane LOS	A	-	-	C	C	B	D	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	0.1	0.9	0.3	0	-	-

HCM 2010 TWSC
12: College Drive & Storey Boulevard

2017 Existing PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱		✥		↰	↱		↰	↱	
Traffic Vol, veh/h	11	6	255	4	3	1	182	256	15	2	175	7
Future Vol, veh/h	11	6	255	4	3	1	182	256	15	2	175	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	-	-	-	160	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	75	91	33	38	25	88	86	54	50	82	44
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	8	280	12	8	4	207	298	28	4	213	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	960	968	221	958	962	312	229	0	0	325	0	0
Stage 1	229	229	-	725	725	-	-	-	-	-	-	-
Stage 2	731	739	-	233	237	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	236	254	819	237	256	728	1339	-	-	1235	-	-
Stage 1	774	715	-	416	430	-	-	-	-	-	-	-
Stage 2	413	424	-	770	709	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	214	819	133	216	728	1339	-	-	1235	-	-
Mov Cap-2 Maneuver	201	214	-	133	216	-	-	-	-	-	-	-
Stage 1	654	713	-	352	364	-	-	-	-	-	-	-
Stage 2	340	358	-	499	707	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	28.1	3.2	0.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1339	-	-	201	214	819	180	1235	-	-
HCM Lane V/C Ratio	0.154	-	-	0.079	0.037	0.342	0.133	0.003	-	-
HCM Control Delay (s)	8.2	-	-	24.4	22.5	11.7	28.1	7.9	-	-
HCM Lane LOS	A	-	-	C	C	B	D	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	0.3	0.1	1.5	0.5	0	-	-

HCM 2010 TWSC
12: College Drive & Storey Boulevard

2040 Background AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱		✥		↰	↱		↰	↱	
Traffic Vol, veh/h	7	3	218	9	1	5	289	193	3	5	238	12
Future Vol, veh/h	7	3	218	9	1	5	289	193	3	5	238	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	-	-	-	160	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	3	237	10	1	5	314	210	3	5	259	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1119	1117	265	1118	1123	211	272	0	0	213	0	0
Stage 1	276	276	-	840	840	-	-	-	-	-	-	-
Stage 2	843	841	-	278	283	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	184	207	774	184	206	829	1291	-	-	1357	-	-
Stage 1	730	682	-	360	381	-	-	-	-	-	-	-
Stage 2	358	380	-	728	677	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	147	156	774	102	155	829	1291	-	-	1357	-	-
Mov Cap-2 Maneuver	147	156	-	102	155	-	-	-	-	-	-	-
Stage 1	552	679	-	272	288	-	-	-	-	-	-	-
Stage 2	268	288	-	501	675	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	32.1	5.2	0.2
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1291	-	-	147	156	774	149	1357	-	-
HCM Lane V/C Ratio	0.243	-	-	0.052	0.021	0.306	0.109	0.004	-	-
HCM Control Delay (s)	8.7	-	-	30.8	28.6	11.7	32.1	7.7	-	-
HCM Lane LOS	A	-	-	D	D	B	D	A	-	-
HCM 95th %tile Q(veh)	1	-	-	0.2	0.1	1.3	0.4	0	-	-

Intersection												
Int Delay, s/veh	6.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	8	339	5	4	10	242	341	20	10	233	9
Future Vol, veh/h	15	8	339	5	4	10	242	341	20	10	233	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	-	-	-	160	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	9	368	5	4	11	263	371	22	11	253	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1195	1198	258	1192	1193	382	263	0	0	392	0	0
Stage 1	280	280	-	908	908	-	-	-	-	-	-	-
Stage 2	915	918	-	284	285	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	163	186	781	164	187	665	1301	-	-	1167	-	-
Stage 1	727	679	-	330	354	-	-	-	-	-	-	-
Stage 2	327	350	-	723	676	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	147	781	69	148	665	1301	-	-	1167	-	-
Mov Cap-2 Maneuver	132	147	-	69	148	-	-	-	-	-	-	-
Stage 1	580	673	-	263	282	-	-	-	-	-	-	-
Stage 2	253	279	-	373	670	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	29.7	3.4	0.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1301	-	-	132	147	781	166	1167	-	-
HCM Lane V/C Ratio	0.202	-	-	0.124	0.059	0.472	0.124	0.009	-	-
HCM Control Delay (s)	8.5	-	-	36.1	31	13.7	29.7	8.1	-	-
HCM Lane LOS	A	-	-	E	D	B	D	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	0.4	0.2	2.6	0.4	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	91	240	9	151	5	327	193	3	5	238	12
Future Volume (veh/h)	7	91	240	9	151	5	327	193	3	5	238	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	8	99	261	10	164	5	355	210	3	5	259	13
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	383	325	308	370	11	696	935	13	825	897	45
Arrive On Green	0.08	0.08	0.08	0.24	0.24	0.24	1.00	1.00	1.00	0.61	0.61	0.61
Sat Flow, veh/h	1211	1569	1333	1017	1514	46	1103	1543	22	1164	1481	74
Grp Volume(v), veh/h	8	99	261	10	0	169	355	0	213	5	0	272
Grp Sat Flow(s),veh/h/ln	1211	1569	1333	1017	0	1560	1103	0	1565	1164	0	1556
Q Serve(g_s), s	0.4	3.6	11.5	0.5	0.0	5.5	5.7	0.0	0.0	0.1	0.0	5.0
Cycle Q Clear(g_c), s	5.9	3.6	11.5	4.0	0.0	5.5	10.7	0.0	0.0	0.1	0.0	5.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.01	1.00		0.05
Lane Grp Cap(c), veh/h	304	383	325	308	0	381	696	0	948	825	0	942
V/C Ratio(X)	0.03	0.26	0.80	0.03	0.00	0.44	0.51	0.00	0.22	0.01	0.00	0.29
Avail Cap(c_a), veh/h	372	471	400	365	0	468	696	0	948	825	0	942
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	1.00	0.00	1.00	0.63	0.00	0.63	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	22.5	26.2	20.1	0.0	19.2	0.7	0.0	0.0	4.7	0.0	5.6
Incr Delay (d2), s/veh	0.0	0.3	7.5	0.0	0.0	0.8	1.7	0.0	0.3	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.6	4.9	0.1	0.0	2.4	1.8	0.0	0.1	0.0	0.0	2.3
LnGrp Delay(d),s/veh	26.2	22.8	33.6	20.2	0.0	20.0	2.4	0.0	0.3	4.7	0.0	6.4
LnGrp LOS	C	C	C	C		C	A		A	A		A
Approach Vol, veh/h		368			179			568			277	
Approach Delay, s/veh		30.5			20.0			1.6			6.4	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.9		19.1		40.9		19.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0
Max Q Clear Time (g_c+I1), s		12.7		13.5		7.0		7.5
Green Ext Time (p_c), s		4.6		1.1		4.9		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	15	234	395	5	191	10	289	341	20	10	233	9
Future Volume (veh/h)	15	234	395	5	191	10	289	341	20	10	233	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	16	254	429	5	208	11	314	371	22	11	253	10
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	510	433	250	480	25	596	770	46	479	787	31
Arrive On Green	0.11	0.11	0.11	0.32	0.32	0.32	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1157	1569	1333	755	1477	78	1112	1466	87	987	1499	59
Grp Volume(v), veh/h	16	254	429	5	0	219	314	0	393	11	0	263
Grp Sat Flow(s),veh/h/ln	1157	1569	1333	755	0	1555	1112	0	1553	987	0	1558
Q Serve(g_s), s	0.8	9.2	19.3	0.3	0.0	6.6	13.5	0.0	9.7	0.4	0.0	5.8
Cycle Q Clear(g_c), s	7.4	9.2	19.3	9.5	0.0	6.6	19.3	0.0	9.7	10.1	0.0	5.8
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	368	510	433	250	0	505	596	0	815	479	0	818
V/C Ratio(X)	0.04	0.50	0.99	0.02	0.00	0.43	0.53	0.00	0.48	0.02	0.00	0.32
Avail Cap(c_a), veh/h	368	510	433	250	0	505	596	0	815	479	0	818
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.40	0.40	1.00	0.00	1.00	0.09	0.00	0.09	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	22.2	26.7	20.7	0.0	15.9	13.7	0.0	9.1	12.3	0.0	8.1
Incr Delay (d2), s/veh	0.0	0.3	24.8	0.0	0.0	0.6	0.3	0.0	0.2	0.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.0	10.1	0.1	0.0	2.9	4.1	0.0	4.1	0.1	0.0	2.7
LnGrp Delay(d),s/veh	24.5	22.5	51.5	20.7	0.0	16.5	14.0	0.0	9.2	12.4	0.0	9.2
LnGrp LOS	C	C	D	C		B	B		A	B		A
Approach Vol, veh/h		699			224			707			274	
Approach Delay, s/veh		40.3			16.6			11.3			9.3	
Approach LOS		D			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0		24.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		31.5		19.5		31.5		19.5
Max Q Clear Time (g_c+I1), s		21.3		21.3		12.1		11.5
Green Ext Time (p_c), s		4.0		0.0		5.5		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↑↱		↰	↑↱	
Traffic Vol, veh/h	1	3	25	21	6	5	26	355	8	4	343	5
Future Vol, veh/h	1	3	25	21	6	5	26	355	8	4	343	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	75	62	44	50	62	65	87	67	33	90	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	40	48	12	8	40	408	12	12	381	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	913	909	385	926	907	414	389	0	0	420	0	0
Stage 1	409	409	-	494	494	-	-	-	-	-	-	-
Stage 2	504	500	-	432	413	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	254	275	663	249	276	638	1170	-	-	1139	-	-
Stage 1	619	596	-	557	546	-	-	-	-	-	-	-
Stage 2	550	543	-	602	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	234	263	663	223	264	638	1170	-	-	1139	-	-
Mov Cap-2 Maneuver	234	263	-	223	264	-	-	-	-	-	-	-
Stage 1	598	590	-	538	527	-	-	-	-	-	-	-
Stage 2	513	524	-	556	588	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	24.8	0.7	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1170	-	-	519	249	1139	-	-
HCM Lane V/C Ratio	0.034	-	-	0.093	0.272	0.011	-	-
HCM Control Delay (s)	8.2	-	-	12.6	24.8	8.2	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	1.1	0	-	-

HCM 2010 TWSC
13: College Drive & Thomas Road

2017 Existing PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱		↰	↱	
Traffic Vol, veh/h	3	6	24	11	4	8	35	444	16	9	430	2
Future Vol, veh/h	3	6	24	11	4	8	35	444	16	9	430	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	50	67	55	50	67	52	94	80	45	90	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	12	36	20	8	12	67	472	20	20	478	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1147	1147	480	1161	1139	482	482	0	0	492	0	0
Stage 1	520	520	-	617	617	-	-	-	-	-	-	-
Stage 2	627	627	-	544	522	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	176	199	586	172	201	584	1081	-	-	1071	-	-
Stage 1	539	532	-	477	481	-	-	-	-	-	-	-
Stage 2	471	476	-	523	531	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	157	183	586	144	185	584	1081	-	-	1071	-	-
Mov Cap-2 Maneuver	157	183	-	144	185	-	-	-	-	-	-	-
Stage 1	506	522	-	447	451	-	-	-	-	-	-	-
Stage 2	425	446	-	471	521	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.9	27.9	1	0.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1081	-	-	315	197	1071	-	-
HCM Lane V/C Ratio	0.062	-	-	0.177	0.203	0.019	-	-
HCM Control Delay (s)	8.6	-	-	18.9	27.9	8.4	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.7	0.1	-	-

HCM 2010 TWSC
13: College Drive & Thomas Road

2040 Background AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱		↰	↱	
Traffic Vol, veh/h	1	4	33	28	8	7	35	472	11	5	456	7
Future Vol, veh/h	1	4	33	28	8	7	35	472	11	5	456	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	4	36	30	9	8	38	513	12	5	496	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1113	1111	499	1125	1109	519	503	0	0	525	0	0
Stage 1	510	510	-	595	595	-	-	-	-	-	-	-
Stage 2	603	601	-	530	514	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	186	209	572	182	210	557	1061	-	-	1042	-	-
Stage 1	546	538	-	491	492	-	-	-	-	-	-	-
Stage 2	486	489	-	533	535	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	172	201	572	163	202	557	1061	-	-	1042	-	-
Mov Cap-2 Maneuver	172	201	-	163	202	-	-	-	-	-	-	-
Stage 1	526	535	-	473	474	-	-	-	-	-	-	-
Stage 2	454	471	-	493	532	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	29.7	0.6	0.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1061	-	-	456	192	1042	-	-
HCM Lane V/C Ratio	0.036	-	-	0.091	0.243	0.005	-	-
HCM Control Delay (s)	8.5	-	-	13.7	29.7	8.5	-	-
HCM Lane LOS	A	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.9	0	-	-

Intersection												
Int Delay, s/veh	2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↱		↰	↱	
Traffic Vol, veh/h	4	8	32	15	5	11	47	591	21	12	572	3
Future Vol, veh/h	4	8	32	15	5	11	47	591	21	12	572	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	275	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	9	35	16	5	12	51	642	23	13	622	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1414	1416	623	1427	1407	654	625	0	0	665	0	0
Stage 1	649	649	-	756	756	-	-	-	-	-	-	-
Stage 2	765	767	-	671	651	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	115	137	486	113	139	467	956	-	-	924	-	-
Stage 1	458	466	-	400	416	-	-	-	-	-	-	-
Stage 2	396	411	-	446	465	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	103	128	486	94	130	467	956	-	-	924	-	-
Mov Cap-2 Maneuver	103	128	-	94	130	-	-	-	-	-	-	-
Stage 1	434	459	-	379	394	-	-	-	-	-	-	-
Stage 2	360	389	-	401	458	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.7	38.7	0.6	0.2
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	263	140	924	-	-
HCM Lane V/C Ratio	0.053	-	-	0.182	0.241	0.014	-	-
HCM Control Delay (s)	9	-	-	21.7	38.7	9	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0.9	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	1	4	33	216	8	45	35	472	121	27	456	7
Future Volume (veh/h)	1	4	33	216	8	45	35	472	121	27	456	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	1	4	36	235	9	49	38	513	132	29	496	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	384	31	282	403	49	267	582	745	192	383	953	15
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.62	0.62	0.62	0.82	0.82	0.82
Sat Flow, veh/h	1340	135	1218	1362	212	1153	891	1204	310	782	1539	25
Grp Volume(v), veh/h	1	0	40	235	0	58	38	0	645	29	0	504
Grp Sat Flow(s),veh/h/ln	1340	0	1354	1362	0	1365	891	0	1514	782	0	1564
Q Serve(g_s), s	0.0	0.0	1.4	9.9	0.0	2.0	1.3	0.0	17.0	1.3	0.0	6.0
Cycle Q Clear(g_c), s	2.1	0.0	1.4	11.3	0.0	2.0	7.3	0.0	17.0	18.3	0.0	6.0
Prop In Lane	1.00		0.90	1.00		0.84	1.00		0.20	1.00		0.02
Lane Grp Cap(c), veh/h	384	0	313	403	0	316	582	0	937	383	0	968
V/C Ratio(X)	0.00	0.00	0.13	0.58	0.00	0.18	0.07	0.00	0.69	0.08	0.00	0.52
Avail Cap(c_a), veh/h	487	0	417	508	0	421	582	0	937	383	0	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.00	0.92
Uniform Delay (d), s/veh	19.4	0.0	18.3	22.8	0.0	18.5	7.3	0.0	7.6	8.6	0.0	2.6
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.3	0.0	0.3	0.2	0.0	4.1	0.4	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.5	3.9	0.0	0.8	0.4	0.0	8.1	0.3	0.0	2.9
LnGrp Delay(d),s/veh	19.4	0.0	18.5	24.1	0.0	18.8	7.5	0.0	11.7	8.9	0.0	4.4
LnGrp LOS	B		B	C		B	A		B	A		A
Approach Vol, veh/h		41			293			683			533	
Approach Delay, s/veh		18.5			23.0			11.5			4.6	
Approach LOS		B			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.6		18.4		41.6		18.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		32.5		18.5		32.5		18.5
Max Q Clear Time (g_c+I1), s		19.0		4.1		20.3		13.3
Green Ext Time (p_c), s		6.8		1.1		6.4		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		11.5
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	4	8	32	249	5	58	47	591	303	68	572	3
Future Volume (veh/h)	4	8	32	249	5	58	47	591	303	68	572	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	4	9	35	271	5	63	51	642	329	74	622	3
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	69	269	396	24	307	408	620	318	96	989	5
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1328	281	1094	1357	99	1249	797	979	502	577	1560	8
Grp Volume(v), veh/h	4	0	44	271	0	68	51	0	971	74	0	625
Grp Sat Flow(s),veh/h/ln	1328	0	1376	1357	0	1348	797	0	1480	577	0	1567
Q Serve(g_s), s	0.2	0.0	1.9	14.6	0.0	3.0	3.1	0.0	47.5	0.0	0.0	18.2
Cycle Q Clear(g_c), s	3.2	0.0	1.9	16.4	0.0	3.0	21.3	0.0	47.5	47.5	0.0	18.2
Prop In Lane	1.00		0.80	1.00		0.93	1.00		0.34	1.00		0.00
Lane Grp Cap(c), veh/h	369	0	338	396	0	332	408	0	938	96	0	994
V/C Ratio(X)	0.01	0.00	0.13	0.68	0.00	0.20	0.13	0.00	1.03	0.77	0.00	0.63
Avail Cap(c_a), veh/h	370	0	339	397	0	333	408	0	938	96	0	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.85	0.00	0.85
Uniform Delay (d), s/veh	23.7	0.0	22.0	28.4	0.0	22.4	14.9	0.0	13.7	37.5	0.0	8.4
Incr Delay (d2), s/veh	0.0	0.0	0.2	4.8	0.0	0.3	0.6	0.0	38.7	39.0	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	5.9	0.0	1.1	0.8	0.0	29.1	2.6	0.0	8.5
LnGrp Delay(d),s/veh	23.7	0.0	22.2	33.2	0.0	22.8	15.5	0.0	52.5	76.5	0.0	10.9
LnGrp LOS	C		C	C		C	B		F	E		B
Approach Vol, veh/h		48			339			1022			699	
Approach Delay, s/veh		22.3			31.1			50.6			17.9	
Approach LOS		C			C			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		23.0		52.0		23.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		47.5		18.5		47.5		18.5
Max Q Clear Time (g_c+I1), s		49.5		5.2		49.5		18.4
Green Ext Time (p_c), s		0.0		1.3		0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		36.0
HCM 2010 LOS		D

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	1	9	0	2	2	27	4	1	158	0
Future Vol, veh/h	0	0	1	9	0	2	2	27	4	1	158	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	25	56	92	50	25	75	50	25	82	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	16	0	4	8	36	8	4	193	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	259	261	193	259	257	40	193	0	0	44	0	0
Stage 1	201	201	-	56	56	-	-	-	-	-	-	-
Stage 2	58	60	-	203	201	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	694	644	849	694	647	1031	1380	-	-	1564	-	-
Stage 1	801	735	-	956	848	-	-	-	-	-	-	-
Stage 2	954	845	-	799	735	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	687	638	849	686	641	1031	1380	-	-	1564	-	-
Mov Cap-2 Maneuver	687	638	-	686	641	-	-	-	-	-	-	-
Stage 1	796	733	-	950	843	-	-	-	-	-	-	-
Stage 2	945	840	-	793	733	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10	1.2	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1380	-	-	849	735	1564	-	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.027	0.003	-	-
HCM Control Delay (s)	7.6	0	-	9.3	10	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

HCM 2010 TWSC
14: Whitney Road & Beckle Road

2017 Existing PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	4	3	0	2	1	110	9	3	69	0
Future Vol, veh/h	0	0	4	3	0	2	1	110	9	3	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	33	75	92	50	25	76	56	38	72	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	12	4	0	4	4	145	16	8	96	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	275	281	96	279	273	153	96	0	0	161	0	0
Stage 1	112	112	-	161	161	-	-	-	-	-	-	-
Stage 2	163	169	-	118	112	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	677	627	960	673	634	893	1498	-	-	1418	-	-
Stage 1	893	803	-	841	765	-	-	-	-	-	-	-
Stage 2	839	759	-	887	803	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	669	621	960	660	628	893	1498	-	-	1418	-	-
Mov Cap-2 Maneuver	669	621	-	660	628	-	-	-	-	-	-	-
Stage 1	890	798	-	838	763	-	-	-	-	-	-	-
Stage 2	833	757	-	871	798	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.8	0.2	0.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1498	-	-	960	759	1418	-	-
HCM Lane V/C Ratio	0.003	-	-	0.013	0.011	0.006	-	-
HCM Control Delay (s)	7.4	0	-	8.8	9.8	7.6	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 TWSC
14: Whitney Road & Beckle Road

2040 Background AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	5	1	12	5	3	3	36	5	1	210	5
Future Vol, veh/h	5	5	1	12	5	3	3	36	5	1	210	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	1	13	5	3	3	39	5	1	228	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	286	284	231	284	284	42	234	0	0	45	0	0
Stage 1	233	233	-	48	48	-	-	-	-	-	-	-
Stage 2	53	51	-	236	236	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	666	625	808	668	625	1029	1333	-	-	1563	-	-
Stage 1	770	712	-	965	855	-	-	-	-	-	-	-
Stage 2	960	852	-	767	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	658	623	808	661	623	1029	1333	-	-	1563	-	-
Mov Cap-2 Maneuver	658	623	-	661	623	-	-	-	-	-	-	-
Stage 1	768	711	-	963	853	-	-	-	-	-	-	-
Stage 2	949	850	-	759	709	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.4	0.5	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1333	-	-	652	687	1563	-	-
HCM Lane V/C Ratio	0.002	-	-	0.018	0.032	0.001	-	-
HCM Control Delay (s)	7.7	0	-	10.6	10.4	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	1.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	10	5	4	10	3	1	146	12	4	92	10
Future Vol, veh/h	10	10	5	4	10	3	1	146	12	4	92	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	5	4	11	3	1	159	13	4	100	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	288	288	105	289	287	165	111	0	0	172	0	0
Stage 1	114	114	-	167	167	-	-	-	-	-	-	-
Stage 2	174	174	-	122	120	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	664	622	949	663	623	879	1479	-	-	1405	-	-
Stage 1	891	801	-	835	760	-	-	-	-	-	-	-
Stage 2	828	755	-	882	796	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	651	620	949	648	621	879	1479	-	-	1405	-	-
Mov Cap-2 Maneuver	651	620	-	648	621	-	-	-	-	-	-	-
Stage 1	890	799	-	834	759	-	-	-	-	-	-	-
Stage 2	812	754	-	862	794	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.6	0	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1479	-	-	680	662	1405	-	-
HCM Lane V/C Ratio	0.001	-	-	0.04	0.028	0.003	-	-
HCM Control Delay (s)	7.4	0	-	10.5	10.6	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	5	16	12	5	3	28	36	5	1	210	5
Future Vol, veh/h	5	5	16	12	5	3	28	36	5	1	210	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	17	13	5	3	30	39	5	1	228	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	340	338	231	348	339	42	234	0	0	45	0	0
Stage 1	233	233	-	103	103	-	-	-	-	-	-	-
Stage 2	107	105	-	245	236	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	614	583	808	607	582	1029	1333	-	-	1563	-	-
Stage 1	770	712	-	903	810	-	-	-	-	-	-	-
Stage 2	898	808	-	759	710	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	596	569	808	579	568	1029	1333	-	-	1563	-	-
Mov Cap-2 Maneuver	596	569	-	579	568	-	-	-	-	-	-	-
Stage 1	752	711	-	882	791	-	-	-	-	-	-	-
Stage 2	869	789	-	736	709	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	11.1	3.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1333	-	-	703	616	1563	-	-
HCM Lane V/C Ratio	0.023	-	-	0.04	0.035	0.001	-	-
HCM Control Delay (s)	7.8	0	-	10.3	11.1	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

HCM 2010 TWSC
14: Whitney Road & Storey Boulevard/Beckle Road

2040 Total PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	43	4	10	3	32	146	12	4	92	10
Future Vol, veh/h	10	10	43	4	10	3	32	146	12	4	92	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	47	4	11	3	35	159	13	4	100	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	356	355	105	378	355	165	111	0	0	172	0	0
Stage 1	114	114	-	235	235	-	-	-	-	-	-	-
Stage 2	242	241	-	143	120	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	599	571	949	580	571	879	1479	-	-	1405	-	-
Stage 1	891	801	-	768	710	-	-	-	-	-	-	-
Stage 2	762	706	-	860	796	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	575	554	949	531	554	879	1479	-	-	1405	-	-
Mov Cap-2 Maneuver	575	554	-	531	554	-	-	-	-	-	-	-
Stage 1	868	799	-	748	692	-	-	-	-	-	-	-
Stage 2	728	688	-	804	794	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	11.3	1.3	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1479	-	-	780	586	1405	-	-
HCM Lane V/C Ratio	0.024	-	-	0.088	0.032	0.003	-	-
HCM Control Delay (s)	7.5	0	-	10.1	11.3	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

HCM 2010 TWSC
15: Whitney Road & Buttercup Drive

2017 Existing AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	1	33	1	1	169
Future Vol, veh/h	12	1	33	1	1	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	60	25	69	25	25	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	4	48	4	4	217

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	275	50	0	0	52	0
Stage 1	50	-	-	-	-	-
Stage 2	225	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	715	1018	-	-	1554	-
Stage 1	972	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	713	1018	-	-	1554	-
Mov Cap-2 Maneuver	713	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	750	1554	-
HCM Lane V/C Ratio	-	-	0.032	0.003	-
HCM Control Delay (s)	-	-	10	7.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	0	125	15	2	67
Future Vol, veh/h	8	0	125	15	2	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	40	92	87	75	50	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	0	144	20	4	96

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	258	154	0	0	164	0
Stage 1	154	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	731	892	-	-	1414	-
Stage 1	874	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	729	892	-	-	1414	-
Mov Cap-2 Maneuver	729	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	917	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	729	1414	-
HCM Lane V/C Ratio	-	-	0.027	0.003	-
HCM Control Delay (s)	-	-	10.1	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	1	44	1	1	225
Future Vol, veh/h	16	1	44	1	1	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	1	48	1	1	245

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	295	48	0	0	49	0
Stage 1	48	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	696	1021	-	-	1558	-
Stage 1	974	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	695	1021	-	-	1558	-
Mov Cap-2 Maneuver	695	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	708	1558	-
HCM Lane V/C Ratio	-	-	0.026	0.001	-
HCM Control Delay (s)	-	-	10.2	7.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

HCM 2010 TWSC
15: Whitney Road & Buttercup Drive

2040 Background PM.syn
12/12/2017

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	11	0	166	20	3	89
Future Vol, veh/h	11	0	166	20	3	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	180	22	3	97

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	294	191	0	0	202	0
Stage 1	191	-	-	-	-	-
Stage 2	103	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	697	851	-	-	1370	-
Stage 1	841	-	-	-	-	-
Stage 2	921	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	696	851	-	-	1370	-
Mov Cap-2 Maneuver	696	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	919	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	696	1370	-
HCM Lane V/C Ratio	-	-	0.017	0.002	-
HCM Control Delay (s)	-	-	10.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

HCM 2010 TWSC
15: Whitney Road & Thomas Road/Buttercup Drive

2040 Total AM.syn
12/12/2017

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	5	5	63	16	5	1	37	69	1	1	240	5
Future Vol, veh/h	5	5	63	16	5	1	37	69	1	1	240	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	68	17	5	1	40	75	1	1	261	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	425	423	264	459	424	76	266	0	0	76	0	0
Stage 1	266	266	-	156	156	-	-	-	-	-	-	-
Stage 2	159	157	-	303	268	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	540	522	775	512	522	985	1298	-	-	1523	-	-
Stage 1	739	689	-	846	769	-	-	-	-	-	-	-
Stage 2	843	768	-	706	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	522	505	775	451	505	985	1298	-	-	1523	-	-
Mov Cap-2 Maneuver	522	505	-	451	505	-	-	-	-	-	-	-
Stage 1	715	688	-	819	744	-	-	-	-	-	-	-
Stage 2	809	743	-	638	686	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	13	2.7	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1298	-	-	724	474	1523	-	-
HCM Lane V/C Ratio	0.031	-	-	0.11	0.05	0.001	-	-
HCM Control Delay (s)	7.9	0	-	10.6	13	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.2	0	-	-

Intersection												
Int Delay, s/veh	3.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	78	11	10	0	94	197	20	3	127	10
Future Vol, veh/h	10	10	78	11	10	0	94	197	20	3	127	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	85	12	11	0	102	214	22	3	138	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	585	590	143	627	584	225	149	0	0	236	0	0
Stage 1	150	150	-	429	429	-	-	-	-	-	-	-
Stage 2	435	440	-	198	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	422	420	905	396	423	814	1432	-	-	1331	-	-
Stage 1	853	773	-	604	584	-	-	-	-	-	-	-
Stage 2	600	578	-	804	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	387	385	905	329	388	814	1432	-	-	1331	-	-
Mov Cap-2 Maneuver	387	385	-	329	388	-	-	-	-	-	-	-
Stage 1	783	771	-	554	536	-	-	-	-	-	-	-
Stage 2	540	531	-	717	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	15.8	2.3	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1432	-	-	710	355	1331	-	-
HCM Lane V/C Ratio	0.071	-	-	0.15	0.064	0.002	-	-
HCM Control Delay (s)	7.7	0	-	11	15.8	7.7	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	0.2	0	-	-

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	36	0	0	181
Future Vol, veh/h	5	0	36	0	0	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	62	92	75	92	92	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	0	48	0	0	221

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	269	48	0	0	48	0
Stage 1	48	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	720	1021	-	-	1559	-
Stage 1	974	-	-	-	-	-
Stage 2	816	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	720	1021	-	-	1559	-
Mov Cap-2 Maneuver	720	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	720	1559	-
HCM Lane V/C Ratio	-	-	0.011	-	-
HCM Control Delay (s)	-	-	10.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection						
Int Delay, s/veh	0.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	0	137	8	0	78
Future Vol, veh/h	6	0	137	8	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	92	78	67	92	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	176	12	0	108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	290	182	0	0	188	0
Stage 1	182	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	701	861	-	-	1386	-
Stage 1	849	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	701	861	-	-	1386	-
Mov Cap-2 Maneuver	701	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	701	1386	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	10.2	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.3					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	2	48	0	0	241
Future Vol, veh/h	7	2	48	0	0	241
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	2	52	0	0	262

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	314	52	0	0	52	0
Stage 1	52	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	679	1016	-	-	1554	-
Stage 1	970	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	679	1016	-	-	1554	-
Mov Cap-2 Maneuver	679	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	733	1554	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	10	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	4	182	11	0	104
Future Vol, veh/h	8	4	182	11	0	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	4	198	12	0	113

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	317	204	0	0	210	0
Stage 1	204	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	676	837	-	-	1361	-
Stage 1	830	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	676	837	-	-	1361	-
Mov Cap-2 Maneuver	676	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	912	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	722	1361	-
HCM Lane V/C Ratio	-	-	0.018	-	-
HCM Control Delay (s)	-	-	10.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	50	7	5	2	29	110	0	0	319	5
Future Vol, veh/h	5	5	50	7	5	2	29	110	0	0	319	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	54	8	5	2	32	120	0	0	347	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	535	532	349	562	535	120	352	0	0	120	0	0
Stage 1	349	349	-	183	183	-	-	-	-	-	-	-
Stage 2	186	183	-	379	352	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	456	453	694	438	452	931	1207	-	-	1468	-	-
Stage 1	667	633	-	819	748	-	-	-	-	-	-	-
Stage 2	816	748	-	643	632	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	441	440	694	391	439	931	1207	-	-	1468	-	-
Mov Cap-2 Maneuver	441	440	-	391	439	-	-	-	-	-	-	-
Stage 1	648	633	-	796	727	-	-	-	-	-	-	-
Stage 2	785	727	-	588	632	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	13.4	1.7	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1207	-	-	633	445	1468	-	-
HCM Lane V/C Ratio	0.026	-	-	0.103	0.034	-	-	-
HCM Control Delay (s)	8.1	0	-	11.3	13.4	0	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

HCM 2010 TWSC
16: Whitney Road & Chickadee Drive

2040 Total PM.syn
12/12/2017

Intersection												
Int Delay, s/veh	2.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	62	8	10	4	75	307	11	0	220	10
Future Vol, veh/h	10	10	62	8	10	4	75	307	11	0	220	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	11	67	9	11	4	82	334	12	0	239	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	755	754	245	787	753	340	250	0	0	346	0	0
Stage 1	245	245	-	503	503	-	-	-	-	-	-	-
Stage 2	510	509	-	284	250	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	325	338	794	309	339	702	1316	-	-	1213	-	-
Stage 1	759	703	-	551	541	-	-	-	-	-	-	-
Stage 2	546	538	-	723	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	296	312	794	259	313	702	1316	-	-	1213	-	-
Mov Cap-2 Maneuver	296	312	-	259	313	-	-	-	-	-	-	-
Stage 1	701	703	-	509	499	-	-	-	-	-	-	-
Stage 2	490	497	-	651	700	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	17.1	1.5	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1316	-	-	570	321	1213	-	-
HCM Lane V/C Ratio	0.062	-	-	0.156	0.074	-	-	-
HCM Control Delay (s)	7.9	0	-	12.5	17.1	0	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	0.2	0	-	-

HCM 2010 TWSC
17: Whitney Road & Foxglove Drive

2017 Existing AM.syn
12/12/2017

Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	33	2	1	187
Future Vol, veh/h	4	1	33	2	1	187
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	25	75	50	25	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	44	4	4	228

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	282	46	0	0	48	0
Stage 1	46	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	708	1023	-	-	1559	-
Stage 1	976	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	706	1023	-	-	1559	-
Mov Cap-2 Maneuver	706	-	-	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	801	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	787	1559	-
HCM Lane V/C Ratio	-	-	0.015	0.003	-
HCM Control Delay (s)	-	-	9.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	8	134	6	3	85
Future Vol, veh/h	1	8	134	6	3	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	50	82	30	38	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	16	163	20	8	116

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	305	173	0	0	183	0
Stage 1	173	-	-	-	-	-
Stage 2	132	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	687	871	-	-	1392	-
Stage 1	857	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	683	871	-	-	1392	-
Mov Cap-2 Maneuver	683	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	889	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	826	1392	-
HCM Lane V/C Ratio	-	-	0.024	0.006	-
HCM Control Delay (s)	-	-	9.5	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	0.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	1	44	3	1	249
Future Vol, veh/h	5	1	44	3	1	249
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	1	48	3	1	271

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	322	49	0	0	51	0
Stage 1	49	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	672	1020	-	-	1555	-
Stage 1	973	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	671	1020	-	-	1555	-
Mov Cap-2 Maneuver	671	-	-	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	712	1555	-
HCM Lane V/C Ratio	-	-	0.009	0.001	-
HCM Control Delay (s)	-	-	10.1	7.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	11	178	8	4	113
Future Vol, veh/h	1	11	178	8	4	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	12	193	9	4	123

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	330	198	0	0	202	0
Stage 1	198	-	-	-	-	-
Stage 2	132	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	665	843	-	-	1370	-
Stage 1	835	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	663	843	-	-	1370	-
Mov Cap-2 Maneuver	663	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	824	1370	-
HCM Lane V/C Ratio	-	-	0.016	0.003	-
HCM Control Delay (s)	-	-	9.4	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	25	5	0	1	15	135	3	1	377	2
Future Vol, veh/h	2	0	25	5	0	1	15	135	3	1	377	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	27	5	0	1	16	147	3	1	410	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	595	596	411	608	595	148	412	0	0	150	0	0
Stage 1	413	413	-	181	181	-	-	-	-	-	-	-
Stage 2	182	183	-	427	414	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	416	417	641	408	417	899	1147	-	-	1431	-	-
Stage 1	616	594	-	821	750	-	-	-	-	-	-	-
Stage 2	820	748	-	606	593	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	410	410	641	386	410	899	1147	-	-	1431	-	-
Mov Cap-2 Maneuver	410	410	-	386	410	-	-	-	-	-	-	-
Stage 1	607	593	-	809	739	-	-	-	-	-	-	-
Stage 2	807	737	-	580	592	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	13.6	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1147	-	-	615	427	1431	-	-
HCM Lane V/C Ratio	0.014	-	-	0.048	0.015	0.001	-	-
HCM Control Delay (s)	8.2	0	-	11.1	13.6	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection												
Int Delay, s/veh	1.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	4	0	31	1	0	11	38	378	8	4	291	4
Future Vol, veh/h	4	0	31	1	0	11	38	378	8	4	291	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	34	1	0	12	41	411	9	4	316	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	831	829	318	842	827	415	321	0	0	420	0	0
Stage 1	327	327	-	498	498	-	-	-	-	-	-	-
Stage 2	504	502	-	344	329	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	289	306	723	284	307	637	1239	-	-	1139	-	-
Stage 1	686	648	-	554	544	-	-	-	-	-	-	-
Stage 2	550	542	-	671	646	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	273	292	723	261	293	637	1239	-	-	1139	-	-
Mov Cap-2 Maneuver	273	292	-	261	293	-	-	-	-	-	-	-
Stage 1	657	645	-	530	521	-	-	-	-	-	-	-
Stage 2	516	519	-	637	643	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	11.5	0.7	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	608	569	1139	-	-
HCM Lane V/C Ratio	0.033	-	-	0.063	0.023	0.004	-	-
HCM Control Delay (s)	8	0	-	11.3	11.5	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection												
Int Delay, s/veh	5.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	5	20	85	5	36	5	132	5	5	5	5	5
Future Vol, veh/h	5	20	85	5	36	5	132	5	5	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	22	92	5	39	5	143	5	5	5	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	45	0	0	114	0	0	137	134	68	137	178	42
Stage 1	-	-	-	-	-	-	79	79	-	53	53	-
Stage 2	-	-	-	-	-	-	58	55	-	84	125	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1563	-	-	1475	-	-	834	757	995	834	716	1029
Stage 1	-	-	-	-	-	-	930	829	-	960	851	-
Stage 2	-	-	-	-	-	-	954	849	-	924	792	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1563	-	-	1475	-	-	821	752	995	821	712	1029
Mov Cap-2 Maneuver	-	-	-	-	-	-	821	752	-	821	712	-
Stage 1	-	-	-	-	-	-	927	827	-	957	848	-
Stage 2	-	-	-	-	-	-	940	846	-	910	790	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	10.4	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	823	1563	-	-	1475	-	-	835
HCM Lane V/C Ratio	0.188	0.003	-	-	0.004	-	-	0.02
HCM Control Delay (s)	10.4	7.3	0	-	7.5	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	5.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	69	193	10	42	10	165	10	10	10	10	10
Future Vol, veh/h	10	69	193	10	42	10	165	10	10	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	75	210	11	46	11	179	11	11	11	11	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	57	0	0	285	0	0	286	280	180	286	380	51
Stage 1	-	-	-	-	-	-	202	202	-	73	73	-
Stage 2	-	-	-	-	-	-	84	78	-	213	307	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1547	-	-	1277	-	-	666	628	863	666	552	1017
Stage 1	-	-	-	-	-	-	800	734	-	937	834	-
Stage 2	-	-	-	-	-	-	924	830	-	789	661	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1547	-	-	1277	-	-	640	617	863	640	542	1017
Mov Cap-2 Maneuver	-	-	-	-	-	-	640	617	-	640	542	-
Stage 1	-	-	-	-	-	-	793	727	-	929	826	-
Stage 2	-	-	-	-	-	-	894	823	-	761	655	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.3	13	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	648	1547	-	-	1277	-	-	683
HCM Lane V/C Ratio	0.31	0.007	-	-	0.009	-	-	0.048
HCM Control Delay (s)	13	7.3	0	-	7.8	0	-	10.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	119	49	153	15
Demand Flow Rate, veh/h	121	50	156	15
Vehicles Circulating, veh/h	15	156	32	191
Vehicles Exiting, veh/h	191	32	104	15
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	4.2	4.6	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	121	50	156	15
Cap Entry Lane, veh/h	1113	967	1094	933
Entry HV Adj Factor	0.980	0.984	0.980	0.993
Flow Entry, veh/h	119	49	153	15
Cap Entry, veh/h	1091	952	1073	927
V/C Ratio	0.109	0.052	0.143	0.016
Control Delay, s/veh	4.2	4.2	4.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	296	68	201	33
Demand Flow Rate, veh/h	301	69	205	33
Vehicles Circulating, veh/h	33	205	98	241
Vehicles Exiting, veh/h	241	98	236	33
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.0	4.7	5.5	4.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	301	69	205	33
Cap Entry Lane, veh/h	1093	921	1024	888
Entry HV Adj Factor	0.982	0.987	0.979	0.993
Flow Entry, veh/h	296	68	201	33
Cap Entry, veh/h	1073	908	1003	882
V/C Ratio	0.275	0.075	0.200	0.037
Control Delay, s/veh	6.0	4.7	5.5	4.4
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	0

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			✥				✥				✥	
Traffic Vol, veh/h	0	37	59	62	0	25	100	50	0	78	42	15
Future Vol, veh/h	0	37	59	62	0	25	100	50	0	78	42	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	40	64	67	0	27	109	54	0	85	46	16
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.2	9.4	9.4
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	58%	23%	14%	19%
Vol Thru, %	31%	37%	57%	38%
Vol Right, %	11%	39%	29%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	135	158	175	149
LT Vol	78	37	25	29
Through Vol	42	59	100	57
RT Vol	15	62	50	63
Lane Flow Rate	147	172	190	162
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.226	0.251	0.214
Departure Headway (Hd)	5.042	4.735	4.755	4.767
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	706	752	749	747
Service Time	3.114	2.802	2.822	2.839
HCM Lane V/C Ratio	0.208	0.229	0.254	0.217
HCM Control Delay	9.4	9.2	9.4	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.9	1	0.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations			✣	
Traffic Vol, veh/h	0	29	57	63
Future Vol, veh/h	0	29	57	63
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	32	62	68
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	9.2
HCM LOS	A

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			✣				✣				✣	
Traffic Vol, veh/h	0	94	151	125	0	31	125	62	0	116	81	38
Future Vol, veh/h	0	94	151	125	0	31	125	62	0	116	81	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	102	164	136	0	34	136	67	0	126	88	41
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	19.8	13.7	14.9
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	25%	14%	33%
Vol Thru, %	34%	41%	57%	32%
Vol Right, %	16%	34%	28%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	235	370	218	224
LT Vol	116	94	31	75
Through Vol	81	151	125	71
RT Vol	38	125	62	78
Lane Flow Rate	255	402	237	243
Geometry Grp	1	1	1	1
Degree of Util (X)	0.459	0.661	0.412	0.43
Departure Headway (Hd)	6.463	5.916	6.266	6.359
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	557	611	573	565
Service Time	4.523	3.967	4.327	4.421
HCM Lane V/C Ratio	0.458	0.658	0.414	0.43
HCM Control Delay	14.9	19.8	13.7	14.2
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	2.4	4.9	2	2.1

Intersection				
Intersection Delay, s/veh				
Intersection LOS				

Movement	SBU	SBL	SBT	SBR
Lane Configurations			✥	
Traffic Vol, veh/h	0	75	71	78
Future Vol, veh/h	0	75	71	78
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	82	77	85
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	14.2
HCM LOS	B

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	171	190	147	162
Demand Flow Rate, veh/h	174	194	150	165
Vehicles Circulating, veh/h	124	175	139	226
Vehicles Exiting, veh/h	267	114	159	143
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.3	5.9	5.2	5.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	174	194	150	165
Cap Entry Lane, veh/h	998	949	983	901
Entry HV Adj Factor	0.981	0.978	0.981	0.980
Flow Entry, veh/h	171	190	147	162
Cap Entry, veh/h	979	928	964	884
V/C Ratio	0.174	0.205	0.153	0.183
Control Delay, s/veh	5.3	5.9	5.2	5.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	1

Intersection				
Intersection Delay, s/veh	8.5			
Intersection LOS	A			
Approach	**EB**	**WB**	**NB**	**SB**
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	402	237	255	244
Demand Flow Rate, veh/h	410	242	261	250
Vehicles Circulating, veh/h	198	323	355	303
Vehicles Exiting, veh/h	355	293	253	262
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.3	7.8	8.6	7.8
Approach LOS	A	A	A	A
Lane	**Left**	**Left**	**Left**	**Left**
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	410	242	261	250
Cap Entry Lane, veh/h	927	818	792	835
Entry HV Adj Factor	0.980	0.980	0.978	0.978
Flow Entry, veh/h	402	237	255	244
Cap Entry, veh/h	908	802	775	816
V/C Ratio	0.442	0.296	0.329	0.300
Control Delay, s/veh	9.3	7.8	8.6	7.8
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	1

Intersection						
Int Delay, s/veh	4.2					
Movement	**WBL**	**WBR**	**NBT**	**NBR**	**SBL**	**SBT**
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	63	75	80	37	44	137
Future Vol, veh/h	63	75	80	37	44	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	82	87	40	48	149
Major/Minor	**Minor1**		**Major1**		**Major2**	
Conflicting Flow All	352	107	0	0	127	0
Stage 1	107	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	646	947	-	-	1459	-
Stage 1	917	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	623	947	-	-	1459	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Approach	**WB**		**NB**		**SB**	
HCM Control Delay, s	10.9		0		1.8	
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	765	1459	-
HCM Lane V/C Ratio	-	-	0.196	0.033	-
HCM Control Delay (s)	-	-	10.9	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection						
Int Delay, s/veh	5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	78	94	197	94	113	161
Future Vol, veh/h	78	94	197	94	113	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	85	102	214	102	123	175

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	686	265	0	0	316	0
Stage 1	265	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	413	774	-	-	1244	-
Stage 1	779	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	368	774	-	-	1244	-
Mov Cap-2 Maneuver	368	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	589	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	3.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	516	1244	-
HCM Lane V/C Ratio	-	-	0.362	0.099	-
HCM Control Delay (s)	-	-	15.9	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.3	-

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	150	127	197
Demand Flow Rate, veh/h	153	130	201
Vehicles Circulating, veh/h	89	49	69
Vehicles Exiting, veh/h	90	221	173
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.9	4.5	5.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	153	130	201
Cap Entry Lane, veh/h	1034	1076	1055
Entry HV Adj Factor	0.980	0.979	0.980
Flow Entry, veh/h	150	127	197
Cap Entry, veh/h	1013	1053	1034
V/C Ratio	0.148	0.121	0.191
Control Delay, s/veh	4.9	4.5	5.3
LOS	A	A	A
95th %tile Queue, veh	1	0	1

Intersection			
Intersection Delay, s/veh	6.6		
Intersection LOS	A		

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	187	316	298
Demand Flow Rate, veh/h	191	322	303
Vehicles Circulating, veh/h	218	125	87
Vehicles Exiting, veh/h	229	265	322
Follow-Up Headway, s	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.2	7.0	6.5
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193
Entry Flow, veh/h	191	322	303
Cap Entry Lane, veh/h	909	997	1036
Entry HV Adj Factor	0.979	0.981	0.982
Flow Entry, veh/h	187	316	298
Cap Entry, veh/h	890	978	1017
V/C Ratio	0.210	0.323	0.293
Control Delay, s/veh	6.2	7.0	6.5
LOS	A	A	A
95th %tile Queue, veh	1	1	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑	↱	
Traffic Volume (veh/h)	25	163	95	129	393	15
Future Volume (Veh/h)	25	163	95	129	393	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	177	103	140	427	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				1194		
pX, platoon unblocked						
vC, conflicting volume	781	435	443			
vC1, stage 1 conf vol	435					
vC2, stage 2 conf vol	346					
vCu, unblocked vol	781	435	443			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	72	91			
cM capacity (veh/h)	531	621	1117			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	27	177	103	140	443
Volume Left	27	0	103	0	0
Volume Right	0	177	0	0	16
cSH	531	621	1117	1700	1700
Volume to Capacity	0.05	0.28	0.09	0.08	0.26
Queue Length 95th (ft)	4	29	8	0	0
Control Delay (s)	12.1	13.1	8.5	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	13.0		3.6		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
21: Whitney Road & Commercial Access

2040 Total PM.syn
12/12/2017

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑	↑↱	
Traffic Volume (veh/h)	31	203	245	399	281	38
Future Volume (Veh/h)	31	203	245	399	281	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	221	266	434	305	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				1194		
pX, platoon unblocked						
vC, conflicting volume	1292	326	346			
vC1, stage 1 conf vol	326					
vC2, stage 2 conf vol	966					
vCu, unblocked vol	1292	326	346			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	69	78			
cM capacity (veh/h)	275	716	1213			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	34	221	266	434	346
Volume Left	34	0	266	0	0
Volume Right	0	221	0	0	41
cSH	275	716	1213	1700	1700
Volume to Capacity	0.12	0.31	0.22	0.26	0.20
Queue Length 95th (ft)	10	33	21	0	0
Control Delay (s)	20.0	12.3	8.8	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	13.3		3.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
22: Dell Range Boulevard & Commerical Access

2040 Total AM.syn
12/12/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑↱		↰	↱
Traffic Volume (veh/h)	132	196	513	15	25	225
Future Volume (Veh/h)	132	196	513	15	25	225
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	143	213	558	16	27	245
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1111			
pX, platoon unblocked	0.91				0.91	0.91
vC, conflicting volume	574				1065	566
vC1, stage 1 conf vol					566	
vC2, stage 2 conf vol					499	
vCu, unblocked vol	487				1024	479
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	85				94	54
cM capacity (veh/h)	984				420	537

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	143	213	574	27	245
Volume Left	143	0	0	27	0
Volume Right	0	0	16	0	245
cSH	984	1700	1700	420	537
Volume to Capacity	0.15	0.13	0.34	0.06	0.46
Queue Length 95th (ft)	13	0	0	5	59
Control Delay (s)	9.3	0.0	0.0	14.2	17.2
Lane LOS	A			B	C
Approach Delay (s)	3.7		0.0	16.9	
Approach LOS				C	

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
22: Dell Range Boulevard & Commerical Access

2040 Total PM.syn
12/12/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	339	574	477	38	31	281
Future Volume (Veh/h)	339	574	477	38	31	281
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	368	624	518	41	34	305
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)			1111			
pX, platoon unblocked						
vC, conflicting volume	559				1898	538
vC1, stage 1 conf vol					538	
vC2, stage 2 conf vol					1360	
vCu, unblocked vol	559				1898	538
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	64				77	44
cM capacity (veh/h)	1012				145	543

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	368	624	559	34	305
Volume Left	368	0	0	34	0
Volume Right	0	0	41	0	305
cSH	1012	1700	1700	145	543
Volume to Capacity	0.36	0.37	0.33	0.23	0.56
Queue Length 95th (ft)	42	0	0	22	86
Control Delay (s)	10.6	0.0	0.0	37.2	19.8
Lane LOS	B			E	C
Approach Delay (s)	3.9		0.0	21.5	
Approach LOS				C	

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

APPENDIX E

Queuing Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	312	111	82	945	139	279	69	155	233	148
v/c Ratio	0.26	0.24	0.17	0.18	0.74	0.43	0.69	0.16	0.53	0.57	0.32
Control Delay	15.7	19.7	4.2	18.3	30.7	25.3	43.8	2.3	28.4	38.7	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	19.7	4.2	18.3	30.7	25.3	43.8	2.3	28.4	38.7	7.2
Queue Length 50th (ft)	16	67	0	35	291	58	162	0	66	130	0
Queue Length 95th (ft)	26	100	9	m45	329	69	218	1	110	211	35
Internal Link Dist (ft)		2328			1890		987			5221	
Turn Bay Length (ft)	150		60	150		125		125	100		100
Base Capacity (vph)	200	1274	636	449	1278	326	405	429	295	409	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.24	0.17	0.18	0.74	0.43	0.69	0.16	0.53	0.57	0.32

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	101	812	205	124	877	176	420	159	115	269	115
v/c Ratio	0.49	0.77	0.37	0.57	0.78	0.52	0.80	0.30	0.51	0.58	0.24
Control Delay	23.7	34.3	12.8	24.6	34.2	24.3	43.5	8.9	27.8	35.8	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	34.3	12.8	24.6	34.2	24.3	43.5	8.9	27.8	35.8	6.5
Queue Length 50th (ft)	35	238	39	46	298	70	241	16	44	145	0
Queue Length 95th (ft)	65	314	93	m60	m346	108	274	48	75	211	29
Internal Link Dist (ft)		2328			1890		987			5221	
Turn Bay Length (ft)	150		60	150		125		125	100		100
Base Capacity (vph)	206	1061	549	218	1131	344	525	528	226	466	477
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.77	0.37	0.57	0.78	0.51	0.80	0.30	0.51	0.58	0.24

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	537	97	196	1036	209	122	303	141	180	288	163
v/c Ratio	0.24	0.47	0.15	0.49	0.72	0.28	0.51	0.50	0.32	0.56	0.72	0.35
Control Delay	14.7	25.6	0.5	24.2	38.7	14.5	32.2	39.0	2.8	30.4	45.7	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	25.6	0.5	24.2	38.7	14.5	32.2	39.0	2.8	30.4	45.7	7.1
Queue Length 50th (ft)	14	134	0	96	368	57	53	92	0	82	168	0
Queue Length 95th (ft)	31	191	0	m133	441	m92	97	136	10	138	#280	49
Internal Link Dist (ft)		2328			1890			987			2072	
Turn Bay Length (ft)	150		60	150		150	125		125	100		100
Base Capacity (vph)	202	1134	639	421	1445	735	241	606	440	333	400	462
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.47	0.15	0.47	0.72	0.28	0.51	0.50	0.32	0.54	0.72	0.35

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	122	1438	245	278	1180	198	198	423	349	122	307	124
v/c Ratio	0.61	1.05	0.36	1.27	0.79	0.26	1.14	0.70	0.87	0.66	1.09	0.37
Control Delay	23.6	66.2	10.6	172.8	13.3	1.0	141.6	43.9	44.5	48.5	119.5	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	66.2	10.6	172.8	13.3	1.0	141.6	43.9	44.5	48.5	119.5	11.7
Queue Length 50th (ft)	30	~528	48	~178	204	0	~105	132	122	59	~221	5
Queue Length 95th (ft)	#60	#663	105	m#234	m330	m3	#243	186	#288	#125	#388	55
Internal Link Dist (ft)		2328			1890			987			2132	
Turn Bay Length (ft)	150		60	150		150	125		125	100		100
Base Capacity (vph)	201	1370	675	219	1492	748	174	607	399	184	282	334
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	1.05	0.36	1.27	0.79	0.26	1.14	0.70	0.87	0.66	1.09	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: College Drive & Dell Range Boulevard

2022 Total AM.syn
12/14/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	150	305	197	802	381	495	135	496
v/c Ratio	0.17	0.21	0.23	0.45	0.76	0.87	0.47	0.43	0.75
Control Delay	21.7	34.3	0.9	19.2	27.3	40.8	21.8	20.9	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	34.3	0.9	19.2	27.3	40.8	21.8	20.9	42.8
Queue Length 50th (ft)	13	49	4	62	234	160	101	46	151
Queue Length 95th (ft)	m27	76	10	87	#334	196	104	73	#232
Internal Link Dist (ft)		1890			2082		1020		1940
Turn Bay Length (ft)	175		50	125		125		100	
Base Capacity (vph)	175	723	1333	448	1057	469	1058	333	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.21	0.23	0.44	0.76	0.81	0.47	0.41	0.75

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: College Drive & Dell Range Boulevard

2022 Total PM.syn
12/14/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	557	427	100	576	449	786	238	358
v/c Ratio	0.60	0.61	0.32	0.44	0.74	0.85	0.78	0.76	0.54
Control Delay	36.7	41.2	0.5	32.2	41.5	33.2	34.0	36.9	35.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	41.2	0.5	32.2	41.5	33.2	34.0	36.9	35.9
Queue Length 50th (ft)	83	194	0	45	165	187	216	82	99
Queue Length 95th (ft)	m104	250	0	71	229	#326	250	#190	152
Internal Link Dist (ft)		1890			3832		1020		1940
Turn Bay Length (ft)	175		50	125		125		100	
Base Capacity (vph)	229	918	1333	226	779	566	1003	346	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.61	0.32	0.44	0.74	0.79	0.78	0.69	0.54

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
2040 Total AM.syn
2: College Drive & Dell Range Boulevard
12/12/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	113	323	382	302	913	240	384	350	190	146	534	246
v/c Ratio	0.52	0.37	0.29	0.61	0.77	0.36	0.74	0.48	0.40	0.44	0.76	0.53
Control Delay	32.6	43.3	0.8	17.3	28.2	3.0	31.3	35.2	7.5	25.2	43.6	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	43.3	0.8	17.3	28.2	3.0	31.3	35.2	7.5	25.2	43.6	12.9
Queue Length 50th (ft)	55	110	1	96	275	9	86	102	0	61	167	25
Queue Length 95th (ft)	96	158	0	m142	327	m23	#124	148	55	108	229	100
Internal Link Dist (ft)		1890			3832			1020			1940	
Turn Bay Length (ft)	175		200	125		200	125		200	100		200
Base Capacity (vph)	220	883	1333	525	1183	673	524	730	470	344	704	464
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.37	0.29	0.58	0.77	0.36	0.73	0.48	0.40	0.42	0.76	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
2040 Total PM.syn
2: College Drive & Dell Range Boulevard
12/12/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	339	1043	511	252	829	174	580	683	413	284	432	262
v/c Ratio	1.09	1.01	0.38	1.06	0.93	0.33	0.90	1.06	0.82	1.07	0.73	0.56
Control Delay	95.8	41.9	0.2	93.1	47.8	5.8	42.8	90.3	27.5	102.2	45.9	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.8	41.9	0.2	93.1	47.8	5.8	42.8	90.3	27.5	102.2	45.9	9.9
Queue Length 50th (ft)	~209	~294	0	~131	276	11	140	~252	85	~157	136	3
Queue Length 95th (ft)	m#217	m#297	m0	m#248	m#366	m29	#214	#367	#254	#323	192	74
Internal Link Dist (ft)		1890			3832			1020			1940	
Turn Bay Length (ft)	175		200	125		200	125		200	100		200
Base Capacity (vph)	310	1037	1333	238	896	522	644	646	503	266	590	470
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.01	0.38	1.06	0.93	0.33	0.90	1.06	0.82	1.07	0.73	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	96	379	47	479	69	57	8	346
v/c Ratio	0.29	0.45	0.12	0.55	0.32	0.11	0.02	0.52
Control Delay	9.0	7.3	8.3	14.3	25.9	13.1	21.3	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	7.3	8.3	14.3	25.9	13.1	21.3	8.8
Queue Length 50th (ft)	27	90	13	194	30	14	3	30
Queue Length 95th (ft)	8	118	12	292	42	3	13	0
Internal Link Dist (ft)		3832		760		3424		895
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	336	841	404	869	213	539	400	666
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.45	0.12	0.55	0.32	0.11	0.02	0.52

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	657	20	444	63	77	4	216
v/c Ratio	0.32	0.63	0.06	0.42	0.37	0.21	0.02	0.47
Control Delay	11.0	14.4	5.0	7.2	36.9	14.7	29.8	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	14.4	5.0	7.2	36.9	14.7	29.8	11.0
Queue Length 50th (ft)	49	252	3	90	33	15	2	16
Queue Length 95th (ft)	44	m207	3	113	43	20	11	0
Internal Link Dist (ft)		3832		760		3424		895
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	487	1044	347	1056	171	370	260	462
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.63	0.06	0.42	0.37	0.21	0.02	0.47

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	121	352	110	79	766	62	93	27	298
v/c Ratio	0.46	0.34	0.12	0.15	0.75	0.45	0.23	0.10	0.68
Control Delay	10.1	3.8	0.3	7.5	17.4	27.3	9.4	29.7	30.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	3.8	0.3	7.5	17.4	27.3	9.4	29.7	30.1
Queue Length 50th (ft)	11	30	0	17	296	17	12	13	110
Queue Length 95th (ft)	33	35	0	36	460	m18	m13	36	207
Internal Link Dist (ft)		3832			760		3424		2586
Turn Bay Length (ft)	100			100		100		100	
Base Capacity (vph)	262	1027	911	532	1025	137	400	278	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.34	0.12	0.15	0.75	0.45	0.23	0.10	0.68

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	310	968	93	68	774	55	226	34	362
v/c Ratio	0.98	0.87	0.10	0.33	0.70	0.89	0.72	0.28	1.00
Control Delay	36.7	10.6	0.2	10.6	12.3	108.3	38.4	41.1	77.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	10.6	0.2	10.6	12.3	108.3	38.4	41.1	77.3
Queue Length 50th (ft)	195	509	0	14	241	19	64	19	171
Queue Length 95th (ft)	m#222	m540	m0	39	375	m#59	m#123	49	#363
Internal Link Dist (ft)		3832			760		3424		2586
Turn Bay Length (ft)	100			100		100		100	
Base Capacity (vph)	316	1118	977	206	1111	62	315	122	362
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.87	0.10	0.33	0.70	0.89	0.72	0.28	1.00

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2040 Total AM.syn

6: Whitney Road & Dell Range Boulevard
12/12/2017

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	225	5	386	117	186	72	532
v/c Ratio	0.10	0.46	0.02	0.80	0.38	0.22	0.13	0.63
Control Delay	14.9	16.4	13.0	31.7	13.9	8.9	8.9	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	16.4	13.0	31.7	13.9	8.9	8.9	14.3
Queue Length 50th (ft)	4	51	1	118	23	33	12	120
Queue Length 95th (ft)	15	99	7	#208	65	69	33	234
Internal Link Dist (ft)		1031		4112		1506		1114
Turn Bay Length (ft)	125		100		150		125	
Base Capacity (vph)	188	561	319	560	311	850	544	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.40	0.02	0.69	0.38	0.22	0.13	0.63

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2040 Total PM.syn

6: Whitney Road & Dell Range Boulevard
12/12/2017

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	568	4	411	136	506	88	439
v/c Ratio	0.37	0.90	0.03	0.65	0.50	0.72	0.38	0.63
Control Delay	17.1	36.1	10.8	18.5	20.6	22.1	18.3	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	36.1	10.8	18.5	20.6	22.1	18.3	17.8
Queue Length 50th (ft)	21	165	1	100	35	148	21	116
Queue Length 95th (ft)	55	#347	6	184	88	#297	58	207
Internal Link Dist (ft)		1031		4112		1506		1114
Turn Bay Length (ft)	125		100		150		125	
Base Capacity (vph)	259	662	150	661	274	701	230	696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.86	0.03	0.62	0.50	0.72	0.38	0.63

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	24	120	4	757	4	125
v/c Ratio	0.07	0.06	0.01	0.43	0.01	0.35
Control Delay	1.7	1.8	7.0	10.5	27.5	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.7	1.8	7.0	10.5	27.5	27.1
Queue Length 50th (ft)	1	3	1	89	2	41
Queue Length 95th (ft)	1	5	1	141	6	100
Internal Link Dist (ft)		913		1774	437	277
Turn Bay Length (ft)	350		325			
Base Capacity (vph)	384	1860	699	1751	415	358
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.06	0.01	0.43	0.01	0.35

Intersection Summary

Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	12	366	398	8	285
v/c Ratio	0.04	0.31	0.34	0.01	0.48
Control Delay	5.4	10.8	11.8	12.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	10.8	11.8	12.0	16.7
Queue Length 50th (ft)	2	92	40	2	84
Queue Length 95th (ft)	m3	76	77	3	83
Internal Link Dist (ft)		913	1774	437	277
Turn Bay Length (ft)	350				
Base Capacity (vph)	303	1177	1155	740	590
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.34	0.01	0.48

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	10	132	1	912	3	240
v/c Ratio	0.04	0.08	0.00	0.56	0.01	0.55
Control Delay	2.1	2.6	10.0	13.1	21.7	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	2.6	10.0	13.1	21.7	24.5
Queue Length 50th (ft)	1	4	0	135	1	88
Queue Length 95th (ft)	m2	m6	3	241	8	169
Internal Link Dist (ft)		913		1774	437	277
Turn Bay Length (ft)	350		325			
Base Capacity (vph)	263	1623	607	1624	541	438
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.00	0.56	0.01	0.55

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	10	442	620	2	485
v/c Ratio	0.05	0.42	0.53	0.00	0.76
Control Delay	5.2	13.0	11.0	10.0	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	13.0	11.0	10.0	27.0
Queue Length 50th (ft)	2	109	49	1	225
Queue Length 95th (ft)	m3	m119	118	4	377
Internal Link Dist (ft)		913	1774	437	277
Turn Bay Length (ft)	350				
Base Capacity (vph)	187	1057	1171	814	635
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.42	0.53	0.00	0.76

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: US-30 & Van Buren Avenue

2022 Total AM.syn

12/12/2017

Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	197	906	457	145
v/c Ratio	0.30	0.37	0.22	0.63
Control Delay	3.3	3.0	9.4	37.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.3	3.0	9.4	37.2
Queue Length 50th (ft)	16	48	62	24
Queue Length 95th (ft)	45	99	114	73
Internal Link Dist (ft)		2716	1386	3424
Turn Bay Length (ft)	100			
Base Capacity (vph)	773	2457	2055	444
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.37	0.22	0.33
Intersection Summary				

Queues

8: US-30 & Van Buren Avenue

2022 Total PM.syn

12/12/2017

Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	197	906	457	145
v/c Ratio	0.30	0.37	0.22	0.63
Control Delay	3.3	3.0	4.6	31.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.3	3.0	4.6	31.3
Queue Length 50th (ft)	16	48	30	29
Queue Length 95th (ft)	45	99	75	54
Internal Link Dist (ft)		2716	1386	3424
Turn Bay Length (ft)	100			
Base Capacity (vph)	773	2457	2055	444
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.37	0.22	0.33
Intersection Summary				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	172	489	1528	171	171
v/c Ratio	0.75	0.23	0.89	0.46	0.46
Control Delay	39.1	4.8	24.1	12.5	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	4.8	24.1	12.5	11.3
Queue Length 50th (ft)	53	45	308	6	6
Queue Length 95th (ft)	#147	63	#407	m61	m55
Internal Link Dist (ft)		2716	1386	3424	
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	245	2166	1724	375	371
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.23	0.89	0.46	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	411	1446	872	23	278
v/c Ratio	0.83	0.67	0.64	0.08	0.59
Control Delay	28.0	9.3	22.7	32.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.0	9.3	22.7	32.4	8.9
Queue Length 50th (ft)	127	221	169	12	18
Queue Length 95th (ft)	238	287	210	m26	m45
Internal Link Dist (ft)		2716	1386	3424	
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	578	2160	1356	275	473
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.67	0.64	0.08	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	36	277	34	12	842	157	153
v/c Ratio	0.12	0.16	0.04	0.02	0.53	0.48	0.29
Control Delay	9.0	9.6	0.6	10.0	26.7	32.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	9.6	0.6	10.0	26.7	32.4	6.6
Queue Length 50th (ft)	8	33	0	5	262	77	4
Queue Length 95th (ft)	15	42	0	5	297	96	48
Internal Link Dist (ft)		1386			1488	601	706
Turn Bay Length (ft)	100		150	25			
Base Capacity (vph)	293	1713	794	548	1589	329	528
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.16	0.04	0.02	0.53	0.48	0.29

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	148	692	110	16	344	120	115
v/c Ratio	0.26	0.39	0.13	0.04	0.23	0.36	0.28
Control Delay	8.2	10.8	2.4	5.5	15.3	32.2	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	10.8	2.4	5.5	15.3	32.2	15.1
Queue Length 50th (ft)	34	97	0	4	74	59	22
Queue Length 95th (ft)	44	122	14	5	106	46	44
Internal Link Dist (ft)		1386			1488	601	706
Turn Bay Length (ft)	100		150	25			
Base Capacity (vph)	622	1792	845	420	1502	338	416
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.39	0.13	0.04	0.23	0.36	0.28

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	41	449	29	5	1251	142	175
v/c Ratio	0.20	0.24	0.03	0.01	0.71	0.59	0.38
Control Delay	9.5	8.4	0.2	2.6	14.8	42.6	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	8.4	0.2	2.6	14.8	42.6	10.7
Queue Length 50th (ft)	9	55	0	1	349	77	17
Queue Length 95th (ft)	m20	76	m2	m1	416	145	72
Internal Link Dist (ft)		1386			1488	601	706
Turn Bay Length (ft)	100		150	25			
Base Capacity (vph)	202	1865	858	513	1750	241	463
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.03	0.01	0.71	0.59	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	152	1208	118	9	734	95	128
v/c Ratio	0.35	0.58	0.12	0.03	0.42	0.43	0.37
Control Delay	6.3	7.8	1.4	2.8	6.2	40.4	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	7.8	1.4	2.8	6.2	40.4	16.1
Queue Length 50th (ft)	26	140	0	0	112	51	20
Queue Length 95th (ft)	m41	170	m11	m1	m132	102	73
Internal Link Dist (ft)		1386			1488	601	706
Turn Bay Length (ft)	100		150	25			
Base Capacity (vph)	458	2070	962	271	1732	221	344
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.58	0.12	0.03	0.42	0.43	0.37

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
10: Whitney Road & US-30

2022 Total AM.syn
12/12/2017

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	43	256	8	687	64	80	248
v/c Ratio	0.15	0.18	0.02	0.51	0.20	0.13	0.47
Control Delay	13.7	15.1	8.7	14.9	21.0	19.3	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	15.1	8.7	14.9	21.0	19.3	12.6
Queue Length 50th (ft)	19	54	2	171	25	31	42
Queue Length 95th (ft)	37	71	2	92	45	45	38
Internal Link Dist (ft)		1323		2503		1420	1506
Turn Bay Length (ft)	375		375		100		
Base Capacity (vph)	285	1448	483	1341	318	616	528
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.18	0.02	0.51	0.20	0.13	0.47

Intersection Summary

Queues
10: Whitney Road & US-30

2022 Total PM.syn
12/12/2017

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	137	524	97	201	42	89	209
v/c Ratio	0.28	0.46	0.28	0.19	0.11	0.14	0.41
Control Delay	16.1	29.5	14.8	20.3	18.5	16.8	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	29.5	14.8	20.3	18.5	16.8	20.9
Queue Length 50th (ft)	66	172	26	36	16	30	96
Queue Length 95th (ft)	75	235	18	58	32	55	126
Internal Link Dist (ft)		1323		2503		1420	1506
Turn Bay Length (ft)	375		375		100		
Base Capacity (vph)	501	1132	373	1041	376	643	516
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.46	0.26	0.19	0.11	0.14	0.41

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	198	217	4	774	66	75	495
v/c Ratio	0.62	0.14	0.01	0.69	0.38	0.13	0.71
Control Delay	32.7	21.2	7.2	22.4	31.5	21.2	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	21.2	7.2	22.4	31.5	21.2	15.8
Queue Length 50th (ft)	112	53	1	215	31	30	94
Queue Length 95th (ft)	187	100	m1	300	72	62	224
Internal Link Dist (ft)		1323		2503		1420	1506
Turn Bay Length (ft)	375		375		100		
Base Capacity (vph)	355	1538	440	1119	173	569	700
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.14	0.01	0.69	0.38	0.13	0.71

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	513	664	43	263	45	93	527
v/c Ratio	0.96	0.52	0.20	0.44	0.21	0.15	0.88
Control Delay	51.9	25.2	16.5	32.7	20.4	17.8	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.9	25.2	16.5	32.7	20.4	17.8	40.2
Queue Length 50th (ft)	345	226	12	68	17	33	242
Queue Length 95th (ft)	#408	296	m24	m88	39	67	#463
Internal Link Dist (ft)		1323		2503		1420	1506
Turn Bay Length (ft)	375		375		100		
Base Capacity (vph)	537	1282	215	592	217	639	597
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.52	0.20	0.44	0.21	0.15	0.88

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	359	139	12	525	4	292	110	1	183
v/c Ratio	0.05	0.58	0.23	0.04	0.85	0.01	0.64	0.16	0.00	0.26
Control Delay	10.6	17.8	3.3	9.9	25.6	0.2	22.9	10.6	11.0	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	17.8	3.3	9.9	25.6	0.2	22.9	10.6	11.0	9.6
Queue Length 50th (ft)	2	91	0	1	103	0	83	21	0	30
Queue Length 95th (ft)	8	157	25	m5	#300	m0	#197	49	3	68
Internal Link Dist (ft)		1090			1843			3069		857
Turn Bay Length (ft)	125		100	125		100	200		75	
Base Capacity (vph)	182	692	666	306	692	603	457	706	488	704
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.52	0.21	0.04	0.76	0.01	0.64	0.16	0.00	0.26

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	675	207	42	485	5	210	244	16	200
v/c Ratio	0.10	0.88	0.27	0.25	0.63	0.01	0.60	0.44	0.05	0.36
Control Delay	8.3	28.0	2.7	12.3	13.7	0.6	26.7	18.4	14.7	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	28.0	2.7	12.3	13.7	0.6	26.7	18.4	14.7	16.3
Queue Length 50th (ft)	5	185	2	4	108	0	64	68	4	50
Queue Length 95th (ft)	17	#384	28	m20	218	m0	#154	127	15	100
Internal Link Dist (ft)		1090			1843			3009		857
Turn Bay Length (ft)	125		100	125		100	200		75	
Base Capacity (vph)	308	823	791	178	823	712	349	559	316	559
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.82	0.26	0.24	0.59	0.01	0.60	0.44	0.05	0.36

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	99	261	10	169	355	213	5	272
v/c Ratio	0.04	0.33	0.56	0.05	0.56	0.58	0.21	0.01	0.27
Control Delay	16.1	20.4	17.2	18.0	27.8	18.3	10.5	5.0	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.1	20.4	17.2	18.0	27.8	18.3	10.5	5.0	5.7
Queue Length 50th (ft)	3	38	60	3	55	116	55	1	33
Queue Length 95th (ft)	m6	m77	125	12	97	m187	m102	4	79
Internal Link Dist (ft)		1843			3827		1228		854
Turn Bay Length (ft)	100		100	100		160		150	
Base Capacity (vph)	292	470	582	326	470	610	1028	643	1025
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.45	0.03	0.36	0.58	0.21	0.01	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	254	429	5	219	314	393	11	263
v/c Ratio	0.07	0.63	0.65	0.03	0.54	0.57	0.43	0.02	0.28
Control Delay	14.9	23.8	13.6	14.6	22.9	14.2	9.5	7.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	23.8	13.6	14.6	22.9	14.2	9.5	7.0	8.0
Queue Length 50th (ft)	6	102	89	1	65	64	70	2	42
Queue Length 95th (ft)	m6	m126	m126	8	113	158	143	8	89
Internal Link Dist (ft)		1843			3827		1228		854
Turn Bay Length (ft)	100		100	100		160		150	
Base Capacity (vph)	283	509	722	251	509	553	922	458	923
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.50	0.59	0.02	0.43	0.57	0.43	0.02	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	40	235	58	38	645	29	504
v/c Ratio	0.00	0.10	0.78	0.15	0.10	0.71	0.10	0.55
Control Delay	14.0	7.3	38.6	7.4	7.5	15.5	6.7	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	7.3	38.6	7.4	7.5	15.5	6.7	9.5
Queue Length 50th (ft)	0	1	74	2	6	150		
Queue Length 95th (ft)	3	19	#164	24	19	#347	m13	143
Internal Link Dist (ft)		1031		3828		1890		1228
Turn Bay Length (ft)	100		100		275		100	
Base Capacity (vph)	347	443	353	456	374	903	282	916
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.09	0.67	0.13	0.10	0.71	0.10	0.55

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

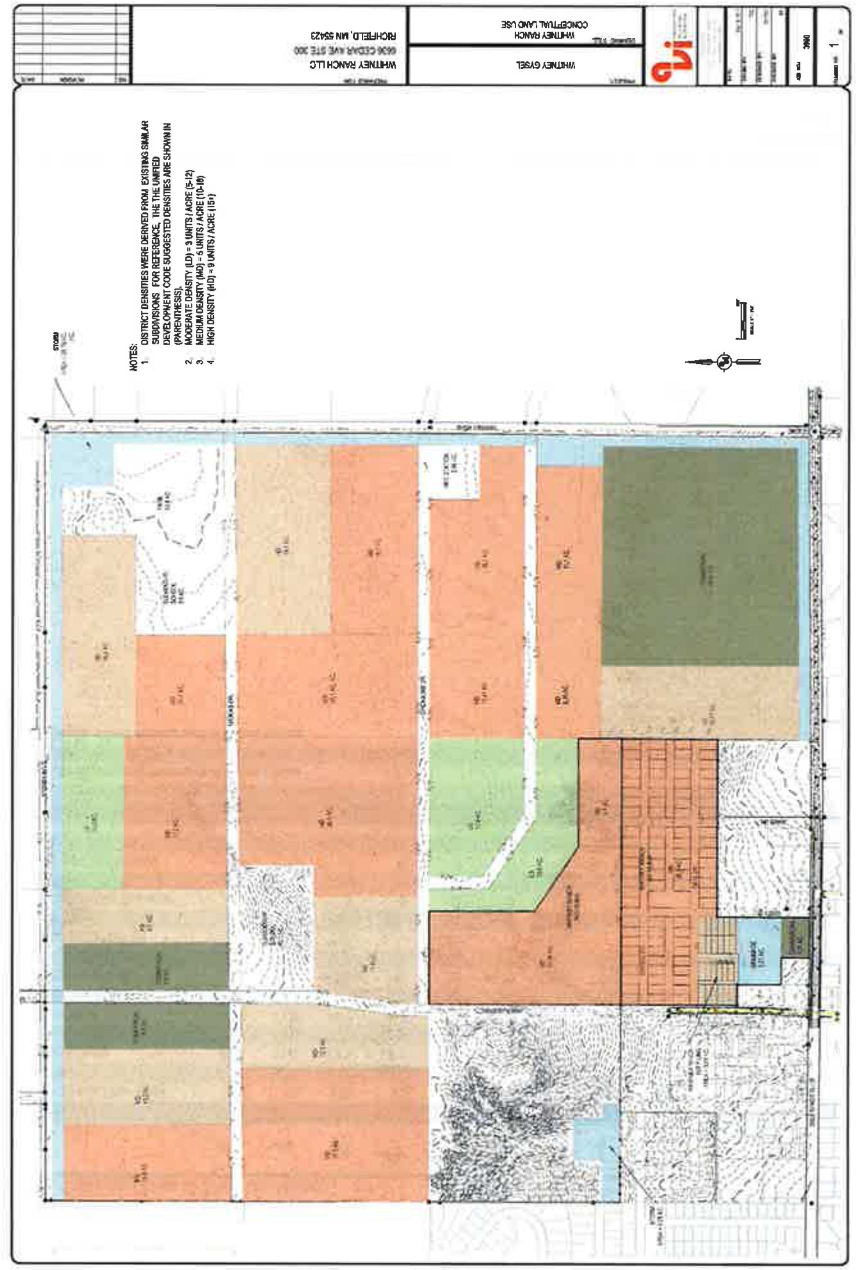
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	44	271	68	51	971	74	625
v/c Ratio	0.01	0.12	0.96	0.18	0.15	1.00	0.58	0.63
Control Delay	21.8	11.0	77.1	8.7	7.0	45.5	31.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	11.0	77.1	8.7	7.0	45.5	31.7	12.0
Queue Length 50th (ft)	1	3	125	2	8	~387	17	155
Queue Length 95th (ft)	9	27	#269	31	23	#693	#90	256
Internal Link Dist (ft)		1031		3828		1890		1228
Turn Bay Length (ft)	100		100		275		100	
Base Capacity (vph)	275	367	281	380	335	967	127	992
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.12	0.96	0.18	0.15	1.00	0.58	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX F

Conceptual Land Use Plan



WHITNEY ROAD CORRIDOR STUDY

Whitney Ranch Meeting

March 7, 2018 @ 4:00 P.M.

•LIST OF ATTENDEES •

Please Initial To Record Attendance	NAME	COMPANY	EMAIL	CELL/ PHONE
TDC	Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
TMM	Tom Mason	MPO	tmason@cheyennempo.org	(307)637-6299
BE	Brad Emmons	AVI	emmons@avipc.com	307.637.6017

Whitney Road Corridor Study
Whitney Ranch Meeting
March 7, 2018

I. Introduction and Sign In

II. Why Modification to Roadway Alignment

a. Impact to Petroleum high pressure lines in east and west side of roadway (Suncor 12.75" [2' to 5' deep: East] and Plains All American Pipeline 16" [4' to 14'-5" deep; West])
b. Road sight distance related to design speed
c. Roadway profile or longitudinal grade exceeds current standard 10% maximum snow 8%

III. Potential Benefits

a. Eliminate water and sewer crossing of petroleum line
b. Storm Sewer outlet Whitney Road to Whitney Ranch
c. Detention Area

IV. Primary Options
a. Alignment East
b. Alignment West
c. Other

V. Alternatives
a. Single travel lane each alignment south/ north
b. 3 Lane Section on new alignment
✓ Greenway old alignment

Whitney Road Corridor Study

Whitney Ranch Meeting

16-Nov-18

* List of Attendees*

Please Initial to Confirm attendance	NAME	COMPANY	EMAIL	CELL/PHONE
TM	Tom Mason	MPO	tmason@cheyennempo.org	637-6299
TC	Tom Cobb	MPO	tcobb@cheyennempo.org	638-4384
	Joe Patterson	Guardian Development	joe@guardiancompanies.com	220-1772
CH	Connie Holgerson	Gysel Whitney, LLC	bholgerson@rtconnect.net	307-246-3294
WH	Bill Holgerson	Gysel Whitney, LLC	bholgerson@rtconnect.net	307-246-3294
NO	Nancy Olson	MPO	nolson@cheyennempo.org	638-4366

WHITNEY ROAD CORRIDOR STUDY

Whitney Ranch Meeting

August 8, 2018 @ 11:00 A.M.

• *LIST OF ATTENDEES* •

Please Initial to Record Attendance	NAME	COMPANY	EMAIL	CELL / PHONE
TC	Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
CH	Connie Holgerson	Gysle Whitney, LLC	bholgerson@rtconnect.net	307.246.3294
	Brad Emmons	AVI	emmons@avipc.com	307.637.6017
	Joe Patterson	Guardian Development	joe@gulardiancompanies.com	307.220.1772
wh	Bill Holgerson	Gysel Whitney LLC	bholgerson@rtconnect.net	307.2K 3294

SUNCOR ENERGY USA PIPELINE
WHITNEY ROAD CORRIDOR STUDY

May 9, 2017@ 2:00 P.M.

•LIST OF ATTENDEES •

Suncor Energy USA Pipeline Co 1715 Fleischli Blvd. Cheyenne, WY 82001

NAME	COMPANY	EMAIL	CELL/ PHONE
Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
Dillon Ohrt	Suncor	dohrt@suncor.com	303-~~5??~~ 549-8004
Barry McCann	Suncor	bmccann@suncor.com	307-632-8219
[illegible]	"	[illegible]@suncor.com	(307) 775-[illegible]
Cameron Nuss	Suncor	CNUSS@Suncor.com	(307) 421-7842

AGENDA

Subject:	Suncor Energy USA Pipeline		
Client:	Cheyenne MPO	Date:	May 10, 2017
Project:	Whitney Road Corridor Study	Project No:	2-3987.17
Meeting Date:	May 10, 2017 @ 2:00 pm	Meeting Location:	Suncor Energy USA Pipeline Co 1715 Fleischli Blvd. Cheyenne, WY 82001

I. Introductions

II. Introduce Whitney Project

III. Additional available pipeline data and details

III.1 Verify datum

III.2 Depth

III.3 Marker location on pipeline or offset

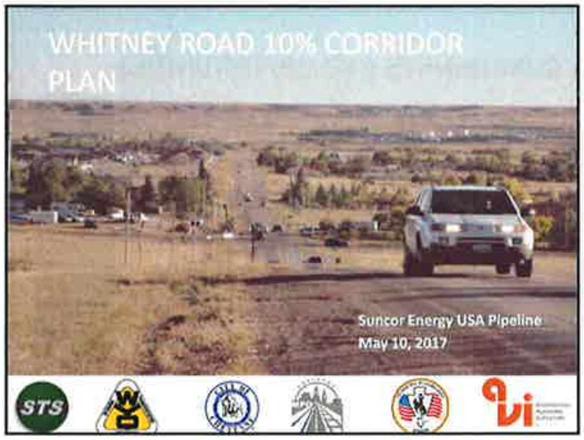
IV. Ability to complete isolated relocation or realign of portion of pipeline

IV.1 Procedure – logistics of process

IV.2 Constraints

IV.3 Typical Costs

IV.4 Timing



1

INTRODUCTIONS

- Tom Cobb, PE
  - Project Manager/Public Involvement
- Cassie Pickett, EIT
  - Project Assistant/Road Design/Social Media
- Joe Henderson, PE
  - Traffic Engineer

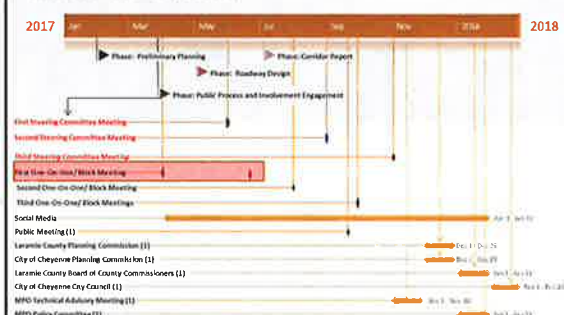
2

PURPOSE, OBJECTIVES, AND GOALS

- **Purpose**
  - Create a comprehensive planning document that will optimize safety, growth and fiscal responsibility.
- **Objective**
  - Development of a 10% conceptual design for Whitney Road between U.S. 30 and Beckle Road/ Storey Blvd.
- **Goals:**
  - Improve intersection and roadway design.
  - Address considerations such as drainage and snow drifting
  - Follow a comprehensive planning and public involvement process strategy.

3

WHAT TO EXPECT



4

WHAT TO EXPECT?

PROJECT MILESTONES	MILESTONE DATES
Notice to Proceed	March 1, 2017
Initial Kickoff Meeting MPO	March 22, 2017 @2:00
Traffic Counts	April 4, 2017
Steering Committee Meetings	May 9, 2017: August/ September, October, 2017
Neighborhood Block Meeting #1, #2, and #3	June, July, and August, 2017
Open House/Public Meeting	September, 2017
Draft Plan	October, 2017
Submit to MPO for Final Adoption	November, 2017
Presentation to the Governing Body	January/ February, 2018

5

WHAT TO EXPECT – OVERALL APPROACH

6

CONSTRAINTS AND OPPORTUNITIES

- Utilities
  - Blackhills Energy
  - High West Energy
  - Suncor Energy
  - Plains All American Pipeline System, LLC
  - Qwest
  - BOPU

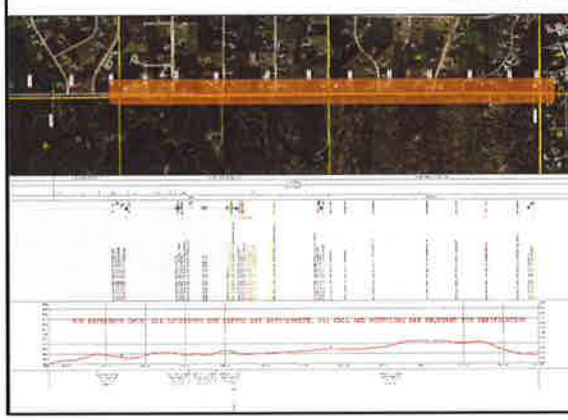
7

CONSTRAINTS AND OPPORTUNITIES

- Suncor Energy
  - 12.75" Steel Crude Line
  - 1,440 psi
  - 2' to 5' deep (East Side)
  - Dillon R. Ohrt, SR/WA
    - Right of Way and Public Awareness Coordinator
    - Suncor Energy (U.S.A.) Pipeline Company
  - Meeting scheduled 5/10/17 at Suncor Office

8

9



10

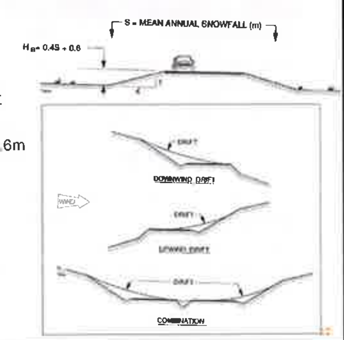
CONSTRAINTS AND OPPORTUNITIES

- Profile

11

CONSTRAINTS AND OPPORTUNITIES

- Snow Transport
  - Fill Sections
    - Minimum Height
      He = 0.4S + 0.6
      He = 0.4(1.53m)+0.6m
      He = 1.21 m (4')
  - Cut Sections



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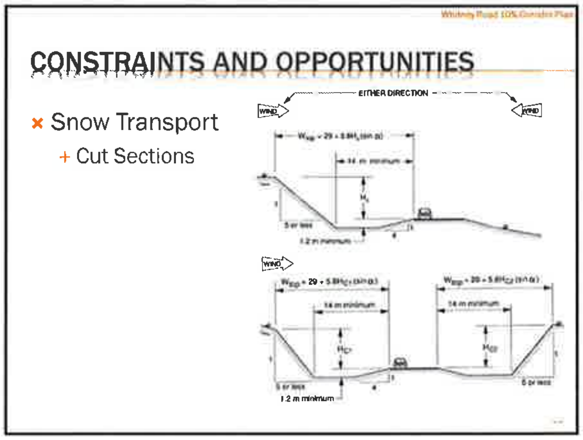
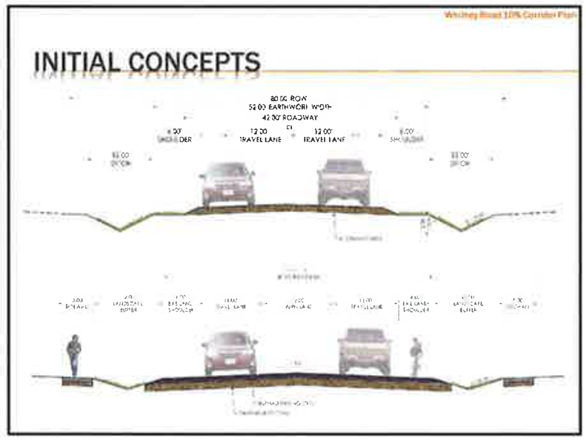
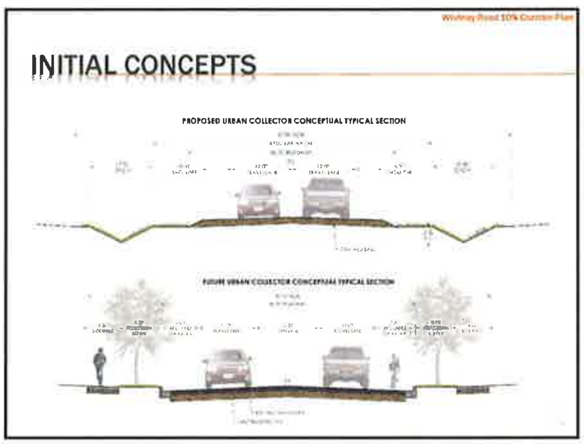

CONSTRAINTS AND OPPORTUNITIES
Snow Transport
Cut Sections
EITHER DIRECTION
WIND
14 m minimum
5 or less
1.2 m minimum

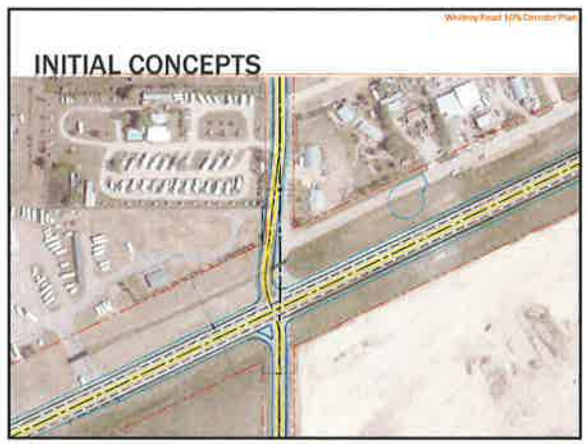
13


INITIAL CONCEPTS
80.00' ROW
52.00' EARTHWORK WIDTH
42.00' ROADWAY
12.00' TRAVEL LANE
12.00' TRAVEL LANE

14


INITIAL CONCEPTS
PROPOSED URBAN COLLECTOR CONCEPTUAL TYPICAL SECTION
FUTURE URBAN COLLECTOR CONCEPTUAL TYPICAL SECTION

15


INITIAL CONCEPTS

16

17

ENGINEERING
PLANNING
SURVEYING

PLAINS ALL AMERICAN PIPELINE
WHITNEY ROAD CORRIDOR STUDY

October 19, 2017@ 9:45 A.M.

•LIST OF ATTENDEES •

Plains All American Pipeline 1103 Old Town Lane, Suite 101. Cheyenne, WY 82001

NAME	COMPANY	EMAIL	CELL/ PHONE
Tom Cobb	AVI	cobb@avipc.com	(970)214-6542 (307)637-6017
Nancy Olson	MPO	nolson@cheyennempo.org	(307)638-4366
Steve Sullivan, ROW	PAALP	sdsullivan@paalp.com	(307) 472-9900
Jason Norris, Op. Supervisor	PAALP	jrnorris@paalp.com	(307) 837-2121
Tyler Keller, Dist. Mgr.	PAALP	tckeller@paalp.com	(307) 268-4535
Eric Heap, Tech. Mgr	PAALP	ejheap@paalp.com	(307) 472-9902

MEETING MINTUES

Subject:	Plains all American Pipeline		
Client:		Date:	
Project:	Whitney Road Corridor Study	Project No:	2-3987.17
Meeting Date:	October 19, 2017 @ 9:45 am	Meeting Location:	1103 Old Town Lane, Suite 101 Cheyenne. WY 82009
Agenda Status:			

ATTENDEES:
Tom Cobb, AVI
Nancy Olson, MPO
Steve Sullivan, ROW, PAALP
Jason Norris, Op. Supervisor, PAALP
Tyler Keller, Dist. Mgr., PAALP
Eric Heap, Tech. Mgr., PAALP

TOPICS FOR DISCUSSION:

I. 16"
   a. Pothole Location, coordinate
   b. Conventional line
   c. Horizontal location ± | $500
II. Jason Norris (Contract)
III. Easement BK #1976, P. 1815, Steve
IV. Retaining Walls
   a. Foundation Type (Key Steve)
   b. 10" From Footer
   c. Cover min. 4' TOD. | Standard

d. Eric Authocy

e. Rodway Traffic

f. 100' to 500' Budget Cost $\left.\begin{matrix}\text{Budget Cost}\\ \text{Time Frame}\end{matrix}\right\}$ \$ Additional Detail

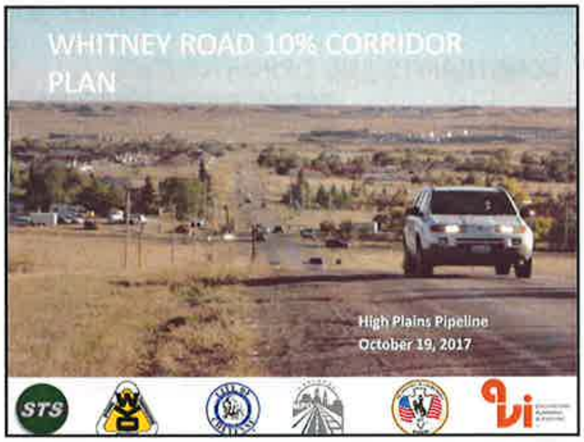
E Forward | Group

g. Shut down? No

AVIPC COM

AVI CHEYENNE
P 307.637.6017 • F 307.632.2126
1103 Old Town Lane, Ste. 101 • Cheyenne, WY 82009

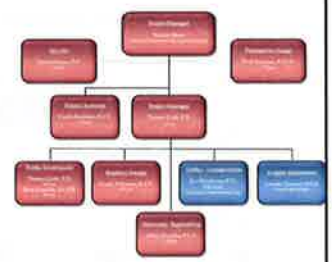
AVI FORT COLLINS
P 970.420.0066
706 South College Ste. 200 • Fort Collins, CO 80524



1

INTRODUCTIONS

- Tom Cobb
  - AVI, pc
  - Project Manager
- Nancy Olson
  - Cheyenne Metropolitan Planning Organization
  - Project Manager



2

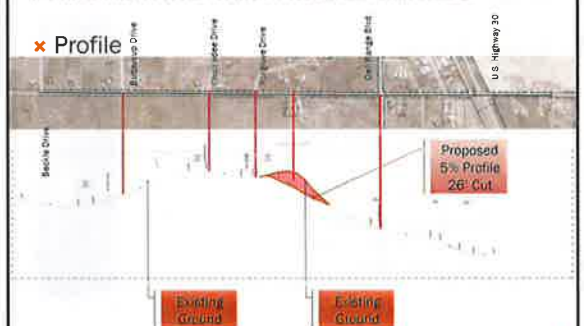
PURPOSE, OBJECTIVES, AND GOALS

- Purpose
  - Create a comprehensive planning document that will optimize safety, growth and fiscal responsibility.
- Objective
  - Development of a 10% conceptual design for Whitney Road between U.S. 30 and Beckle Road/ Storey Blvd.
- Goals:
  - Improve intersection and roadway design,
  - Address considerations such as drainage and snow drifting

3

CONSTRAINTS AND OPPORTUNITIES

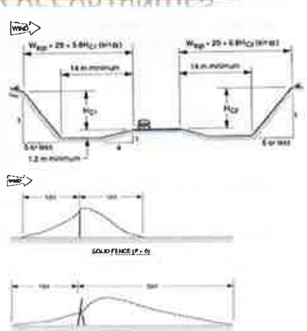
- Profile



4

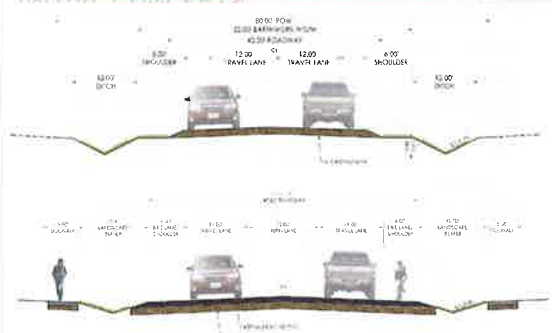
CONSTRAINTS AND OPPORTUNITIES

- Snow Transport Mitigation Options
  - Cut Sections
  - Snow Fence



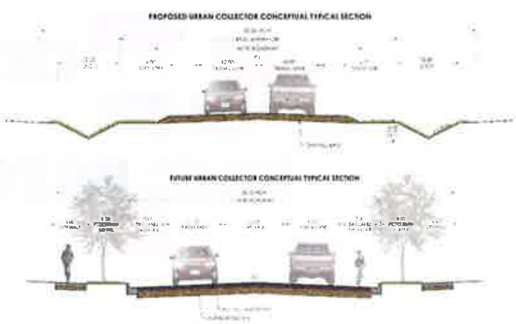
5

INITIAL CONCEPTS



6

INITIAL CONCEPTS



7

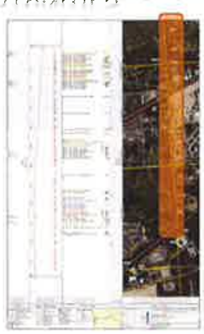
CONSTRAINTS AND OPPORTUNITIES

- Utilities
  - Blackhills Energy
  - High West Energy
  - Suncor Energy
  - Plains All American Pipeline System, LLC
  - Qwest
  - BOPU

8

CONSTRAINTS AND OPPORTUNITIES

- Suncor Energy
  - Met 5/10/17 at Suncor Office
    - 12.75" Steel Crude Line
    - 1,440 psi
    - 2' to 5' deep (East Side)
    - Dillon R. Ohrt, SR/WA
      - Right of Way and Public Awareness Coordinator



9

CONSTRAINTS AND OPPORTUNITIES

- Plains All American Pipeline System, LLC
  - 16" Steel Crude(West Side)
  - 4'-3" to 14'-5"
  - Gregg Werger
    - Plains All American Pipeline
    - Manager-Pipeline Commercial Operations

10

WHAT OPTIONS ARE AVAILABLE TO WORK AROUND THE PIPELINE?

- Additional available pipeline details
- What additional pipeline details are available (i.e. Horizontal and vertical position of pipeline, plan and profile documentation)?
- Do you have documentation on the easement for the pipeline?
- What is the ability to isolated relocate/ realign
  - Retaining Walls, Realign Vertical and/ or Horizontal
    - Procedure or guidelines
    - Constraints
    - Typical Costs
    - Timing

11

WHAT TO EXPECT?

PROJECT MILESTONES	MILESTONE DATES
Notice to Proceed	March 1, 2017
Initial Kickoff Meeting MPO	March 22, 2017 @2:00
Traffic Counts	April 4, 2017
Steering Committee Meetings	May 9, 2017; November, 2017; December, 2017
Open House/Public Meeting	November 8, 2017
Draft Plan	October, 2017 - November
Submit to MPO for Final Adoption	December, 2017
Presentation to the Governing Body	February, 2018

12

13

Whitney Road Corridor Study

Restway Travel Park Meeting

13-Nov-18

* List of Attendees*

Please Initial to Confirm attendance	NAME	COMPANY	EMAIL	CELL/PHONE
	Tom Mason	MPO	tmason@cheyennempo.org	637-6299
TDC	Tom Cobb	MPO	tcobb@cheyennempo.org	638-4384
[illegible]	Scott Sherman	Restway Travel Park	restwaytravelpark	634-3811
KS	Karen Sherman	Restway Travel Park	@yahoo.com	634-3811
KB	Kelly BARTlett	Restway Travel Park	" "	634-3811

Whitney Road Corridor Study

Restway Travel Park Meeting

2-May-19

* List of Attendees*

Please Initial to Confirm attendance	NAME	COMPANY	EMAIL	CELL/PHONE
TMM	Tom Mason	MPO	tmason@cheyennempo.org	637-6299
TQC	Tom Cobb	MPO	tcobb@cheyennempo.org	638-4384
[illegible]	Scott Sherman	Restway Travel Park	restwaytravelpark@yahoo.com	630-9812
KSP	Karen Sherman	Restway Travel Park	restwaytravelpark@yahoo.com	631-9256
[illegible]	Chris Brennan	WRN	Christopher@wrnlawfirm.com	432-9399
GW	Gay Woodhouse	WRN	Gay@wrnlawfirm.com	432-9399
	DAVE BUMANN	LCPW	DBUMANN@LARAMIECOUNTY.com	633-4302

APPENDIX D

Cost Estimates

ENGINEERING
PLANNING
SURVEYING
PC

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Project #: **3987.16**
Project Name: **WHITNEY ROAD CORRIDOR PLAN**

WHITNEY ROAD (STOREY BLVD TO DELL RANGE) OPINION OF COST

				Engineers Estimate	
Item No.	Item	Total	Unit	Unit Price	Total
1020.01	BONDS AND INSURANCE	1	LS	$ 24,000.00	$ 24,000.00
1020.02	CONTRACTOR TESTING	1	LS	$ 20,000.00	$ 20,000.00
1020.03	POTHOLING UTILITIES (NON-DESTRUCTIVE)	1	LS	$ 5,000.00	$ 5,000.00
1030.01	MOBILIZATION	1	LS	$ 166,925.00	$ 166,925.00
1050.01	TRAFFIC CONTROL	1	LS	$ 25,000.00	$ 25,000.00
1563.01	STORMWATER MANAGEMENT & EROSION CONTROL	1	LS	$ 15,000.00	$ 15,000.00
2050.01	REMOVAL OF EXISTING ASPHALT	16,320	SY	$ 8.60	$ 140,352.00
2210.01	UNCLASSIFIED EXCAVATION - 12" Deep	10,250	CY	$ 34.00	$ 348,500.00
2231.01	CRUSHED BASE - 6"	11,120	Ton	$ 24.55	$ 272,996.00
2231.02	CRUSHED BASE - 4"	1,450	Ton	$ 24.55	$ 35,597.50
2500.00	CEMENT STABILZATION FULL DEPTH RECLAMATION	34,810	SY	$ 11.50	$ 400,315.00
2512.01	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'A' - 2"	34,810	SY	$ 17.50	$ 609,175.00
2512.02	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'D' - 3"	34,810	SY	$ 20.00	$ 696,200.00
2900.02	LANDSCAPING (RESTORE AND RECLAIM)	4.0	AC	$ 2,500.00	$ 10,000.00
3330.01	CURB AND GUTTER - TYPE A	11,630	LF	$ 19.50	$ 226,785.00
3340.03	CONCRETE SIDEWALK - 6' WIDE	3,925	SY	$ 46.50	$ 182,512.50
3340.02	CONCRETE DRIVEWAY APPROACH - 8 INCH	50	SY	$ 83.85	$ 4,192.50
3340.03	12' VALLEY PAN	150	SY	$ 83.85	$ 12,577.50
4000.01	PAVEMENT MARKINGS (EXPOXY PAINT LINE 4 INCH)	22,650	LF	$ 0.30	$ 6,795.00
7023.03	SIGN POST, SQ TUBULAR STL	8	EA	$ 147.50	$ 1,180.00
7023.05	SIGN PANELS, ALUMINUM	32	SF	$ 23.15	$ 740.80
7000.01	ROADWAY LIGHTING	1	LS	$ 110,000.00	$ 110,000.00
			SUB-TOTAL		$ 3,313,843.80
	CONTINGENCY (20%)	1	LS	$ 662,769.00	$ 662,769.00
			SUB-TOTAL CONSTRUCTION COST		$ 3,976,612.80
	ENGINEER DESIGN (10%)	1	LS	$ 331,384.00	$ 331,384.00
			SUB-TOTAL ENGINEERING		$ 331,384.00
			TOTAL PROJECT		$ 4,307,996.80
			FOR ESTIMATE		$ 4,310,000.00

Footnotes:

(1) The Cost Estimates were developed using data from 2019 Weighted Average Bid Prices, complied by WYDOT; and Typical Costs from historical AVI project experience database.

(2) Right-of-way costs are based on previous projects in 2015 for City of Cheyenne, City of Laramie, at 2.5% Inflation Rate (AVI, pc) (i.e. Vacant, Commercial Level 2)

(3) Please note totals and unit prices are calculated based on present worth or present value dollars. Adjustments should be made for years beyond the present year to better estimate required capital dollars for future improvements plan(s).

(4) Landscaping (Restore and Reclaim) for areas adjacent to right-of-way.

(5) Estimated values of Contract Bond and Insurance and Mobilization were estimated at 0.8% and 5.5% of total construction cost, respectively.

(6) Right-of-way estimated for Whitney Road and Dell Range Only based on GIS and available plat data.

ENGINEERING
PLANNING
SURVEYING
PC

Project #: **3987.16**
Project Name: **WHITNEY ROAD CORRIDOR PLAN**

WHITNEY ROAD (DELL RANGE INTERSECTION (RAB; SLIP LANE)) OPINION OF COST

				Engineers Estimate	
Item No.	**Item**	**Total**	**Unit**	**Unit Price**	**Total**
1020.01	BONDS AND INSURANCE	1	LS	$ 9,000.00	$ 9,000.00
1020.02	CONTRACTOR TESTING	1	LS	$ 5,000.00	$ 5,000.00
1020.03	POTHOLING UTILITIES (NON-DESTRUCTIVE)	1	LS	$ 2,000.00	$ 2,000.00
1030.01	MOBILIZATION	1	LS	$ 62,069.00	$ 62,069.00
1050.01	TRAFFIC CONTROL	1	LS	$ 25,000.00	$ 25,000.00
1563.01	STORMWATER MANAGEMENT & EROSION CONTROL	1	LS	$ 5,000.00	$ 5,000.00
2050.01	REMOVAL OF EXISTING ASPHALT	5,800	SY	$ 8.60	$ 49,880.00
2210.01	UNCLASSIFIED EXCAVATION - 12" Deep	1,940	CY	$ 34.00	$ 65,960.00
2231.01	CRUSHED BASE - 6"	540	Ton	$ 24.55	$ 13,257.00
2231.02	CRUSHED BASE - 4"	1,660	Ton	$ 24.55	$ 40,753.00
2500.00	CEMENT STABILZATION FULL DEPTH RECLAMATION	5,110	SY	$ 11.50	$ 58,765.00
2514.08	COLORED CONCRETE PAVEMENT	965	SY	$ 50.00	$ 48,250.00
2512.01	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'A' - 2"	1,590	SY	$ 17.50	$ 27,825.00
2512.02	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'D' - 3"	1,590	SY	$ 20.00	$ 31,800.00
2514.08	CONCRETE PAVEMENT (8 IN)	4,590	SY	$ 111.00	$ 509,490.00
2900.02	LANDSCAPING (RESTORE AND RECLAIM)	2.0	AC	$ 2,500.00	$ 5,000.00
2900.03	LANDSCAPING (RAB)	1	LS	$ 55,000.00	$ 55,000.00
3330.01	CURB AND GUTTER - TYPE A	2,225	LF	$ 19.50	$ 43,387.50
3340.03	CONCRETE SIDEWALK - 6' WIDE	1,450	SY	$ 46.50	$ 67,425.00
4000.01	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
7023.03	SIGN POST, SQ TUBULAR STL	20	EA	$ 147.50	$ 2,950.00
7023.05	SIGN PANELS, ALUMINUM	120	SF	$ 23.15	$ 2,778.00
7000.01	ROADWAY LIGHTING	1	LS	$ 50,000.00	$ 50,000.00
			SUB-TOTAL		**$ 1,190,589.50**
	CONTINGENCY (15%)	1	LS	$ 178,588.00	$ 178,588.00
			SUB-TOTAL CONSTRUCTION COST		**$ 1,369,177.50**
	ENGINEER DESIGN (10%)	1	LS	$ 119,059.00	$ 119,059.00
			SUB-TOTAL ENGINEERING		**$ 119,059.00**
	RIGHT OF WAY ACQUISITION (LEVEL 2 COMMERCIAL)	9,500	SF	$ 12.60	$ 119,700.00
			SUB-TOTAL RIGHT-OF-WAY		**$ 119,700.00**
			TOTAL PROJECT		**$ 1,488,236.50**
			FOR ESTIMATE		**$ 1,490,000.00**

Footnotes:

(1) The Cost Estimates were developed using data from 2019 Weighted Average Bid Prices, complied by WYDOT; and Typical Costs from historical AVI project experience database.

(2) Right-of-way costs are based on previous projects in 2015 for City of Cheyenne, City of Laramie, at 2.5% Inflation Rate (AVI, pc) (i.e. Vacant, Commercial Level 2)

(3) Please note totals and unit prices are calculated based on present worth or present value dollars. Adjustments should be made for years beyond the present year to better estimate required capital dollars for future improvements plan(s).

(4) Landscaping (Restore and Reclaim) for areas adjacent to right-of-way.

(5) Estimated values of Contract Bond and Insurance and Mobilization were estimated at 0.8% and 5.5% of total construction cost, respectively.

(6) Right-of-way estimated for Whitney Road and Dell Range Only based on GIS and available plat data.

Project #: **3987.16**
Project Name: **WHITNEY ROAD CORRIDOR PLAN**

WHITNEY ROAD (DELL RANGE INTERSECTION (RAB)) OPINION OF COST

				Engineers Estimate	
Item No.	Item	Total	Unit	Unit Price	Total
1020.01	BONDS AND INSURANCE	1	LS	$ 8,000.00	$ 8,000.00
1020.02	CONTRACTOR TESTING	1	LS	$ 5,000.00	$ 5,000.00
1020.03	POTHOLING UTILITIES (NON-DESTRUCTIVE)	1	LS	$ 2,000.00	$ 2,000.00
1030.01	MOBILIZATION	1	LS	$ 55,157.00	$ 55,157.00
1050.01	TRAFFIC CONTROL	1	LS	$ 25,000.00	$ 25,000.00
1563.01	STORMWATER MANAGEMENT & EROSION CONTROL	1	LS	$ 5,000.00	$ 5,000.00
2050.01	REMOVAL OF EXISTING ASPHALT	5,800	SY	$ 8.60	$ 49,880.00
2210.01	UNCLASSIFIED EXCAVATION - 12" Deep	1,940	CY	$ 34.00	$ 65,960.00
2231.01	CRUSHED BASE - 6"	540	Ton	$ 24.55	$ 13,257.00
2231.02	CRUSHED BASE - 4"	1,420	Ton	$ 24.55	$ 34,861.00
2500.00	CEMENT STABILZATION FULL DEPTH RECLAMATION	5,110	SY	$ 11.50	$ 58,765.00
2514.08	COLORED CONCRETE PAVEMENT	965	SY	$ 50.00	$ 48,250.00
2512.01	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'A' - 2"	1,590	SY	$ 17.50	$ 27,825.00
2512.02	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'D' - 3"	1,590	SY	$ 20.00	$ 31,800.00
2514.08	CONCRETE PAVEMENT (8 IN)	3,520	SY	$ 111.00	$ 390,720.00
2900.02	LANDSCAPING (RESTORE AND RECLAIM)	2.0	AC	$ 2,500.00	$ 5,000.00
2900.03	LANDSCAPING (RAB)	1	LS	$ 55,000.00	$ 55,000.00
3330.01	CURB AND GUTTER - TYPE A	2,225	LF	$ 19.50	$ 43,387.50
3340.03	CONCRETE SIDEWALK - 6' WIDE	1,450	SY	$ 46.50	$ 67,425.00
4000.01	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
7023.03	SIGN POST, SQ TUBULAR STL	20	EA	$ 147.50	$ 2,950.00
7023.05	SIGN PANELS, ALUMINUM	120	SF	$ 23.15	$ 2,778.00
7000.01	ROADWAY LIGHTING	1	LS	$ 50,000.00	$ 50,000.00
			SUB-TOTAL		$ 1,058,015.50
	CONTINGENCY (15%)	1	LS	$ 158,702.00	$ 158,702.00
			SUB-TOTAL CONSTRUCTION COST		$ 1,216,717.50
	ENGINEER DESIGN (10%)	1	LS	$ 105,802.00	$ 105,802.00
			SUB-TOTAL ENGINEERING		$ 105,802.00
	RIGHT OF WAY ACQUISITION (LEVEL 2 COMMERCIAL)	509	SF	$ 12.60	$ 6,413.40
	RIGHT OF WAY ACQUISITION (VACANT RESIDENTIAL/ COMMERCIAL)	5,180	SF	$ 8.00	$ 41,440.00
			SUB-TOTAL RIGHT-OF-WAY		$ 47,853.40
			TOTAL PROJECT		$ 1,370,372.90
			FOR ESTIMATE		$ 1,380,000.00

Footnotes:

(1) The Cost Estimates were developed using data from 2019 Weighted Average Bid Prices, complied by WYDOT; and Typical Costs from historical AVI project experience database.

(2) Right-of-way costs are based on previous projects in 2015 for City of Cheyenne, City of Laramie, at 2.5% Inflation Rate (AVI, pc) (i.e. Vacant, Commercial Level 2)

(3) Please note totals and unit prices are calculated based on present worth or present value dollars. Adjustments should be made for years beyond the present year to better estimate required capital dollars for future improvements plan(s).

(4) Landscaping (Restore and Reclaim) for areas adjacent to right-of-way.

(5) Estimated values of Contract Bond and Insurance and Mobilization were estimated at 0.8% and 5.5% of total construction cost, respectively.

(6) Right-of-way estimated for Whitney Road and Dell Range Only based on GIS and available plat data.

Project #: **3987.16**
Project Name: **WHITNEY ROAD CORRIDOR PLAN**

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WHITNEY ROAD (DELL RANGE INTERSECTION (SIGNALIZED)) OPINION OF COST

Item No.	Item	Total	Unit	Engineers Estimate Unit Price		Engineers Estimate Total	
1020.01	BONDS AND INSURANCE	1	LS	$	9,000.00	$	9,000.00
1020.02	CONTRACTOR TESTING	1	LS	$	5,000.00	$	5,000.00
1020.03	POTHOLING UTILITIES (NON-DESTRUCTIVE)	1	LS	$	2,000.00	$	2,000.00
1030.01	MOBILIZATION	1	LS	$	57,748.00	$	57,748.00
1050.01	TRAFFIC CONTROL	1	LS	$	25,000.00	$	25,000.00
1563.01	STORMWATER MANAGEMENT & EROSION CONTROL	1	LS	$	5,000.00	$	5,000.00
2050.01	REMOVAL OF EXISTING ASPHALT	5,800	SY	$	8.60	$	49,880.00
2210.01	UNCLASSIFIED EXCAVATION - 12" Deep	1,940	CY	$	34.00	$	65,960.00
2231.01	CRUSHED BASE - 6"	1,710	Ton	$	24.55	$	41,980.50
2231.02	CRUSHED BASE - 4"	650	Ton	$	24.55	$	15,958.00
2500.00	CEMENT STABILZATION FULL DEPTH RECLAMATION	5,110	SY	$	11.50	$	58,765.00
2514.08	COLORED CONCRETE PAVEMENT	965	SY	$	50.00	$	48,250.00
2512.01	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'A' - 2"	5,110	SY	$	17.50	$	89,425.00
2512.02	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'D' - 3"	5,110	SY	$	20.00	$	102,200.00
2900.02	LANDSCAPING (RESTORE AND RECLAIM)	2.0	AC	$	2,500.00	$	5,000.00
3330.01	CURB AND GUTTER - TYPE A	2,225	LF	$	19.50	$	43,387.50
3340.03	CONCRETE SIDEWALK - 6' WIDE	1,450	SY	$	46.50	$	67,425.00
4000.01	PAVEMENT MARKINGS	1	LS	$	10,000.00	$	10,000.00
7023.03	SIGN POST, SQ TUBULAR STL	20	EA	$	147.50	$	2,950.00
7023.05	SIGN PANELS, ALUMINUM	120	SF	$	23.15	$	2,778.00
7000.01	ROADWAY LIGHTING AND SIGNALIZATION	1	LS	$	400,000.00	$	400,000.00
			SUB-TOTAL			$	1,107,707.00
	CONTINGENCY (15%)	1	LS	$	166,156.00	$	166,156.00
			SUB-TOTAL CONSTRUCTION COST			$	1,273,863.00
	ENGINEER DESIGN (10%)	1	LS	$	110,771.00	$	110,771.00
			SUB-TOTAL ENGINEERING			$	110,771.00
	RIGHT OF WAY ACQUISITION (LEVEL 2 COMMERCIAL)	0	SF	$	12.60	$	-
			SUB-TOTAL RIGHT-OF-WAY			$	-
			TOTAL PROJECT			$	1,384,634.00
			FOR ESTIMATE			$	1,390,000.00

Footnotes:

(1) The Cost Estimates were developed using data from 2019 Weighted Average Bid Prices, complied by WYDOT; and Typical Costs from historical AVI project experience database.

(2) Right-of-way costs are based on previous projects in 2015 for City of Cheyenne, City of Laramie, at 2.5% Inflation Rate (AVI, pc) (i.e. Vacant, Commercial Level 2)

(3) Please note totals and unit prices are calculated based on present worth or present value dollars. Adjustments should be made for years beyond the present year to better estimate required capital dollars for future improvements plan(s).

(4) Landscaping (Restore and Reclaim) for areas adjacent to right-of-way.

(5) Estimated values of Contract Bond and Insurance and Mobilization were estimated at 0.8% and 5.5% of total construction cost, respectively.

(6) Right-of-way estimated for Whitney Road and Dell Range Only based on GIS and available plat data.

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Project #: **3987.16**
Project Name: **WHITNEY ROAD CORRIDOR PLAN**

WHITNEY ROAD (DELL RANGE BLVD. TO US 30) OPINION OF COST

Item No.	Item	Total	Unit	Engineers Estimate Unit Price	Engineers Estimate Total
1020.01	BONDS AND INSURANCE	1	LS	$ 16,000.00	$ 16,000.00
1020.02	CONTRACTOR TESTING	1	LS	$ 20,000.00	$ 20,000.00
1020.03	POTHOLING UTILITIES (NON-DESTRUCTIVE)	1	LS	$ 5,000.00	$ 5,000.00
1030.01	MOBILIZATION	1	LS	$ 112,740.00	$ 112,740.00
1050.01	TRAFFIC CONTROL	1	LS	$ 25,000.00	$ 25,000.00
1563.01	STORMWATER MANAGEMENT & EROSION CONTROL	1	LS	$ 15,000.00	$ 15,000.00
2050.01	REMOVAL OF EXISTING ASPHALT	5,280	SY	$ 8.60	$ 45,408.00
2210.01	UNCLASSIFIED EXCAVATION - 12" Deep	1,800	CY	$ 34.00	$ 61,200.00
2231.01	CRUSHED BASE - 6"	4,180	Ton	$ 24.55	$ 102,619.00
2231.02	CRUSHED BASE - 4"	800	Ton	$ 24.55	$ 19,640.00
2500.00	CEMENT STABILZATION FULL DEPTH RECLAMATION	12,625	SY	$ 11.50	$ 145,188.00
2512.01	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'A' - 2"	12,625	SY	$ 17.50	$ 220,937.50
2512.02	PLANT MIX BITUMINOUS PAVEMENT (TYPE II) GRADING 'D' - 3"	12,625	SY	$ 20.00	$ 252,500.00
2645.00	FIRE HYDRANT ASSEMBLY	5	EA	$ 7,500.00	$ 37,500.00
2665.01	WATER MAIN PVC (C-900) 12"	2,100	LF	$ 75.00	$ 157,500.00
2665.02	GATE VALVE (AND BOX) - 12"	17	EA	$ 3,415.00	$ 58,055.00
2665.03	12" FITTING	10	EA	$ 1,200.00	$ 12,000.00
2700.01	SANITARY SEWER MANHOLE - 48" DIA	6	EA	$ 7,500.00	$ 45,000.00
2700.02	SANITARY SEWER MAIN PVC SDR 35 - 8"	1,475	LF	$ 65.00	$ 95,875.00
2725.01	STORM SEWER MAIN - 36"	1,800	LF	$ 125.00	$ 225,000.00
2725.02	STORM SEWER MAIN - 18"	615	LF	$ 65.00	$ 39,975.00
2725.03	36" FLARED END SECTION	3	EA	$ 5,000.00	$ 15,000.00
2725.04	INLET	7	EA	$ 6,800.00	$ 47,600.00
2725.05	STORM SEWER MANHOLE	6	EA	$ 6,500.00	$ 39,000.00
2900.02	LANDSCAPING (RESTORE AND RECLAIM)	2.0	ACRE	$ 2,500.00	$ 5,000.00
3330.01	CURB AND GUTTER - TYPE A	5,395	LF	$ 19.50	$ 105,202.50
3340.02	CONCRETE SIDEWALK - 6' WIDE	2,290	SY	$ 46.50	$ 106,485.00
3340.03	CONCRETE DRIVEWAY APPROACH - 8 INCH	115	SY	$ 83.85	$ 9,642.75
3340.04	CONCRETE VALLEYPAN	45	SY	$ 83.85	$ 3,773.25
4000.01	PAVEMENT MARKINGS (EXPOXY PAINT LINE 4 INCH)	22,650	LF	$ 0.30	$ 6,795.00
7023.03	SIGN POST, SQ TUBULAR STL	8	EA	$ 147.50	$ 1,180.00
7023.05	SIGN PANELS, ALUMINUM	32	SF	$ 23.15	$ 740.80
7000.01	ROADWAY LIGHTING	1	LS	$ 110,000.00	$ 110,000.00
			SUB-TOTAL		$ 2,162,556.80
	CONTINGENCY (20%)	1	LS	$ 432,511.00	$ 432,511.00
			SUB-TOTAL CONSTRUCTION COST		$ 2,595,067.80
	ENGINEER DESIGN (10%)	1	LS	$ 216,256.00	$ 216,256.00
			SUB-TOTAL ENGINEERING		$ 216,256.00
	RIGHT OF WAY ACQUISITION (LEVEL 2 COMMERCIAL)	8,577	SF	$ 12.60	$ 108,070.20
			SUB-TOTAL RIGHT-OF-WAY		$ 108,070.20
			TOTAL PROJECT		$ 2,811,323.80
			FOR ESTIMATE		**$ 2,820,000.00**

Footnotes:

(1) The Cost Estimates were developed using data from 2019 Weighted Average Bid Prices, complied by WYDOT; and Typical Costs from historical AVI project experience database.

(2) Right-of-way costs are based on previous projects in 2015 for City of Cheyenne, City of Laramie, at 2.5% Inflation Rate (AVI, pc) (i.e. Vacant, Commercial Level 2)

(3) Please note totals and unit prices are calculated based on present worth or present value dollars. Adjustments should be made for years beyond the present year to better estimate required capital dollars for future improvements plan(s).

(4) Landscaping (Restore and Reclaim) for areas adjacent to right-of-way.

(5) Estimated values of Contract Bond and Insurance and Mobilization were estimated at 0.8% and 5.5% of total construction cost, respectively.

(6) Right-of-way estimated for Whitney Road and Dell Range Only based on GIS and available plat data.

Project #: **3987.16**

Project Name: **WHITNEY ROAD CORRIDOR PLAN - SUMMARY OF RECOMMEDATION COST**

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Description of Area	Estimated Costs					
	Construction	Right-of-way	Engineering	Contingency	Total	For Estimate
Whitney Road at Dell Range Blvd. Intersection (RAB W\Slib Lane)	$ 1,142,609	$ 119,700	$ 114,261	$ 171,391	$ 1,547,961	**$ 1,550,000**
Dell Range Blvd. to U.S. 30	$ 1,245,878	$ 108,070	$ 124,588	$ 249,176	$ 1,727,712	**$ 1,730,000**
Sub-total Phase I	$ 2,388,487	$ 227,770	$ 238,849	$ 420,567	$ 3,275,673	**$ 3,280,000**
Storey Blvd. to Dell Range Blvd.	$ 2,446,254	$ -	$ 244,625	$ 489,251	$ 3,180,130	**$ 3,190,000**
					Whitney Road Totals	**$ 6,470,000**

APPENDIX E

Traffic Analysis

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Memorandum

Date: April 25, 2018

To: Mr. Tom Mason, Director, MPO
CC: Ms. Nancy Olson, Project Manager, MPO

From: Thomas D. Cobb, PE, Project Manager

Subject: **Whitney Road Corridor Study (AVI Project No. 3987.16) related to Traffic Impact Study Whitney Ranch completed by Kimley-Horn**

The MPO and City of Cheyenne were in the process of reviewing the final *Traffic Impact Study Whitney Ranch Cheyenne, Wyoming December 21, 2017* (TIS) completed by Kimley-Horn (KM-H). AVI believes that the study has now been accepted by the City of Cheyenne. This detailed traffic impact study prompted discussion during the Whitney Ranch Steering Committee Meetings that scope alterations may be prudent related to Professional Traffic Engineering on the Whitney Road Corridor Study. Consequently, as you were aware, we instructed our sub-consultant Sustainable Traffic Solutions (STS) to hold completion of the Whitney Road traffic analysis until a final determination was made.

Discussions at the time for the traffic impact study were specifically related to 2040 projected traffic volumes for Whitney Road (from Storey Blvd to U.S. 30) and Dell Range Blvd (from VanBuren Avenue to U.S. 30). Consequently, in order to complete our work for the Whitney Road Corridor Study, we respectfully request a formal response from the MPO regarding the following questions:

1. Has the MPO accepted the 2040 projected volumes for traffic and intersections related to the Whitney Road Corridor Study in the final Whitney Ranch *Traffic Impact Study for Whitney Ranch* developed by Kimley-Horn dated December 21, 2017?

2. If accepted, should STS and AVI utilize all the information within the KM-H TIS traffic impact study to complete the Whitney Road Corridor Study (i.e. Projected 2040 projected corridor volumes, Intersection directional volumes, Signal warrant analysis, Level of service analysis)?

   Our recommendation would be to only utilize the 2040 projected land use and background volumes and have our sub-consultant review directional volumes, signal warrant analysis, and level of service of Whitney Road and Dell Range Blvd within our project area to confirm analysis.

The reduction of the traffic scope would then be applied to the Second Open House Public Meeting you have requested of the team.

Highway Safety Intersection Crash History Report

Intersection ID: 14886 County:LARAMIE City:CHEYENNE Years 2014 to 2014

Facility Type: UrXx3 Area Type:U Marked Crosswalk at Intersection Number of Legs:3

Leg	Date	Time	Report#	# Inj	# Killed	Lighting	Junction Relation	First Harmful Event	Manner of Collision	Grid Cell
2014										
WHITNEY RD	03/24/14	1304	04433	0	0	Daylight	03	Motor Vehicle in Transport on Roadway	Rear End (Front to Rear)	Sideswipe Straight North Parking Vehicle North

Highway Safety Intersection Report

WHITNEY RD | CR 129-1@BECKLE RD | CR 212-3

Intersection ID: 14886 County:LARAMIE City:CHEYENNE Years:2014 to 2018

Facility Type:UrXx3 Area Type:U Marked Crosswalk at Intersection Number of Legs:3

Intersection Crash Types Statistics

Grid Cell	Crash Type	Count
K13	Sideswipe Straight North Parking Vehicle North	1

Intersection Crash Summaries

CRITICAL_CRASHES	0
SERIOUS_CRASHES	0
DAMAGE_CRASHES	1
TOTAL_CRASHES	1
PERSONS_INJURED	0
PERSONS_KILLED	0

Collision Diagram

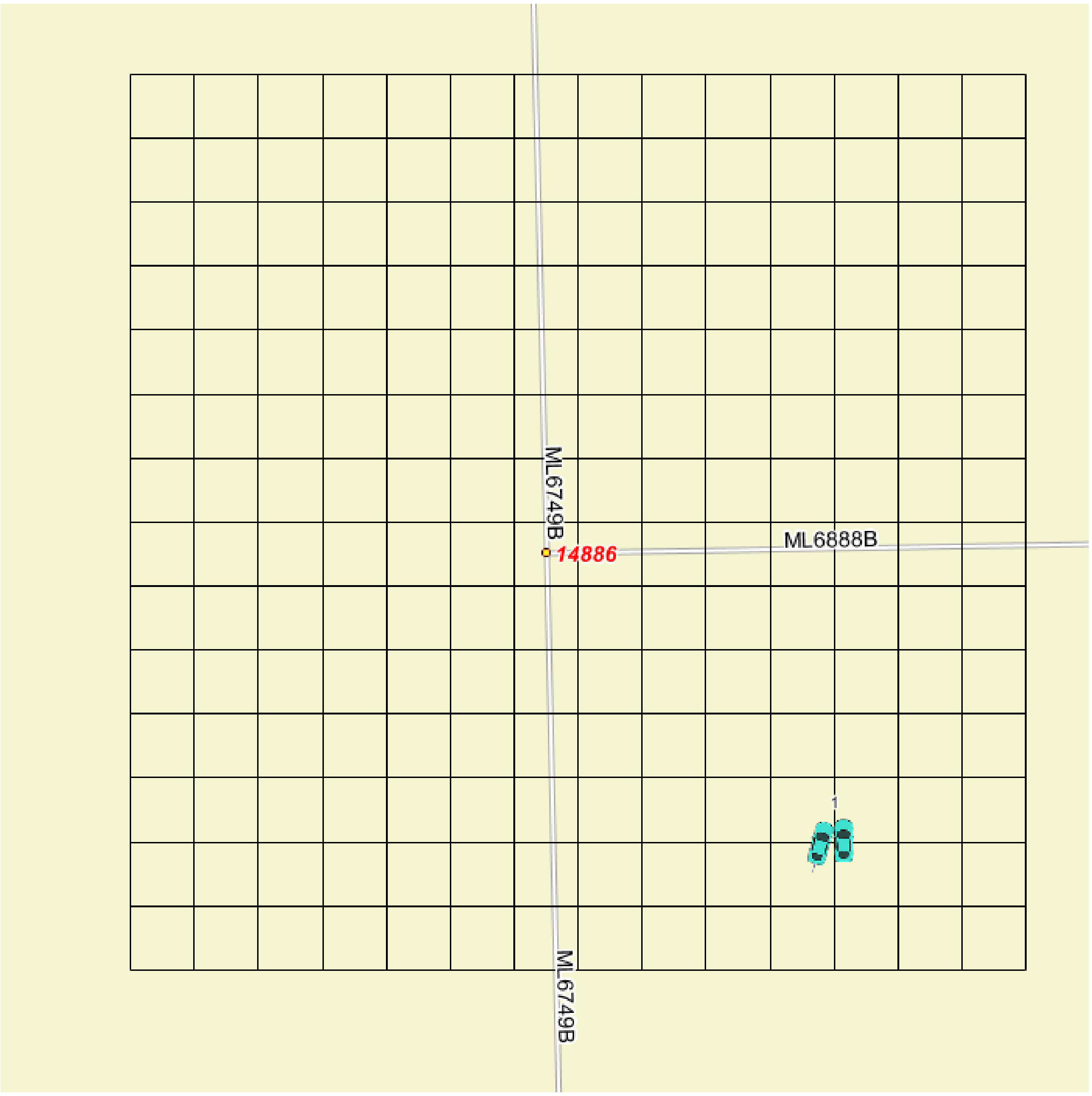
Intersection ID:14886

Intersection Names:WHITNEY RD | CR 129-1@BECKLE RD | CR

Crash types are based on a grid format are are not indicative of crash location

LRS Intersection: ML6749B|ML6888B

Intersection Name: WHITNEY RD | CR 129-1@BECKLE RD | CR 212-3



Severity Diagram

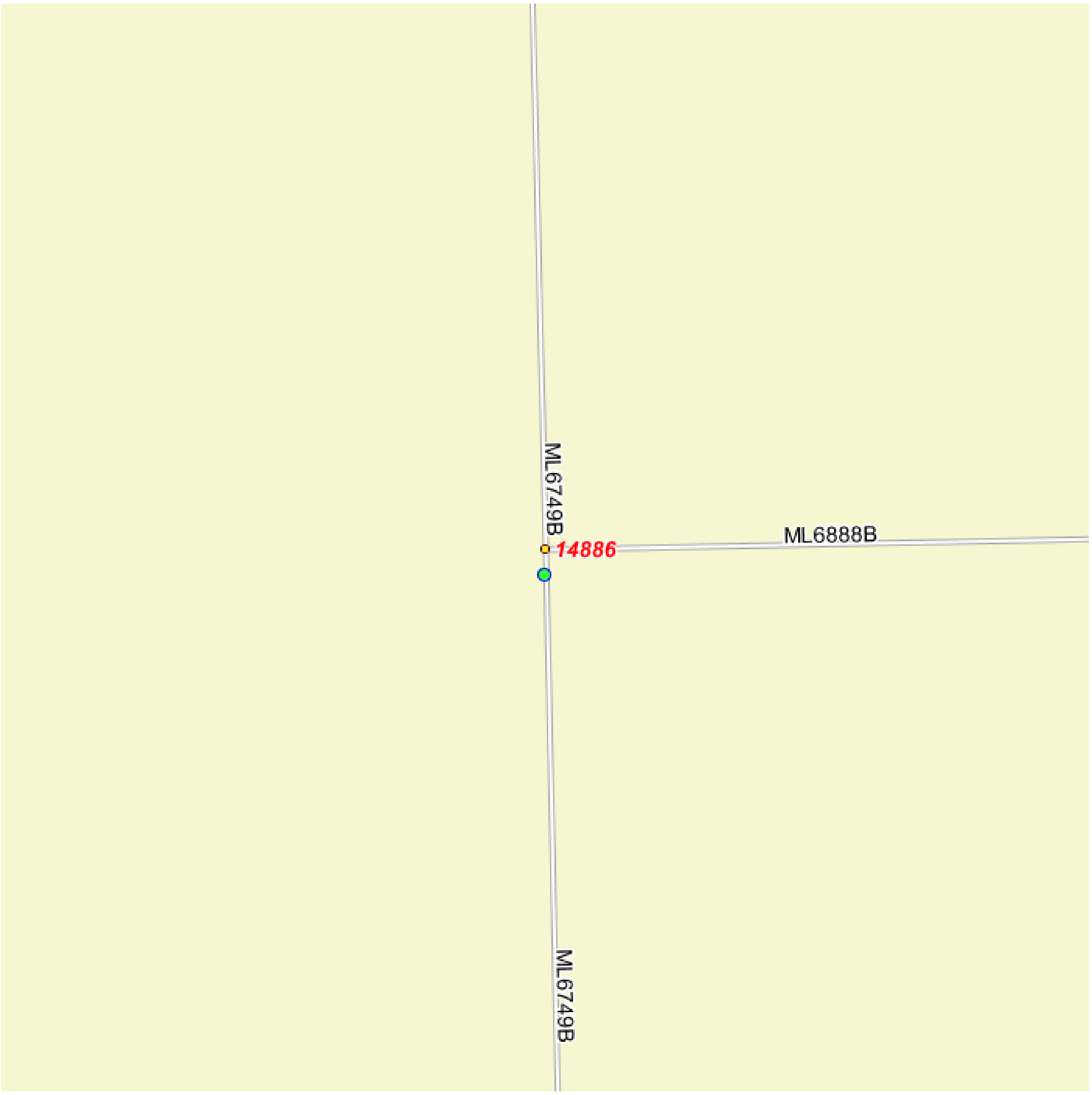
INTERSECTION_ID 14886

INTERSECTION_ROUTES:ML6749B|ML6888B

Locations displayed on Severity Diagram are based on longitude and latitude. Discrepancy between Latitude/Longitude and Route/MP may result in points not appearing on diagram.

LRS Intersection: ML6749B|ML6888B

Intersection Name: WHITNEY RD | CR 129-1@BECKLE RD | CR 212-3



LRS Intersection: ML6749B|ML6888B

Intersection Name: WHITNEY RD | CR 129-1@BECKLE RD | CR 212-3

Highway Safety Intersection Crash History Report

Intersection ID: 13343 | County:LARAMIE | City:CHEYENNE | Years 2014 to 2018

Facility Type: UrXx4 | Area Type:U | Intersection w/o Marked Crosswalk | Number of Legs:4

Leg	Date	Time	Report#	# Inj	# Killed	Lighting	Junction Relation	First Harmful Event	Manner of Collision	Grid Cell
2014										
WHITNEY RD	12/28/14	0848	17590	0	0	Daylight	01	Other Fixed Object	Not a Collision w/2 Vehicles in Transport	Unknown
DELL RANGE BLVD	07/25/14	1658	10018	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Right South Straight West
2016										
WHITNEY RD	08/25/16	0747	10155	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Left North
DELL RANGE BLVD	08/04/16	1144	10421	1	1	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Unknown
DELL RANGE BLVD	10/26/16	1904	12997	2	0	Darkness Lighted	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Right North
2017										
DELL RANGE BLVD	12/05/17	1301	15129	1	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight West Right North
DELL RANGE BLVD	07/27/17	0840	08859	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle (Front to Side), Opposing Direction	Angle Straight East Straight North
2018										
DELL RANGE BLVD |	10/20/18	2108	12619	2	0	Darkness Lighted	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Right South Straight West

Highway Safety Intersection Report

WHITNEY RD | CR 129-1@DELL RANGE BLVD | CR 211-1

Intersection ID: 13343 County:LARAMIE City:CHEYENNE Years:2014 to 2018

Facility Type:UrXx4 Area Type:U Intersection w/o Marked Crosswalk Number of Legs:4

Intersection Crash Types Statistics

Grid Cell	Crash Type	Count
A1	Unknown	2
D5	Angle Right South Straight West	2
H10	Angle Straight East Left North	1
K8	Angle Straight East Straight North	1
M8	Angle Straight West Right North	1
K10	Angle Straight East Right North	1

Intersection Crash Summaries

CRITICAL_CRASHES	2
SERIOUS_CRASHES	2
DAMAGE_CRASHES	4
TOTAL_CRASHES	8
PERSONS_INJURED	6
PERSONS_KILLED	1

Collision Diagram

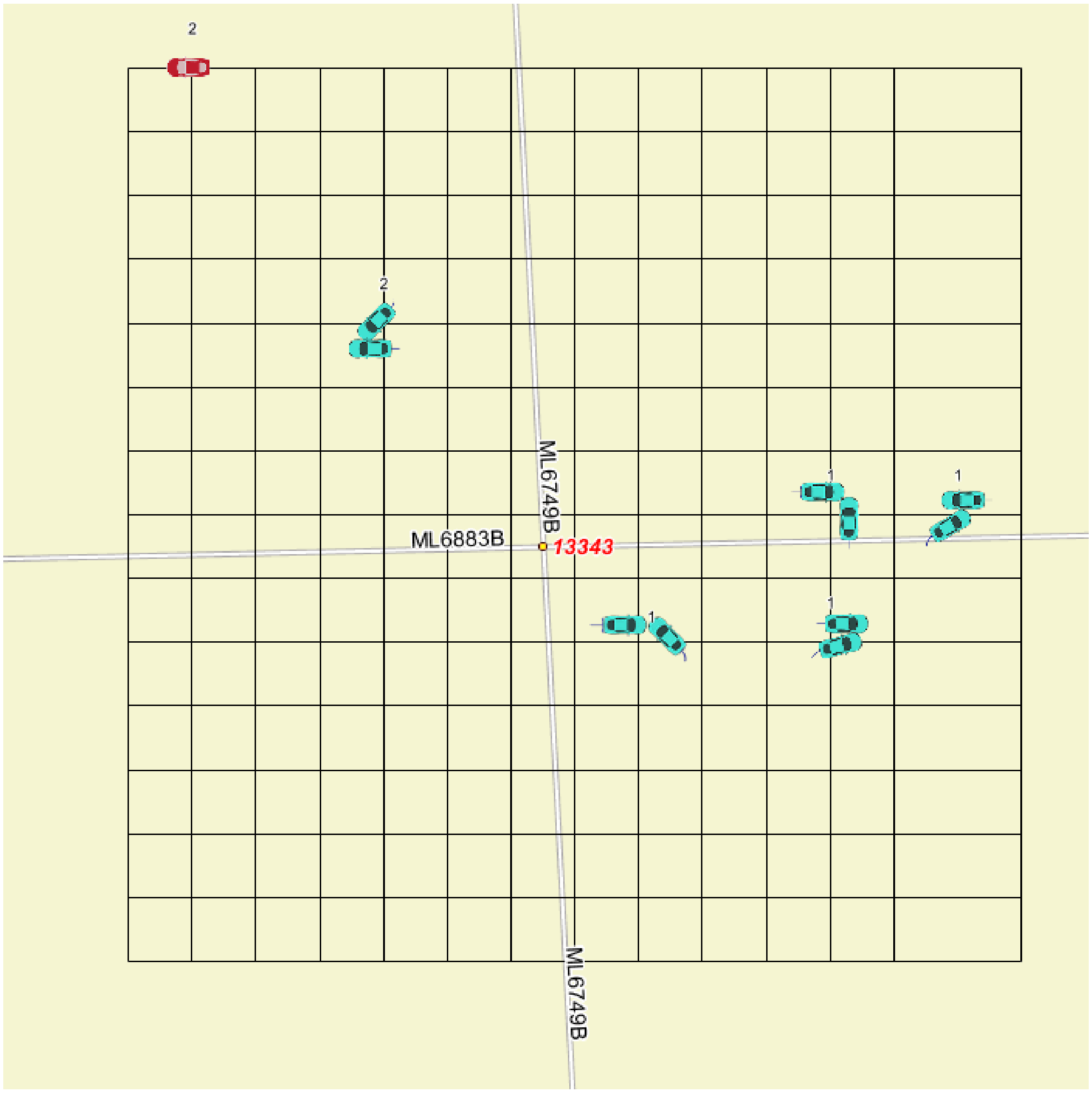
Intersection ID:13343

Intersection Names:WHITNEY RD | CR 129-1@DELL RANGE

Crash types are based on a grid format are are not indicative of crash location

LRS Intersection: ML6749B|ML6883B

Intersection Name: WHITNEY RD | CR 129-1@DELL RANGE BLVD | CR 211-1



Severity Diagram

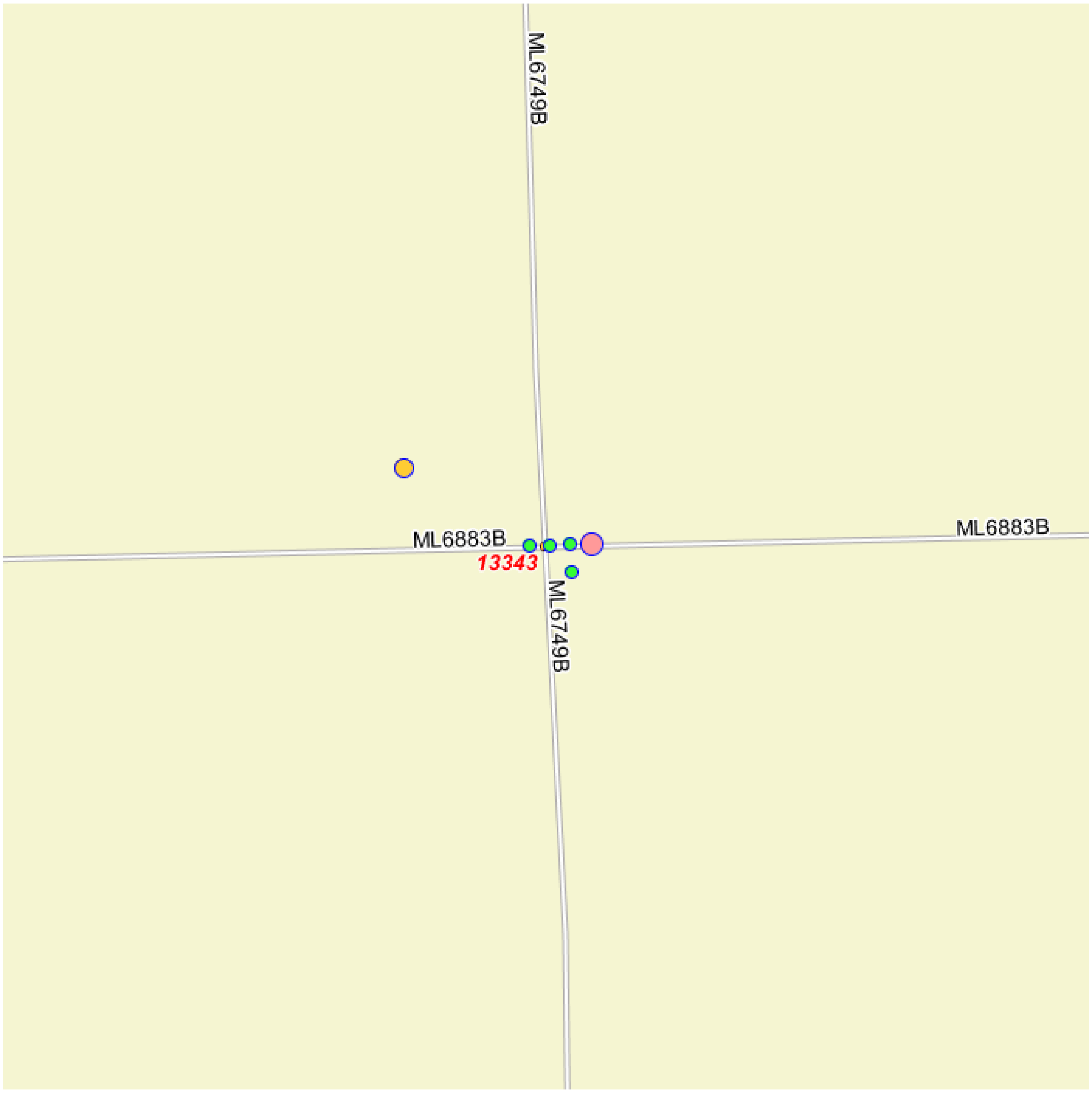
INTERSECTION_ID 13343

INTERSECTION_ROUTES:ML6749B|ML6883B

Locations displayed on Severity Diagram are based on longitude and latitude. Discrepancy between Latitude/Longitude and Route/MP may result in points not appearing on diagram.

LRS Intersection: ML6749B|ML6883B

Intersection Name: WHITNEY RD | CR 129-1@DELL RANGE BLVD | CR 211-1



LRS Intersection: ML6749B|ML6883B

Intersection Name: WHITNEY RD | CR 129-1@DELL RANGE BLVD | CR 211-1

Highway Safety Intersection Crash History Report

Intersection ID: 14459 | County:LARAMIE | City:CHEYENNE | Years 2015 to 2018

Facility Type: UrUn4 | Area Type:U | Intersection w/o Marked Crosswalk | Number of Legs:4

Leg	Date	Time	Report#	# Inj	# Killed	Lighting	Junction Relation	First Harmful Event	Manner of Collision	Grid Cell
2015										
US 30	05/31/15	0113	06266	1	0	Darkness Unlighted	03	Earth Embankment/Berm	Not a Collision w/2 Vehicles in Transport	Unknown
US 30	07/05/15	1110	09117	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Unknown South
WHITNEY RD	02/05/15	0810	01430	0	0	Daylight	03	Traffic Sign Support	Not a Collision w/2 Vehicles in Transport	Unknown
WHITNEY RD	02/03/15	0748	01590	0	0	Daylight	03	Motor Vehicle in Transport on Roadway	Rear End (Front to Rear)	Sideswipe Straight South Parked Vehicle South
WHITNEY RD	11/05/15	0800	13726	0	0	Daylight	03	Motor Vehicle in Transport on Roadway	Rear End (Front to Rear)	Rear End Straight North Straight North
2016										
US 30	03/02/16	1927	03018	1	0	Darkness Unlighted	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Right South Straight West
US 30	01/18/16	1838	00552	0	0	Darkness Lighted	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Right North
US 30	02/18/16	1552	02196	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight West Right North
US 30	12/02/16	1515	16890	0	0	Daylight	02	Raised Median or Curb	Not a Collision w/2 Vehicles in Transport	Unknown
2018										
US 30	10/20/18	1946	12925	2	0	Darkness Lighted	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Right North
US 30	10/20/18	1012	12338	5	1	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Right North

Highway Safety Intersection Crash History Report

Intersection ID: 14459 County:LARAMIE City:CHEYENNE Years 2015 to 2018

Facility Type: UrUn4 Area Type:U Marked Crosswalk at Intersection Number of Legs:4

Leg	Date	Time	Report#	# Inj	# Killed	Lighting	Junction Relation	First Harmful Event	Manner of Collision	Grid Cell
US 30	07/26/18	0553	08220	0	0	Dawn	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight South Right East
US 30	02/23/18	1407	02236	0	0	Daylight	03	Utility Pole/Light Support	Not a Collision w/2 Vehicles in Transport	Unknown
US 30	09/04/18	1649	10771	0	1	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Straight East Right North
US 30	02/13/18	0753	01683	5	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Right South Straight West
US 30	11/03/18	1829	12991	0	0	Darkness Unlighted	02	Motor Vehicle in Transport on Roadway	Angle (Front to Side), Opposing Direction	Angle Straight East Left North
WHITNEY RD	04/14/18	1221	04022	0	0	Daylight	02	Motor Vehicle in Transport on Roadway	Angle Right (Front to Side, includes Broadside)	Angle Right South Straight West

Highway Safety Intersection Report

US 30@WHITNEY RD | CR 129-1

Intersection ID: 14459 County:LARAMIE City:CHEYENNE Years:2014 to 2018

Facility Type:UrUn4 Area Type:U Intersection w/o Marked Crosswalk Number of Legs:4

Intersection Crash Types Statistics

Grid Cell	Crash Type	Count
K10	Angle Straight East Right North	4
A1	Unknown	4
D5	Angle Right South Straight West	3
M8	Angle Straight West Right North	1
D2	Sideswipe Straight South Parked Vehicle South	1
H10	Angle Straight East Left North	1
J13	Rear End Straight North Straight North	1
E11	Angle Straight South Right East	1
A2	Unknown South	1

Intersection Crash Summaries

CRITICAL_CRASHES	2
SERIOUS_CRASHES	4
DAMAGE_CRASHES	11
TOTAL_CRASHES	17
PERSONS_INJURED	14
PERSONS_KILLED	2

Collision Diagram

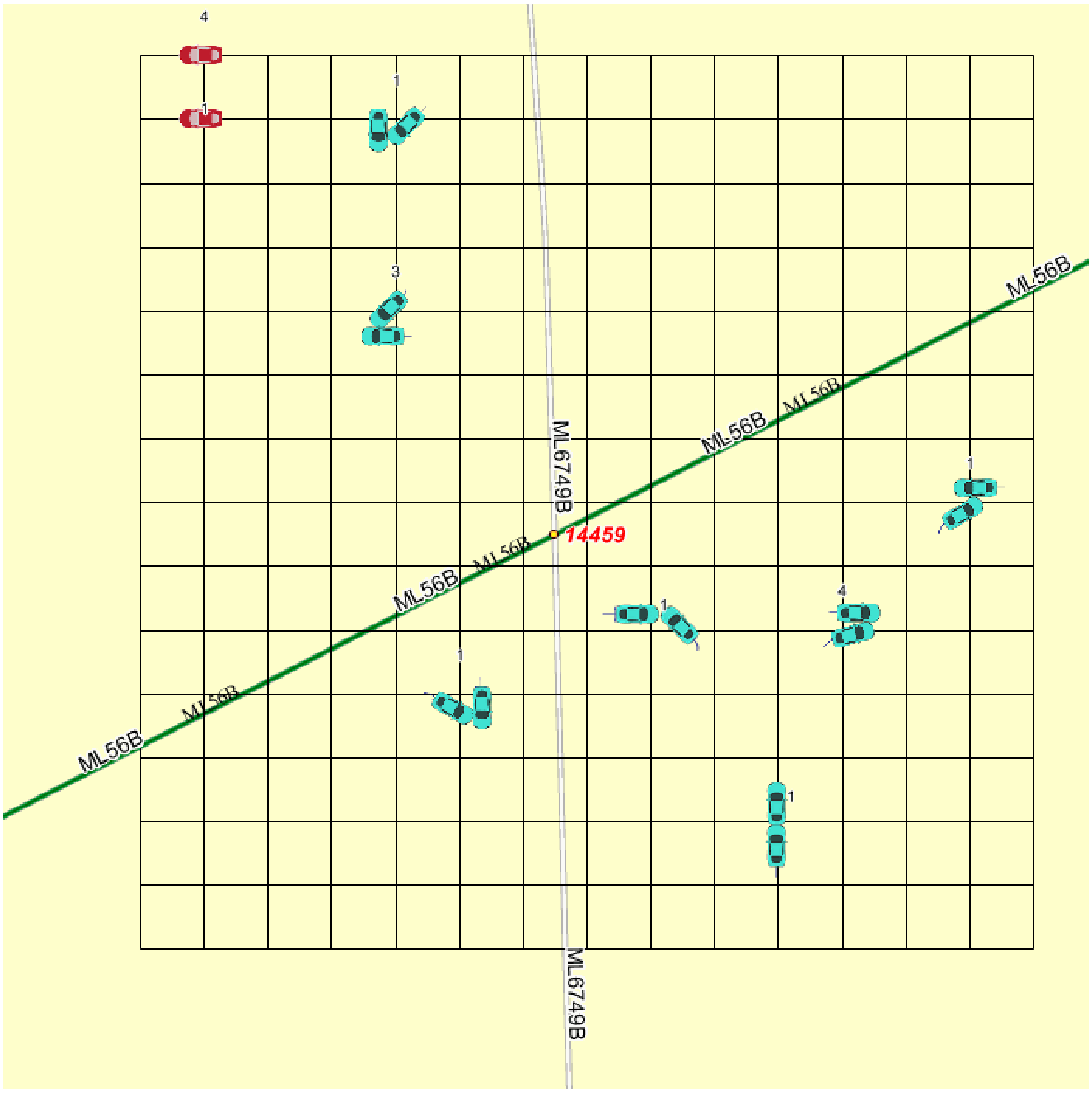
Intersection ID:14459

Intersection Names:US 30@WHITNEY RD | CR 129-1

Crash types are based on a grid format are are not indicative of crash location

LRS Intersection: ML56B|ML6749B

Intersection Name: US 30@WHITNEY RD | CR 129-1



Severity Diagram

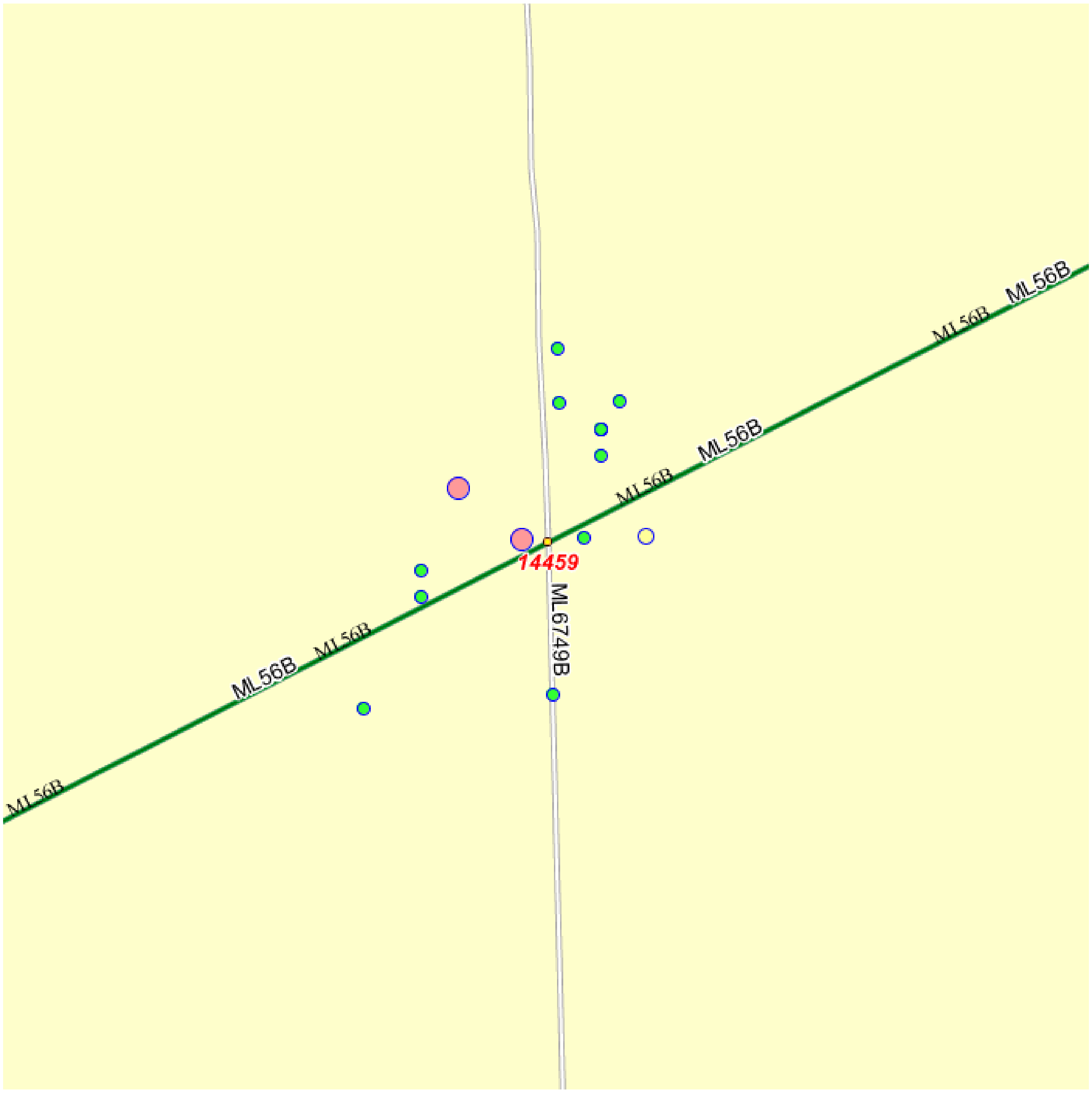
INTERSECTION_ID 14459

INTERSECTION_ROUTES:ML56B|ML6749B

Locations displayed on Severity Diagram are based on longitude and latitude. Discrepancy between Latitude/Longitude and Route/MP may result in points not appearing on diagram.

LRS Intersection: ML56B|ML6749B

Intersection Name: US 30@WHITNEY RD | CR 129-1



LRS Intersection: ML56B|ML6749B

Intersection Name: US 30@WHITNEY RD | CR 129-1

MEMO

Professional Engineer (Civil)
THOMAS D. COBB
8287
Date 2/12/19
WYOMING

TO: Mr. Randy Greisbach, PE, WYDOT, District Traffic Engineer

FROM: Thomas D. Cobb, PE

DATE: February 12, 2019

SUBJECT: Whitney Road Corridor Study – Woodhouse Road/ U.S. 30 Service Road to U.S. 30 Proposed Connection

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Purpose and Need

The intersection of U.S. 30 with Whitney Road was a major emphasis during the during the Whitney Road Corridor Study development. AVI, pc, Cheyenne MPO, and Whitney Road Steering Committee identified the following significant observations:

- Approach accesses are very close to the intersection on north and west legs.
- Under jurisdiction of the State of Wyoming Department of Transportation.
- Large vehicle usage at intersections including large semi-trailers, recreation vehicles, mobile homes, and tow trucks for local business support and access.
- Observed unsafe and opposing cross maneuvers from eastbound U.S. 30 Service Road to southbound Whitney Road.
- Intersection is skewed greater than 10° (25.78°)
- Vehicles traveling north on Whitney Road at the intersection of U.S. 30 can experience a "ghosting" problem with traffic on eastbound U.S. 30. The eastbound thru traffic on U.S. 30 can be "ghosted" or shield from view by right turning vehicles traveling eastbound U.S. 30 to southbound Whitney Road while in the auxiliary lane traffic.
- Posted speed on U.S. 30 is 55 mph.
- Posted speed Whitney Road is 30 mph.
- Inadequate storage length available for left turn bay on northbound Whitney Road created by pedestrian refuge island on south leg of intersection.
- Perceived unsafe pedestrian Greenway crossing location on south leg of intersection on Whitney Road.
- Cut-through traffic observed from Saddle Ridge subdivision via Saddle Ridge Trail to U.S. 30 Service Road and Whitney Road during peak hours to avoid the Whitney Intersection.
- Intersection spacing on U.S. 30 between Whitney Road and the U.S. 30 Service Road/ Saddle Ridge Trail is 1936 feet based on GIS aerial photo measurement.

Potential solutions to address the significant observations were developed and provided to the public for review and comment on June 28, 2018. The solution proposed removal of the service road connection into Whitney Road and replacing it with a cul-de-sac turnaround. Multiple written and verbal comments were expressed at the public meeting which indicated that a cul-de-sac would not function for the existing businesses adjacent to the U.S. 30 Service Road. As a result, multiple one-on-one meetings between AVI, pc, Cheyenne Metropolitan Planning Organization (MPO), and local business owners located on the north U.S. 30 Service Road East of Whitney Road were conducted with the purpose to understand concerns and work together to develop potential alternatives to the cul-de-sac option. A summary of the concerns/ constraints and potential alternatives considered is outlined below.

Concerns/ Constraints

- Thirty-seven (37) foot tow trucks haul up to 80' tractor/ trailer combinations and 40' recreational vehicles which require access from U.S. 30 to Whitney Road to the U.S. 30 Service Road.
- Tractor/ trailer combinations up to eighty (80) feet deliver parts, equipment, and inventory to the businesses along the U.S. 30 Service Road.
- Alternative routes are comprised by un-improved narrow gravel roadways which are minimally maintained, and snow removal is not accomplished.
- The alternative route of Woodhouse Road between the U.S. 30 Service road and Hinesley Road contains steep vertical slopes greater than 8% (maximum 11.8%). The average slope is 3.0% and generally slopes from North to South with a total elevation change of 39 feet.
- The alternate route Hinesley Road between Whitney Road and Woodhouse contains steep vertical slopes greater than 8% (maximum 15.1%). The average slope is 3.7% and generally slopes from East to West with a total elevation change of 42 feet.
- A large radii cul-de-sac of 50' using clearzone distance of 22' (i.e. Design Speed 55 mph, 6:1 or flatter foreslopes, >6000 ADT). Maximum vehicle turnaround WB-67 design vehicle.
- Alternate routes would need to be graded, surfaced, and maintained to accommodate large truck access to businesses.

Potential Alternatives to Cul-de-sac

- Develop alternative access point to business via Woodhouse Road/ U.S. 30 Service Road to U.S. 30 (Intersection spacing between Whitney Road and Woodhouse 982', Intersection spacing between Woodhouse and Saddle Ridge Trail/ U.S. 30 Service Road 978'.
- Access control median on Whitney Road to prevent left ingress or egress turning movement U.S. 30 Service Road to Whitney Road.
- Improve or upgrade service condition of alternative routes (i.e. Hinesley Road and/ or Woodhouse Road) to accommodate anticipated vehicles into the businesses.

Trip Generation

Traffic calculations are based on the *Trip Generation, 8th Edition: An ITE Informational Report* area and unit calculations as follows show below and the Cumulative Total Site Plan Trip Generation for the planning area associated with the potential creation of an access point by extending Woodhouse Road south into U.S. 30. The planning area for analysis is bounded by Whitney Road to the west, Dell Range Blvd. to the north and east, and U.S. 30 to the south and east.

Existing Traffic Generation

Employment data from the 2010 Business Employment Data Survey from Plan Cheyenne was utilized along with updates from "one-on-one" interviews conducted with the area businesses, observation, and engineering judgement to develop the 2018 Trip Generation for the planning area. See *Table 1 2010/ 2018 Business Employment Data* and *Figure 1 2010 Existing Land Use*.

Table 1 2010/ 2018 Business Employment Data

Mark	Address	Name	Full	Part
1	4408 Woodhouse	Elite Auto Upholstery	2	0
2	6702 Hinesley Road	Unique Wood Design, LLC	1	1
3	4219 Whitney Road	Mid City Auto	0	1
4	6800 U.S. 30	Alpine Cleaning Dial-a-Maid	6	1
5	6526 U.S. 30	Big Al's Auto and Exhaust	7	0
6	6600 U.S. 30	Pinnacle Cabinet and Millwork	9	1
7	6520 Hinesley Road	Big Al's Towing	16	0
		Sub-totals	41	4
		Totals	45	

Figure 1 2010 Existing Land Use Foster Tracts

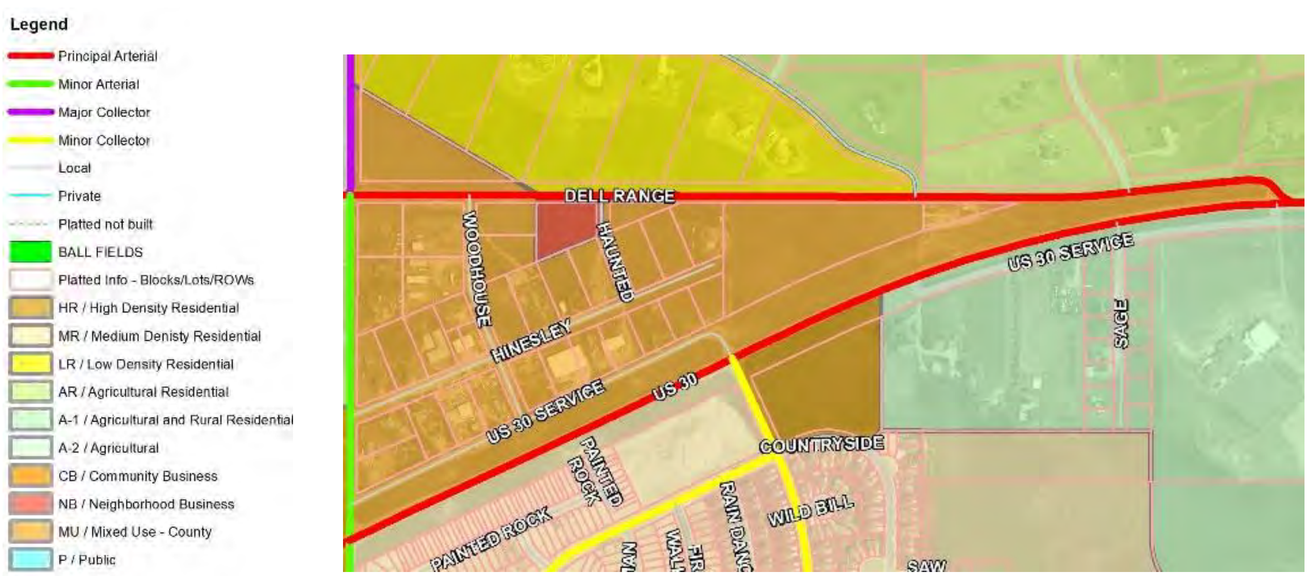


Figure 2 Existing Zoning

The current 34.49 acres of land is being utilized as follows:

Land Use	Percentage (%)	Acres
Vacant Land	38.1%	13.13
Residential	48.7%	16.81 (7 du)
Office Park	3.5%	1.20
Manufacturing	3.4%	1.18
Automotive Care Center	6.3%	2.17
	100%	34.49

Existing Traffic Assumptions

- Residential DU = 7
- Big Al's Automotive and Exhaust (ITE Code 942, Automotive Care Center; 2 bay)
- Elite Upholstery, Mid City Auto (ITE Code 942, Automotive Care Center; 0.5 bay each)
- Big Al's Towing (ITE Code 942, Automotive Care Center; 1 bay)
- Unique Wood Designs and Pinnacle Cabinet & Millwork (ITE Code 140, Manufacturing; 12 total employees)
- Alpine Cleaning Dial-a-maid (ITE Code 770, Business Park; 7 employees)

- Distribution 80% US 30 Service Road, 10% Hinesley Road, 5% Woodhouse, 5% Haunted Road.

Table 2 2019 Trip Generation Foster Tracts

Description/ITE Code	Units	ITE Vehicle Trip Generation Rates (peak hours are for peak hour of adjacent street traffic)							Expected Units	Total Generated Trips			Total Distribution of Trips			
		Weekday	AM	PM	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Business Park 770	Employees	4.04	0.45	0.39	85%	15%	22%	78%	7.0	28	3	3	3	0	1	2
Manufacturing 140	Employees	2.13	0.40	0.36	73%	27%	44%	56%	12.0	26	5	4	4	1	2	2
Single Family Homes 210	DU	9.57	0.75	1.01	25%	75%	63%	37%	7.0	67	5	7	1	4	4	3
Office Park 750	Acres	195.11	25.65	28.28	92%	8%	15%	85%		0	0	0	0	0	0	0
Automobile Care Center 942	Service Bays	12.48	1.52	2.17	68%	32%	NA	NA	4.0	50	6	9	4	2	NA	NA
									Totals	171	19	23	12	8	7	7

Existing Average Week Day Trips a day to/from Foster Tracts Area = 171 trips/ day

AM Peak Hour = 19 Trips/ hour

AM Peak Hour (Ingress) = 12 Trips/ hour

AM Peak Hour (Egress) = 8 Trips/ hour

PM Peak Hour = 23 Trips/ hour

PM Peak Hour (Ingress) = 7 Trips/ hour

PM Peak Hour (Egress) = 7 Trips/ hour

U.S. 30 Service Road Peak Hours 2019
AM Peak Hour (Ingress) = 12 Trips/ hour x 0.80 = 10 Trips
PM Peak Hour (Egress) = 7 Trips/ hour x 0.80 = 6 Trips

2040 Future Traffic Generation

2040 projected traffic generation was based on planning judgement, conversations with existing business regarding future expansion, known future business development, and hypothetical potential for the Foster Tracts Area in the next twenty years.

Future Traffic Assumptions

- Residential DU = 6
- Big Al's Automotive and Exhaust (ITE Code 942, Automotive Care Center; 4 bay)
- Elite Upholstery, Mid City Auto (ITE Code 942, Automotive Care Center; 0.5 bay each)
- Big Al's Towing (ITE Code 942, Automotive Care Center; 1 bay)
- Unique Wood Designs and Pinnacle Cabinet & Millwork (ITE Code 140, Manufacturing; 20 total employees)
- Alpine Cleaning Dial-a-maid (ITE Code 770, Business Park; 10 employees)
- New Business Park (ERA) = 3,000 SF Office Bldg.
- Manufacturing (Unknown) = 5 Employees
- Distribution 5% US 30 Service Road, 75% Woodhouse Extension, 10% Hinesley Road, 5% Woodhouse (north), 5% Haunted Road (north).

The proposed 34.49 acres of land is being utilized as follows:

Land Use	Percentage (%)	Acres
Vacant Land	35.2%	12.13
Residential	43.8%	15.01 (6 du)
Office Park	6.0%	2.20
Manufacturing	6.0%	2.06
Automotive Care Center	9.0%	3.09
	100%	34.49

Table 3 2040 Trip Generation Foster Tracts

Description/ITE Code	Units	ITE Vehicle Trip Generation Rates (peak hours are for peak hour of adjacent street traffic)							Expected Units	Total Generated Trips			Total Distribution of Trips			
		Weekday	AM	PM	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Business Park 770	Employees	4.04	0.45	0.39	85%	15%	22%	78%	20.0	81	9	8	8	1	2	6
Manufacturing 140	Employees	2.13	0.40	0.36	73%	27%	44%	56%	20.0	43	8	7	6	2	3	4
Single Family Homes 210	DU	9.57	0.75	1.01	25%	75%	63%	37%	6.0	57	5	6	1	3	4	2
Office Park 750	KSF^2	11.42	1.71	1.48	89%	11%	14%	86%	3.0	34	5	4	5	1	1	4
Automobile Care Center 942	Service Bays	12.48	1.52	2.17	68%	32%	NA	NA	6.0	75	9	13	6	3	NA	NA
									Totals	**290**	**36**	**39**	**25**	**10**	**9**	**16**

Future Average Week Day Trips a day to/from Foster Tracts Area = 290 trips/ day

AM Peak Hour = 36 Trips/ hour

AM Peak Hour (Ingress) = 25 Trips/ hour

AM Peak Hour (Egress) = 10 Trips/ hour

PM Peak Hour = 39 Trips/ hour

PM Peak Hour (Ingress) = 9 Trips/ hour

PM Peak Hour (Egress) = 16 Trips/ hour

Woodhouse Road at U.S. 30 Peak Hours 2014 Horizon

AM Peak Hour (Ingress) = 25 Trips/ hour x 0.75 = 19 Trips

PM Peak Hour (Egress) = 16 Trips/ hour x 0.75= 12 Trips

Full Buildout/ Redevelopment Traffic Generation

Full buildout/ redevelopment projected traffic generation was based on planning and engineering judgement with the framework for redevelopment based on conversations with existing business regarding future expansion, known future business development, and hypothetical potential for the Foster Tracts Area beyond the design horizon year using the *PlanCheyenne* future land use plan (Laramie County version). The future land use is mixed use commercial. In accordance with the current Laramie County Land Use Regulations, the closest zoning is MU or mixed use. It is intended to encourage rehabilitation and ruse of existing buildings and is a mix of residential an commercial uses.

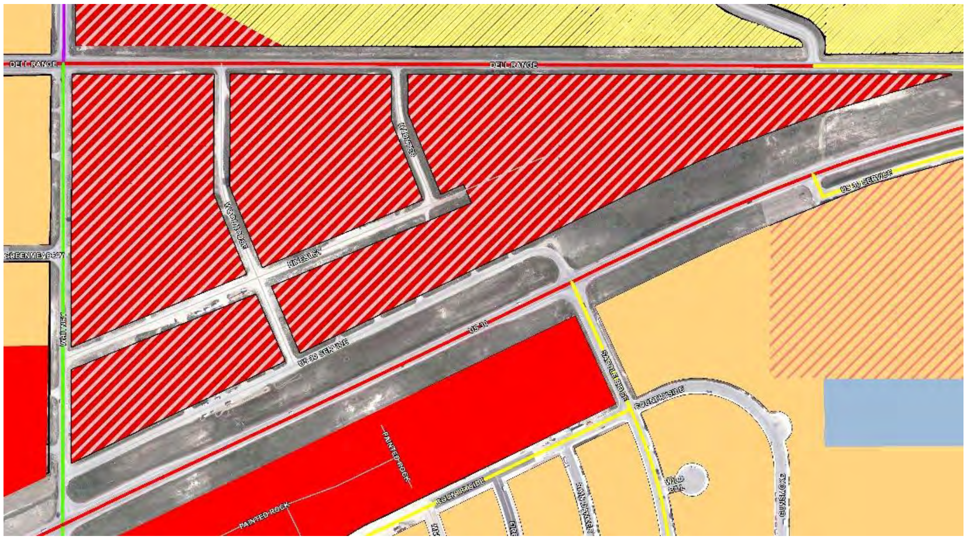


Figure 3Future Land Use PlanCheyenne (Laramie County Version)

Full Buildout Traffic Assumptions

- Distribution 5% US 30 Service Road, 75% Woodhouse Extension, 10% Hinesley Road, 5% Woodhouse (north), 5% Haunted Road (north).

The proposed 34.49 acres of land is being utilized as follows:

Land Use	Units	Expected Units	Acres
Vacant Land	0	0	0.0
Business Park	Employees	20	4.49
Residential (SFH)	DU	5 DU	12.0
Resd. Condo/ Townhomes	DU	8 DU	8.0
Daycare Center	KSF[2]	2 KSF	2.0
Serv. Stat. w/ Conv. Mkt	FUEL Position	4	3.0
Office Park	KSF[2]	6	7.0
Manufacturing	Employees	20	2.0
Automotive Care Center	Bays	6	2.0
			39.49

Table 4 Full Buildout Trip Generation Unknown Year

Description/ITE Code	Units	ITE Vehicle Trip Generation Rates (peak hours are for peak hour of adjacent street traffic)							Expected Units	Total Generated Trips			Total Distribution of Trips			
		Weekday	AM	PM	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Business Park 770	Employees	4.04	0.45	0.39	85%	15%	22%	78%	20.0	81	9	8	8	1	2	6
Manufacturing 140	Employees	2.13	0.40	0.36	73%	27%	44%	56%	20.0	43	8	7	6	2	3	4
Single Family Homes 210	DU	9.57	0.75	1.01	25%	75%	63%	37%	5.0	48	4	5	1	3	3	2
Daycare Center 565	KSF^2	74.06	12.18	12.34	53%	47%	47%	53%	2.0	148	24	25	13	11	12	13
Office Park 750	KSF^2	11.42	1.71	1.48	89%	11%	14%	86%	6.0	69	10	9	9	1	1	8
Serv.Station w/ Conven.Mkt 945	Fuel Position	162.78	10.16	13.51	50%	50%	50%	50%	2.0	326	20	27	4	4	6	6
Automobile Care Center 942	Service Bays	12.48	1.52	2.17	68%	32%	NA	NA	6.0	75	9	13	6	3	NA	NA
									Totals	**788**	**85**	**94**	**47**	**26**	**27**	**39**

Full Buildout Average Week Day Trips a day to/from Foster Tracts Area = 788 trips/ day

AM Peak Hour = 85 Trips/ hour

AM Peak Hour (Ingress) = 47 Trips/ hour

AM Peak Hour (Egress) = 26 Trips/ hour

PM Peak Hour = 94 Trips/ hour

PM Peak Hour (Ingress) = 27 Trips/ hour

PM Peak Hour (Egress) = 39 Trips/ hour

Woodhouse Road at U.S. 30 Peak Hours Full Buildout

AM Peak Hour (Ingress) = 47 Trips/ hour x 0.75 = 36 Trips

PM Peak Hour (Egress) = 39 Trips/ hour x 0.75= 30 Trips

2101 O'Neil Ave. · Cheyenne · Wyoming
Phone 307.637.6299 · Fax 307.637.6308
www.plancheyenne.org

Conclusion

The proposed extension of Woodhouse Road with auxiliary lanes for a full movement intersection shows an increase of approximately 9.05%/ year in AM Peak Hour and a 9.52%/ year increase in PM Peak Hour traffic diverted from the Whitney Road to US 30 Service Road connection to the Woodhouse Road extension into U.S. 30 through year 2040. Fully buildout/ rehabilitation from existing 2019 to an unknown horizon year shows an approximate increase in AM Peak Hour from 10 vehicles to 36 vehicles and PM Peak Hour from 6 to 30 vehicles. A summary of the anticipated volumes is shown in *Table 5 Anticipated Traffic Volumes at Intersection of U.S. 30 w/ Woodhouse Road* below.

It appears based on the low anticipated growth of the development in the next twenty years and beyond, that it is operationally feasible to connect Woodhouse Road to U.S. 30 with minimal operational impact to U.S. 30. Some operational difficulties may or may not occur at final buildout depending on future posted speed limits and surrounding signalization, but this will likely occur well beyond the service life of the proposed U.S. 30 improvements.

Table 5 Anticipated Traffic Volumes at Intersection of U.S. 30 w/ Woodhouse Road

Description	**Units**	**2019**	**2040**	**Full Buildout/ Rehabilitation**
AM Peak Hour In	Vehicles	10	19	36
PM Peak Hour Out	Vehicles	6	12	30
Daily Total	Average Daily Traffic (ADT)	129	218	591

Form M-3A (REV 8/2014)

Permit # ______________
For WYDOT Use Only

Wyoming Department of Transportation
Access Application

Property Owner (Permittee) Laramie County	Applicant or Agent (if different from Property Owner) Cheyenne MPO
Business (if applicable)	Business (if applicable)
Mailing Address 310 West 19th Street	Mailing Address 2101 O'Neil Avenue
City Cheyenne	City Cheyenne
State: Wyoming / Zip Code: 82001	State: Wyoming / Zip Code: 82001
Phone Number 307.633.4302	Phone Number 307.638.4385
E-mail Address dbumann@laramiecounty.com	E-mail Address tcobb@cheyennempo.org

Property Address of Requested Access (if known): Approximately RM/ MP 367.34

Located on Highway: ML 56B | Side of Highway: ☒ N ☐ S ☐ E ☐ W

Approximately 0.64 feet/mile (circle: N S E W) from Milepost/Intersection 366.70 End Divided Section

Legal Description

County	Subdivision	Block	Lot	Section	Township	Range
Laramie	Foster Tracts			25	14N	66W

Access requested

☒ New Access ☐ Temporary Access ☐ Change in Access Use ☐ Removal of Access

Check appropriate box if requesting a new access or change in access use.

☒ Major ☐ Commercial ☐ Residential ☐ Field

Does the property owner own or have any interests in the adjacent property? ☒ No ☐ Yes

If yes, please describe:

Are there other existing or dedicated public streets, roads, highways or access easements bordering or within the property?
☐ No ☒ Yes If yes, list them on your plans and indicate the proposed and existing access points

I, the undersigned property owner, request permission to construct an access driveway on Wyoming Department of Transportation right-of-way at the above property, subject to the rules and regulations contained in the " Rules and Regulations, General Section, Chapter 13, Access Facilities, approved by the Transportation Commission of Wyoming and promulgated by authority of W.S. 24-2-105 and W.S. 24-6-101 through W.S. 24-6-111 to administer access facilities on the state highway system".

If an access permit is issued to you, **the applicant agrees to the terms and conditions as stated in the permit**.

Applicant or Agent Signature for Permittee	Date
[signature]	2/14/19

Applications for access permits will be accepted only from an individual(s), partnerships, corporations, or other bodies recognized by law as owning all or the major interest in the property or by a party having an easement through the property abutting the highway right-of-way or proposed highway.

Property Owner Signature	Date
[signature]	2/14/19

Instructions

Form M-3A, Application for permit to Construct Access Driveway must be submitted to your local Wyoming Department of Transportation Maintenance Foreman. He will review and then submit all necessary paperwork to the District Traffic Engineer for processing. The applicant must submit two copies of the M-3A form filled in and signed by the **individual, partnership, corporation, qualified agent, or other body recognized by law as owning all or the major interest in the property abutting the highway right of way or proposed highway.** The planned property ingress or egress must be indicated as one of the following:

- Field (Minor) Access. An entrance to and/or exit from a field or unoccupied property if the access is not used daily throughout the year. Daily use for only a few weeks a year still qualifies as field access.
- Residential Access. An access providing entrance to and/or exit from residential dwelling(s) for exclusive use and benefit of those residing therein.
- Commercial Access. An entrance into and/or exit from any business, commercial development, cultural/institutional complex, public establishment, or any development serving 10 or more family residences.
- Major Access. Any access that generates more than 50 trip ends in any hour of a typical day or is a public street or access.

A business letter shall accompany the application. The letter should have a heading: including name, address, and telephone number of the above owner or owners, estimate of daily traffic, and state what you propose to do, (EX: where you intend to construct the access, when the work will be started, an estimate of completion time).

A drawing or a sketch showing sufficient dimensions **shall** be submitted with the application. Which clearly indicates the character and extent of the proposed work to include all or part the following?

- Proposed access.
- Land description to include the Section, Township, and Range
- The location of all existing or proposed buildings, stands, pumps, retaining walls, and other physical features which affect the access location.
- Property lines, dimensions, and existing accesses.
- All drainage which affects the access location.
- All accesses outside of the property but within 330 feet (urban), 660 feet (rural) of the property line.
- Off street parking locations which may affect access location.
- Radii of proposed accesses.

If Right-of-Way fence is involved, you are required to install brace panels on either side of the access. If you require a cattleguard, it must be located on the private property and installed and maintained by you. If a drainage problem will be created, a minimum of an 18" diameter CMP will be required under the proposed access. The length of the CMP must enable construction of 8:1 side slopes on the approach shoulders.

Note: In order to expedite the processing of your application, the location of the proposed access should be clearly indicated both on your drawing and/or sketch (by Highway Route and distance to a Milepost number) and marked at the actual site with highly visible markings for the field location and inspection.

If you have any questions concerning your access application please feel free to contact the District office.

Whitney Road and East Dell Range Intersection

The Cheyenne Metropolitan Planning Organization (MPO) is currently managing the Whitney Road and East Dell Range/US 30 Corridor Plans. Both Corridor Plans' study areas include the Whitney Road and East Dell Range intersection.

The Whitney Road Corridor Study, initiated at the end of 2017, initially recommended a single lane roundabout as a long-term solution for the intersection. The recommendation was based on a safety assessment, 2016 traffic counts and analysis documented in the City approved Whitney Ranch Traffic Impact Assessment. However, the traffic study did not estimate the redistribution of future traffic with the Christianson Road extension to Interstate 80.

Subsequently, the traffic analysis conducted for the East Dell Range and US 30 Corridor Study, initiated in the Fall of 2018) utilized 2017/18 traffic counts and a traffic analysis which assumed future traffic would be redistributed when Christianson Road was extended south. This more recent traffic analysis suggests the previously recommended intersection at Whitney Road and East Dell Range could accommodate a single lane roundabout as an interim solution. However, at full build-out of the Whitney Ranch development, the single lane roundabout would need additional right-turn lanes for the southbound and eastbound approaches to meet acceptable traffic operations.

The East Dell Range and US 30 Corridor Team was asked to assess a signalized intersection as an alternative to the proposed single lane roundabout. This memorandum summarizes the operational and urban design opportunities and challenges associated with a potential roundabout and an alternative traffic signal for the East Dell Range and Whitney Road intersection.

Operational Assessment

A year 2040 traffic operations assessment was conducted for Whitney Road and East Dell Range intersection. The alternatives evaluated included the current configuration of the intersection; a single lane roundabout; a single lane roundabout with eastbound and southbound additional right-turn slip ramps; and, a signalized intersection with left-turn and a shared through and right-turn travel lane on each approach. The level of service (LOS) and delay analysis is shown below.

Traffic LOS and Delay

2040	Existing Conditions Two-Way Stop Control Delay (LOS)		One Lane Roundabout Delay (LOS)		One Lane Roundabout w/ EB & SB Right Turn Delay (LOS)		Signalized Intersection	
Movement	**AM Delay (LOS)**	**PM Delay (LOS)**	**AM Delay (LOS)**	**PM Delay (LOS)**	**AM Delay (LOS)**	**PM Delay (LOS)**	**AM Delay (LOS)**	**PM Delay (LOS)**
Overall	-	-	19.9 (C)	45.5 (E)	11.9 (B)	31.8(D)	33.7(C)	27.5(C)
NB Approach	>300	>300	-	-	-	-		
EB Approach	8.8 (A)	8.5 (A)	-	-	-	-		
WB Approach	8.0 (A)	9.1 (A)	-	-	-	-		
SB Approach	>300	>300	-	-	-	-		

The analysis shows the signalized intersection and the roundabout with additional right turn lanes meet the minimum traffic operation expectation in both the AM and PM peak hours. The roundabout operates at an LOS D with an overall delay of 31. 8 seconds in the PM peak hour. The signalized intersection operates slightly better with an LOS C with an overall delay of 27. 5 in the PM peak hour.

The 95th percentile queuing analysis for both alternatives shows shorter queue lengths with the signalized intersection. The traffic signal alternative maintains approximately 300' shorter queues in the peak direction when compared to the roundabout.

Vehicle Queuing

Queue Length (95th percentile)	One Lane Roundabout		One Lane Roundabout w/ EB & SB Right Turns		Signalized Intersection	
Movement	**AM (ft)**	**PM (ft)**	**AM (ft)**	**PM (ft)**	**AM (ft)**	**PM Delay (ft)**
NB left	-	-	-	-	#168'	#134'
NB Through	45'	789'	45'	789'	134'	#451'
EB Left	-	-	-	-	28'	m23'
EB Through	98'	897'	46	259'	82'	#599'
EB Right	-	-	10'	18'	-	-
WB Left	-	-	-	-	m21'	m10'
WB Through	180'	175'	180'	175'	#506'	355'
SB Left	-	-	-	-	56'	#107'
SB Through	397'	172'	147'	98'	#452'	318'
SB Right	-	-	15'	7'	-	-

95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

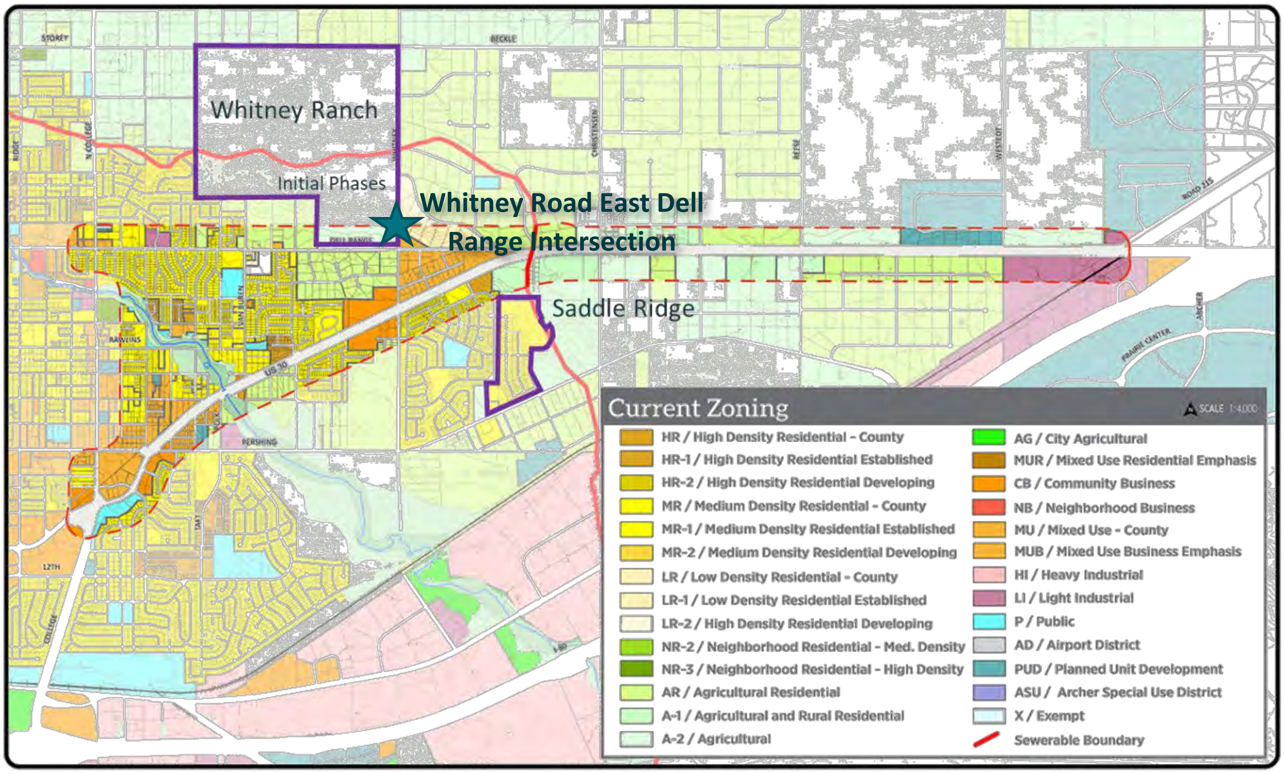
Land Use and Urban Design Assessment

The Whitney Road and East Dell Range intersection is situated within Cheyenne's and Laramie County's high growth corridors. While currently rural in character, the land uses surrounding the intersection are transitioning into a more suburban development pattern. Whitney Ranch and Saddle Ridge are the two largest developments influencing land use and traffic changes occurring in the area.

A zoning and infrastructure assessment of the area shows Whitney Road will function as the City of Cheyenne's eastern boundary for many years. Sewer service expansion in the area is limited east of Whitney Road. Furthermore, most of the properties east of Whitney Road are large lot residential parcels and likely not to redevelop. The Whitney Road and East Dell Range intersection will function as a gateway between the urban and suburban patterns of development within Whitney Ranch, the City of Cheyenne with the more rural development pattern of Laramie County.

Between the two alternatives a roundabout presents a stronger gateway and urban design opportunity for transitioning land uses than a signalized intersection. The roundabout creates a physical transition between the higher travels speeds anticipated in rural areas east Whitney Road and the lower traffic speeds in the more suburban pattern west of Whitney Road. The roundabout balances mobility demands while providing a distinctive place-making opportunity.

Zoning and Sewer Services Map



Opportunities (Pros)

<u>Signalized Intersection</u>

- Maintains LOS B in the AM peak and an LOS C in the PM peak hour
- Maintains shorter vehicle queue lengths
- Provides a safer physical condition than the current intersection condition
- Provides most comfortable pedestrian and bicycle crossing of the intersection
- Lower capital costs when compared to the roundabout

<u>Roundabout</u>

- Maintains LOS B in the AM peak and an acceptable LOS D in the PM peak hour with only a 4 second of additional overall delay when compared to the signalized intersection
- Maintaining lower traffic speeds with fewest conflict points making it the safest alternative
- Presents a long-term aesthetic and urban design gateway opportunity
- Presents a physical traffic calming opportunity transitioning higher rural travel speeds to slower suburban travel speeds
- The roundabout balances mobility demands while providing a distinctive place-making opportunity

Challenges (Cons)

Signalized Intersection

- Higher speeds and more conflict points when compared to the roundabout
- Limited aesthetic and urban design gateway opportunities
- Provides traffic control, not traffic calming in transitioning from higher rural travel speeds to slower suburban travel speeds

Roundabout

- Less comfortable intersection crossing for pedestrians and bicyclists
- Lower traffic LOS and a 4 second higher overall delay when compared to the signalized intersection
- Longer vehicle queues than a signalized intersection
- Higher capital costs than a signalized intersection

Table 1 – Study Area Intersections LOS Results

Intersection	Existing Control	Movement	Existing		2040 No Improvements		2040 With Improvements	
			AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Dell Range Blvd & College Dr (#1)		Overall	28.6 C	36.8 D	94.8 F	186.6 F	33.7 C	52.2 D
Dell Range Blvd & Van Buren Ave (#2)	STOP	Northbound Approach	15.5 C	16.9 C	>300 F	>300 F	-	-
		Eastbound Left	8.2 A	8.1 A	9.9 A	11.8 B	-	-
		Westbound Left	8.1 A	8.7 A	8.5 A	10.7 B	-	-
	STOP	Southbound Approach	14.1 B	13.8 B	171.5 F	>300 F	-	-
		Overall	-	-	-	-	18.9 B	19.4 B
Dell Range Blvd & El Camino Dr (#3)	STOP	Northbound Approach	13.4 B	15.8 C	21.9 C	38.0 E	21.9 C	38.0 E
		Eastbound Left	0.0 A	8.0 A	9.2 A	9.5 A	9.2 A	9.5 A
		Westbound Left	7.6 A	8.5 A	8.2 A	10.4 B	8.2 A	10.4 B
	STOP	Southbound Approach	0.0 A	10.3 B	16.8 C	23.3 C	16.8 C	23.3 C
Dell Range Blvd & James Dr (#4)	STOP	Northbound Approach	0.0 A	18.2 C	0.0 A	0.0 A	0.0 A	0.0 A
		Eastbound Left	0.0 A	8.1 A	9.2 A	9.5 A	9.2 A	9.5 A
		Westbound Left	0.0 A	0.0 A	0.0 A	0.0 A	0.0 A	0.0 A
	STOP	Southbound Approach	12.1 B	0.0 A	17.7 C	30.8 D	15.2 C	18.2 C
Dell Range Blvd & Whitney Rd (#5)	STOP	Northbound Approach	18.8 C	23.3 C	>300 F	>300 F	-	-
		Eastbound Left	7.8 A	7.7 A	8.8 A	8.5 A	-	-
		Westbound Left	7.5 A	8.1 A	8.0 A	9.1 A	-	-
	STOP	Southbound Approach	14.4 B	13.0 B	>300 F	>300 F	-	-
		Overall (Single Lane)	-	-	-	-	19.9 C	45.5 E
		Overall (Single Lane EB & SB RT)	-	-	-	-	11.9 B	31.8 D
		Overall	-	-	-	-	33.7 C	27.5 C
US-30 & N College Dr (#6)		Overall	28.4 C	35.3 D	49.8 D	91.4 F	27.3 C	54.6 D
US-30 & E Pershing Blvd (#7)		Overall	18.6 B	20.3 C	32.4 C	72.5 E	30.2 C	44.0 D

Intersection	Existing Control	Movement	Existing		2040 No Improvements		2040 With Improvements	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
			LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
US-30 & Polk Ave (#8)	STOP	Northbound Approach	10.5 B	15.6 C	22.7 C	36.8 E	10.6 B	22.2 C
		Eastbound Left	10.4 B	8.4 A	14.1 B	10.7 B	DNE	DNE
		Westbound Left	8.2 A	10.9 B	9.1 A	17.9 C	DNE	DNE
	STOP	Southbound Approach	17.6 C	24.3 C	36.9 E	97.5 F	16.7 C	12.7 B
US-30 & Van Buren Ave (#9)		Eastbound Left	10.8 B	8.7 A	18.8 C	15.8 C	-	-
	STOP	Southbound Approach	17.5 C	13.2 B	136.8 F	18.7 C	-	-
		Overall	-	-	-	-	22.7 C	23.8 C
US-30 & Hayes Ave (#10)	STOP	Northbound Approach	23.5 C	33.1 D	86.3 F	233.3 F	9.8 A	13.8 B
		Eastbound Left	9.5 A	8.3 A	12.1 B	10.2 B	12.1 B	10.1 B
		Westbound Left	7.9 A	9.3 A	8.4 A	12.6 B	8.4 A	12.6 B
	STOP	Southbound Approach	13.4 B	17.3 C	22.3 C	39.7 E	18.9 C	11.9 B
US-30 & Whitney Rd (#11)	STOP	Northbound Left	37.0 E	28.3 D	>300 F	>300 F	-	-
		Northbound Through/Right	18.1 C	21.3 C	43.0 E	>300 F	-	-
		Eastbound Left	9.0 A	7.9 A	10.6 B	10.5 A	-	-
		Westbound Left	7.7 A	8.7 A	7.9 A	9.5 A	-	-
	STOP	Southbound Approach	20.7 C	35.9 E	181.6 F	>300 F	-	-
		Overall	-	-	-	-	20.3 C	19.3 B
US-30 & Saddle Ridge Trail (#12)	STOP	Northbound Approach	18.9 C	14.0 B	30.8 D	20.1 C	8.9 A	10.1 B
		Eastbound Left	0.0 A	0.0 A	8.7 A	8.0 A	DNE	DNE
		Westbound Left	7.5 A	8.5 A	7.8 A	9.1 A	7.8 A	9.2 A
	STOP	Southbound Approach	12.9 B	14.0 B	14.5 B	16.6 C	10.2 B	9.3 A
US-30 & Dell Range Blvd (#13)	STOP	Northbound Approach	13.2 B	12.2 B	0.0 A	0.0 A	-	-
		Eastbound Left	8.4 A	7.6 A	8.7 A	8.0 A	-	-
		Westbound Left	7.4 A	0.0 A	0.0 A	0.0 A	-	-
	STOP	Southbound Approach	14.5 B	18.2 C	26.5 D	177.5 F	-	-

Intersection	Existing Control	Movement	Existing		2040 No Improvements		2040 With Improvements	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
			LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
		Overall	-	-	-	-	10.0 A	24.8 C
US-30 & Christensen Rd (#14)	STOP	Northbound Left	- DNE	- DNE	>300 F	245.5 F	-	-
		Northbound Through/Right	- DNE	- DNE	21.0 C	150.0 F	-	-
		Eastbound Left	8.6 A	8.3 A	9.1 A	9.0 A	-	-
		Westbound Left	- DNE	- DNE	8.5 A	10.2 B	-	-
		Southbound Left	- DNE	- DNE	26.6 D	>300 F	-	-
	STOP	Southbound Approach	15.2 C	11.0 B	53.7 F	33.6 D	-	-
		Overall	-	-	-	-	34.7 C	22.1 C
US-30 & Reese Ave (#15)	STOP	Northbound Approach	13.0 B	15.1 C	23.3 C	26.0 D	23.3 C	26.0 D
		Eastbound Left	8.2 A	7.9 A	8.7 A	8.5 A	8.7 A	8.5 A
		Westbound Left	7.5 A	8.3 A	8.0 A	9.2 A	8.0 A	9.2 A
	STOP	Southbound Approach	12.0 B	10.9 B	14.9 B	14.6 B	14.9 B	14.6 B
US-30 & Westedt Rd (#16)		Eastbound Left	8.1 A	7.9 A	8.4 A	8.6 A	8.4 A	8.6 A
	STOP	Southbound Approach	11.1 B	10.5 B	14.1 B	16.2 C	14.1 B	16.2 C
US-30 & Archer Pkwy (#17)	STOP	Northbound Approach	12.5 B	14.1 B	18.6 C	27.8 D	18.6 C	27.8 D
		Eastbound Left	7.7 A	7.4 A	8.0 A	7.7 A	8.0 A	7.7 A
		Westbound Left	7.7 A	8.1 A	8.1 A	8.6 A	8.1 A	8.6 A
	STOP	Southbound Approach	13.1 B	11.3 B	14.8 B	14.2 B	14.8 B	14.2 B

DNE = Does Not Exist

HCM 6th Signalized Intersection Summary

2017-2018 Existing AM.syn

1: College Drive & Dell Range Boulevard

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	23	113	264	115	443	166	265	214	77	101	322	76
Future Volume (veh/h)	23	113	264	115	443	166	265	214	77	101	322	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	28	120	0	151	487	193	358	306	143	125	362	104
Peak Hour Factor	0.82	0.94	0.92	0.76	0.91	0.86	0.74	0.70	0.54	0.81	0.89	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	428		453	651	256	455	674	308	421	552	157
Arrive On Green	0.01	0.09	0.00	0.07	0.31	0.31	0.18	0.34	0.34	0.08	0.24	0.24
Sat Flow, veh/h	1500	1575	1335	1500	2097	826	1500	1996	912	1500	2301	652
Grp Volume(v), veh/h	28	120	0	151	347	333	358	228	221	125	234	232
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	1500	1496	1426	1500	1496	1411	1500	1496	1458
Q Serve(g_s), s	1.0	5.3	0.0	5.1	15.6	15.8	13.0	8.9	9.2	4.6	10.5	10.8
Cycle Q Clear(g_c), s	1.0	5.3	0.0	5.1	15.6	15.8	13.0	8.9	9.2	4.6	10.5	10.8
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.65	1.00		0.45
Lane Grp Cap(c), veh/h	216	428		453	465	443	455	506	477	421	359	350
V/C Ratio(X)	0.13	0.28		0.33	0.75	0.75	0.79	0.45	0.46	0.30	0.65	0.66
Avail Cap(c_a), veh/h	272	428		453	465	443	455	506	477	452	359	350
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	27.3	0.0	18.4	23.2	23.3	16.9	19.4	19.5	18.8	25.7	25.8
Incr Delay (d2), s/veh	0.3	1.6	0.0	0.4	10.4	11.2	8.9	2.9	3.2	0.4	8.8	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.2	0.0	1.9	6.5	6.4	5.2	3.3	3.3	1.6	4.5	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	28.9	0.0	18.9	33.6	34.5	25.8	22.3	22.7	19.2	34.5	35.3
LnGrp LOS	C	C		B	C	C	C	C	C	B	C	D
Approach Vol, veh/h		148	A		831			807			591	
Approach Delay, s/veh		27.3			31.3			23.9			31.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	29.8	9.6	24.9	18.0	22.5	6.7	27.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.7	23.8	5.1	20.4	13.5	18.0	5.0	20.5				
Max Q Clear Time (g_c+I1), s	6.6	11.2	7.1	7.3	15.0	12.8	3.0	17.8				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.4	0.0	1.3	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			28.6									
HCM 6th LOS			C									
Notes												

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

2017-2018 Existing PM.syn

1: College Drive & Dell Range Boulevard

10/18/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	93	438	353	57	339	120	401	401	144	196	240	64
Future Volume (veh/h)	93	438	353	57	339	120	401	401	144	196	240	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	127	456	0	72	365	132	422	501	197	215	261	76
Peak Hour Factor	0.73	0.96	0.88	0.79	0.93	0.91	0.95	0.80	0.73	0.91	0.92	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	483		192	623	222	484	633	248	307	552	157
Arrive On Green	0.02	0.10	0.00	0.05	0.29	0.29	0.16	0.30	0.30	0.10	0.24	0.24
Sat Flow, veh/h	1500	1575	1335	1500	2162	771	1500	2101	822	1500	2298	655
Grp Volume(v), veh/h	127	456	0	72	251	246	422	356	342	215	168	169
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	1500	1496	1436	1500	1496	1427	1500	1496	1457
Q Serve(g_s), s	4.4	21.6	0.0	2.5	10.8	11.0	12.1	16.4	16.5	7.5	7.2	7.5
Cycle Q Clear(g_c), s	4.4	21.6	0.0	2.5	10.8	11.0	12.1	16.4	16.5	7.5	7.2	7.5
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.58	1.00		0.45
Lane Grp Cap(c), veh/h	329	483		192	431	414	484	451	430	307	359	350
V/C Ratio(X)	0.39	0.94		0.38	0.58	0.59	0.87	0.79	0.80	0.70	0.47	0.48
Avail Cap(c_a), veh/h	329	483		214	431	414	484	451	430	307	359	350
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	33.1	0.0	20.1	22.8	22.9	20.7	24.0	24.1	21.5	24.4	24.5
Incr Delay (d2), s/veh	0.7	28.5	0.0	1.2	5.7	6.2	15.8	13.1	14.1	7.0	4.3	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	12.8	0.0	0.9	4.3	4.3	4.3	7.1	6.9	3.3	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	61.5	0.0	21.3	28.5	29.1	36.5	37.2	38.2	28.4	28.7	29.2
LnGrp LOS	B	E		C	C	C	D	D	D	C	C	C
Approach Vol, veh/h		583	A		569			1120			552	
Approach Delay, s/veh		52.3			27.9			37.2			28.8	
Approach LOS		D			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	27.1	8.4	27.5	16.6	22.5	9.8	26.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.5	22.6	5.0	21.9	12.1	18.0	5.3	21.6				
Max Q Clear Time (g_c+I1), s	9.5	18.5	4.5	23.6	14.1	9.5	6.4	13.0				
Green Ext Time (p_c), s	0.0	1.7	0.0	0.0	0.0	1.2	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			36.8									
HCM 6th LOS			D									
Notes												

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
1: College Drive & Dell Range Boulevard

2040 Total AM.syn
10/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	80	510	290	280	840	230	300	300	150	135	480	175
Future Volume (veh/h)	80	510	290	280	840	230	300	300	150	135	480	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	87	543	0	304	913	185	326	326	130	147	522	125
Peak Hour Factor	0.92	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	399		286	799	162	327	644	252	371	575	137
Arrive On Green	0.02	0.08	0.00	0.13	0.32	0.32	0.14	0.31	0.31	0.07	0.24	0.24
Sat Flow, veh/h	1500	1575	1335	1500	2479	502	1500	2101	822	1500	2397	571
Grp Volume(v), veh/h	87	543	0	304	551	547	326	230	226	147	325	322
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	1500	1496	1485	1500	1496	1427	1500	1496	1472
Q Serve(g_s), s	3.2	19.0	0.0	9.5	24.2	24.2	10.5	9.5	9.8	5.5	15.8	16.0
Cycle Q Clear(g_c), s	3.2	19.0	0.0	9.5	24.2	24.2	10.5	9.5	9.8	5.5	15.8	16.0
Prop In Lane	1.00		1.00	1.00		0.34	1.00		0.58	1.00		0.39
Lane Grp Cap(c), veh/h	183	399		286	482	478	327	459	438	371	359	353
V/C Ratio(X)	0.48	1.36		1.06	1.14	1.14	1.00	0.50	0.52	0.40	0.90	0.91
Avail Cap(c_a), veh/h	196	399		286	482	478	327	459	438	371	359	353
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	34.4	0.0	20.4	25.4	25.4	21.2	21.3	21.4	19.8	27.7	27.7
Incr Delay (d2), s/veh	1.9	177.5	0.0	70.8	86.4	87.0	48.6	3.9	4.3	0.7	28.6	30.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	27.6	0.0	9.0	19.6	19.5	8.3	3.6	3.6	1.9	8.2	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	211.9	0.0	91.2	111.8	112.4	69.8	25.2	25.7	20.5	56.3	57.7
LnGrp LOS	C	F		F	F	F	E	C	C	C	E	E
Approach Vol, veh/h		630	A		1402			782			794	
Approach Delay, s/veh		185.9			107.6			43.9			50.2	
Approach LOS		F			F			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	27.5	14.0	23.5	15.0	22.5	8.8	28.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	23.0	9.5	19.0	10.5	18.0	5.0	23.5				
Max Q Clear Time (g_c+I1), s	7.5	11.8	11.5	21.0	12.5	18.0	5.2	26.2				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			94.8									
HCM 6th LOS			F									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
1: College Drive & Dell Range Boulevard

2040 Total PM.syn
10/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑↱		↰	↑↑↱		↰	↑↑↱	
Traffic Volume (veh/h)	260	960	415	235	765	245	485	520	275	270	325	200
Future Volume (veh/h)	260	960	415	235	765	245	485	520	275	270	325	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	283	1000	0	255	823	201	511	565	169	293	353	119
Peak Hour Factor	0.92	0.96	0.92	0.92	0.93	0.92	0.95	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	546		196	827	202	328	621	185	229	603	200
Arrive On Green	0.02	0.11	0.00	0.07	0.35	0.35	0.07	0.27	0.27	0.07	0.27	0.27
Sat Flow, veh/h	1500	1575	1335	1500	2384	582	1500	2272	677	1500	2207	733
Grp Volume(v), veh/h	283	1000	0	255	516	508	511	372	362	293	238	234
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	1500	1496	1470	1500	1496	1453	1500	1496	1443
Q Serve(g_s), s	5.0	26.0	0.0	5.0	25.8	25.8	5.5	18.0	18.1	5.5	10.3	10.6
Cycle Q Clear(g_c), s	5.0	26.0	0.0	5.0	25.8	25.8	5.5	18.0	18.1	5.5	10.3	10.6
Prop In Lane	1.00		1.00	1.00		0.40	1.00		0.47	1.00		0.51
Lane Grp Cap(c), veh/h	197	546		196	519	510	328	409	397	229	409	394
V/C Ratio(X)	1.43	1.83		1.30	1.00	1.00	1.56	0.91	0.91	1.28	0.58	0.59
Avail Cap(c_a), veh/h	197	546		196	519	510	328	409	397	229	409	394
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	33.2	0.0	23.0	24.4	24.4	27.9	26.3	26.4	26.2	23.5	23.6
Incr Delay (d2), s/veh	221.5	381.1	0.0	167.5	38.5	38.9	265.5	26.5	27.8	155.0	5.9	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	68.6	0.0	10.6	14.0	13.8	27.8	9.1	9.0	11.7	4.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	245.0	414.3	0.0	190.5	62.9	63.3	293.3	52.9	54.1	181.2	29.5	30.1
LnGrp LOS	F	F		F	E	E	F	D	D	F	C	C
Approach Vol, veh/h		1283	A		1279			1245			765	
Approach Delay, s/veh		376.9			88.5			151.9			87.8	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	25.0	9.5	30.5	10.0	25.0	9.5	30.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	20.5	5.0	26.0	5.5	20.5	5.0	26.0				
Max Q Clear Time (g_c+I1), s	7.5	20.1	7.0	28.0	7.5	12.6	7.0	27.8				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	1.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			186.6									
HCM 6th LOS			F									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
1: College Drive & Dell Range Boulevard

2040 Total AM_Improved.syn
02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	80	510	290	280	840	230	300	300	150	135	480	175
Future Volume (veh/h)	80	510	290	280	840	230	300	300	150	135	480	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	87	543	0	304	913	185	326	326	163	147	522	92
Peak Hour Factor	0.92	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	932		432	1022	207	469	720	321	353	693	122
Arrive On Green	0.02	0.10	0.00	0.16	0.41	0.41	0.06	0.24	0.24	0.09	0.27	0.27
Sat Flow, veh/h	1500	2993	1335	1500	2479	502	2910	2993	1335	1500	2544	447
Grp Volume(v), veh/h	87	543	0	304	551	547	326	326	163	147	306	308
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1485	1455	1496	1335	1500	1496	1495
Q Serve(g_s), s	3.5	15.6	0.0	11.7	30.8	30.9	5.5	8.4	9.5	6.5	16.8	17.0
Cycle Q Clear(g_c), s	3.5	15.6	0.0	11.7	30.8	30.9	5.5	8.4	9.5	6.5	16.8	17.0
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	197	932		432	617	612	469	720	321	353	407	407
V/C Ratio(X)	0.44	0.58		0.70	0.89	0.89	0.70	0.45	0.51	0.42	0.75	0.76
Avail Cap(c_a), veh/h	207	932		474	617	612	469	720	321	389	407	407
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.44	0.44	0.44	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	34.8	0.0	17.4	24.6	24.6	30.2	29.1	29.6	22.4	30.0	30.0
Incr Delay (d2), s/veh	1.5	2.6	0.0	1.9	9.0	9.1	4.4	2.0	5.6	0.8	12.1	12.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	6.5	0.0	4.0	11.8	11.8	1.6	3.1	3.5	2.3	7.2	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	37.4	0.0	19.3	33.6	33.7	34.6	31.2	35.2	23.2	42.0	42.4
LnGrp LOS	C	D		B	C	C	C	C	D	C	D	D
Approach Vol, veh/h		630	A		1402			815			761	
Approach Delay, s/veh		35.6			30.5			33.3			38.5	
Approach LOS		D			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	26.2	18.5	32.5	10.0	29.0	9.4	41.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.5	19.5	16.5	25.5	5.5	24.5	5.5	36.5				
Max Q Clear Time (g_c+I1), s	8.5	11.5	13.7	17.6	7.5	19.0	5.5	32.9				
Green Ext Time (p_c), s	0.1	1.7	0.3	2.2	0.0	1.8	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay			33.7									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
1: College Drive & Dell Range Boulevard

2040 Total PM_Improved.syn
02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱		↰↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	260	960	415	235	765	245	485	520	275	270	325	200
Future Volume (veh/h)	260	960	415	235	765	245	485	520	275	270	325	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	283	1000	0	255	823	201	511	565	136	293	353	152
Peak Hour Factor	0.92	0.96	0.92	0.92	0.93	0.92	0.95	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	1114		246	834	204	578	682	304	274	467	198
Arrive On Green	0.04	0.12	0.00	0.09	0.35	0.35	0.11	0.23	0.23	0.11	0.23	0.23
Sat Flow, veh/h	1500	2993	1335	1500	2384	582	2910	2993	1335	1500	2046	867
Grp Volume(v), veh/h	283	1000	0	255	516	508	511	565	136	293	256	249
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1470	1455	1496	1335	1500	1496	1419
Q Serve(g_s), s	10.5	29.6	0.0	8.5	30.8	30.8	9.5	16.2	7.9	9.5	14.4	14.8
Cycle Q Clear(g_c), s	10.5	29.6	0.0	8.5	30.8	30.8	9.5	16.2	7.9	9.5	14.4	14.8
Prop In Lane	1.00		1.00	1.00		0.40	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	259	1114		246	524	515	578	682	304	274	341	323
V/C Ratio(X)	1.09	0.90		1.04	0.99	0.99	0.88	0.83	0.45	1.07	0.75	0.77
Avail Cap(c_a), veh/h	259	1114		246	524	515	578	682	304	274	341	323
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.00	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	37.8	0.0	24.2	29.0	29.0	29.2	33.1	29.9	30.1	32.4	32.5
Incr Delay (d2), s/veh	82.0	11.1	0.0	27.9	9.0	9.1	15.2	11.2	4.7	73.7	14.2	16.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	13.5	0.0	5.1	11.8	11.7	3.0	6.8	2.9	7.7	6.4	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	108.0	48.9	0.0	52.1	38.0	38.2	44.4	44.3	34.6	103.9	46.6	48.6
LnGrp LOS	F	D		F	D	D	D	D	C	F	D	D
Approach Vol, veh/h		1283	A		1279			1212			798	
Approach Delay, s/veh		61.9			40.9			43.2			68.3	
Approach LOS		E			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	25.0	13.0	38.0	14.0	25.0	15.0	36.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	20.5	8.5	33.5	9.5	20.5	10.5	31.5				
Max Q Clear Time (g_c+I1), s	11.5	18.2	10.5	31.6	11.5	16.8	12.5	32.8				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.2	0.0	1.1	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			52.2									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	1	161	76	17	377	0	43	4	6	0	8	1
Future Vol, veh/h	1	161	76	17	377	0	43	4	6	0	8	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	84	49	53	90	92	67	25	38	92	40	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	192	155	32	419	0	64	16	16	0	20	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	419	0	0	347	0	0	773	761	270	777	838	419
Stage 1	-	-	-	-	-	-	278	278	-	483	483	-
Stage 2	-	-	-	-	-	-	495	483	-	294	355	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1140	-	-	1212	-	-	316	335	769	314	302	634
Stage 1	-	-	-	-	-	-	728	680	-	565	553	-
Stage 2	-	-	-	-	-	-	556	553	-	714	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1140	-	-	1212	-	-	295	325	769	292	293	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	417	-	407	391	-
Stage 1	-	-	-	-	-	-	725	677	-	563	539	-
Stage 2	-	-	-	-	-	-	518	539	-	680	627	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.6	15.5	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	439	1140	-	-	1212	-	-	418
HCM Lane V/C Ratio	0.219	0.004	-	-	0.026	-	-	0.057
HCM Control Delay (s)	15.5	8.2	-	-	8.1	-	-	14.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	2	458	65	1	331	0	38	5	10	0	3	1
Future Vol, veh/h	2	458	65	1	331	0	38	5	10	0	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	90	85	25	85	92	63	62	42	92	38	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	509	76	4	389	0	60	8	24	0	8	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	389	0	0	585	0	0	958	952	547	968	990	389
Stage 1	-	-	-	-	-	-	555	555	-	397	397	-
Stage 2	-	-	-	-	-	-	403	397	-	571	593	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1170	-	-	990	-	-	237	259	537	233	246	659
Stage 1	-	-	-	-	-	-	516	513	-	629	603	-
Stage 2	-	-	-	-	-	-	624	603	-	506	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1170	-	-	990	-	-	230	257	537	218	244	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	367	-	341	355	-
Stage 1	-	-	-	-	-	-	514	511	-	627	601	-
Stage 2	-	-	-	-	-	-	610	601	-	474	492	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	16.9	13.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	393	1170	-	-	990	-	-	420
HCM Lane V/C Ratio	0.235	0.003	-	-	0.004	-	-	0.028
HCM Control Delay (s)	16.9	8.1	-	-	8.7	-	-	13.8
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	30.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	325	100	75	690	15	60	50	40	25	85	190
Future Vol, veh/h	110	325	100	75	690	15	60	50	40	25	85	190
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	353	109	82	750	16	65	54	43	27	92	207

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	766	0	0	462	0	0	1720	1578	408	1618	1624	758
Stage 1	-	-	-	-	-	-	648	648	-	922	922	-
Stage 2	-	-	-	-	-	-	1072	930	-	696	702	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	847	-	-	1099	-	-	70	109	643	83	102	407
Stage 1	-	-	-	-	-	-	459	466	-	324	349	-
Stage 2	-	-	-	-	-	-	267	346	-	432	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	847	-	-	1099	-	-	~ 17	87	643	48	~ 81	407
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ -37	155	-	133	178	-
Stage 1	-	-	-	-	-	-	394	400	-	278	323	-
Stage 2	-	-	-	-	-	-	87	320	-	299	378	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.8		171.5
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	+	847	-	-	1099	-	-	265
HCM Lane V/C Ratio	-	0.141	-	-	0.074	-	-	1.231
HCM Control Delay (s)	-	9.9	-	-	8.5	-	-	171.5
HCM Lane LOS	-	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-	-	15.5

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	1.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	285	825	85	65	675	40	50	120	90	30	100	235
Future Vol, veh/h	285	825	85	65	675	40	50	120	90	30	100	235
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	310	897	92	71	734	43	54	130	98	33	109	255

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	777	0	0	989	0	0	2643	2482	943	2575	2507	756
Stage 1	-	-	-	-	-	-	1563	1563	-	898	898	-
Stage 2	-	-	-	-	-	-	1080	919	-	1677	1609	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	839	-	-	699	-	-	~ 15	~ 30	318	~ 17	~ 28	408
Stage 1	-	-	-	-	-	-	140	172	-	334	358	-
Stage 2	-	-	-	-	-	-	264	350	-	120	164	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	839	-	-	699	-	-	-	~ 17	318	-	~ 16	408
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	~ 2	-	~ -98	~ 28	-
Stage 1	-	-	-	-	-	-	88	~ 109	-	211	321	-
Stage 2	-	-	-	-	-	-	59	314	-	-	~ 103	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0.9		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	839	-	-	699	-	-	-
HCM Lane V/C Ratio	-	0.369	-	-	0.101	-	-	-
HCM Control Delay (s)	-	11.8	-	-	10.7	-	-	-
HCM Lane LOS	-	B	-	-	B	-	-	-
HCM 95th %tile Q(veh)	-	1.7	-	-	0.3	-	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	110	325	100	75	690	15	60	50	40	25	85	190
Future Volume (veh/h)	110	325	100	75	690	15	60	50	40	25	85	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	120	353	109	82	750	16	65	54	43	27	92	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	1146	349	538	1491	32	258	239	190	397	164	254
Arrive On Green	0.06	0.51	0.51	0.05	0.50	0.50	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1500	2260	688	1500	2996	64	1146	812	647	1298	558	862
Grp Volume(v), veh/h	120	232	230	82	375	391	65	0	97	27	0	234
Grp Sat Flow(s),veh/h/ln	1500	1496	1451	1500	1496	1564	1146	0	1459	1298	0	1420
Q Serve(g_s), s	3.5	8.1	8.4	2.4	15.1	15.1	4.6	0.0	4.5	1.4	0.0	12.5
Cycle Q Clear(g_c), s	3.5	8.1	8.4	2.4	15.1	15.1	17.1	0.0	4.5	6.0	0.0	12.5
Prop In Lane	1.00		0.47	1.00		0.04	1.00		0.44	1.00		0.61
Lane Grp Cap(c), veh/h	398	759	736	538	745	778	258	0	429	397	0	418
V/C Ratio(X)	0.30	0.31	0.31	0.15	0.50	0.50	0.25	0.00	0.23	0.07	0.00	0.56
Avail Cap(c_a), veh/h	403	759	736	557	745	778	258	0	429	397	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	1.00	1.00	1.00	0.68	0.00	0.68	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	12.9	13.0	10.1	15.1	15.1	34.0	0.0	24.0	26.3	0.0	26.8
Incr Delay (d2), s/veh	0.3	0.9	0.9	0.1	2.4	2.3	1.6	0.0	0.8	0.3	0.0	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.8	2.8	0.8	5.3	5.6	1.4	0.0	1.6	0.5	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	13.8	13.9	10.3	17.6	17.5	35.6	0.0	24.8	26.6	0.0	32.2
LnGrp LOS	B	B	B	B	B	B	D	A	C	C	A	C
Approach Vol, veh/h		582			848			162			261	
Approach Delay, s/veh		13.4			16.8			29.2			31.6	
Approach LOS		B			B			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		31.0	8.9	50.1		31.0	9.7	49.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		26.5	5.5	44.5		26.5	5.5	44.5				
Max Q Clear Time (g_c+I1), s		19.1	4.4	10.4		14.5	5.5	17.1				
Green Ext Time (p_c), s		0.4	0.0	3.1		1.1	0.0	5.3				
Intersection Summary												
HCM 6th Ctrl Delay			18.9									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	285	825	85	65	675	40	50	120	90	30	100	235
Future Volume (veh/h)	285	825	85	65	675	40	50	120	90	30	100	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	310	897	92	71	734	32	54	130	65	33	109	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1548	159	350	1415	62	184	237	118	227	160	183
Arrive On Green	0.13	0.56	0.56	0.05	0.48	0.48	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1500	2740	281	1500	2921	127	1146	991	495	1188	669	768
Grp Volume(v), veh/h	310	490	499	71	376	390	54	0	195	33	0	234
Grp Sat Flow(s),veh/h/ln	1500	1496	1524	1500	1496	1552	1146	0	1486	1188	0	1437
Q Serve(g_s), s	8.6	19.1	19.1	2.1	15.6	15.6	4.0	0.0	10.3	2.3	0.0	13.3
Cycle Q Clear(g_c), s	8.6	19.1	19.1	2.1	15.6	15.6	17.4	0.0	10.3	12.6	0.0	13.3
Prop In Lane	1.00		0.18	1.00		0.08	1.00		0.33	1.00		0.53
Lane Grp Cap(c), veh/h	488	845	861	350	725	752	184	0	355	227	0	343
V/C Ratio(X)	0.63	0.58	0.58	0.20	0.52	0.52	0.29	0.00	0.55	0.15	0.00	0.68
Avail Cap(c_a), veh/h	707	845	861	389	725	752	184	0	355	227	0	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.30	1.00	1.00	1.00	0.43	0.00	0.43	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.7	12.7	12.7	11.3	16.0	16.0	39.0	0.0	30.0	35.5	0.0	31.1
Incr Delay (d2), s/veh	0.4	0.9	0.9	0.3	2.6	2.5	1.7	0.0	2.6	1.3	0.0	10.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.0	6.1	0.7	5.5	5.7	1.2	0.0	3.9	0.7	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.1	13.5	13.5	11.6	18.6	18.5	40.8	0.0	32.6	36.9	0.0	41.6
LnGrp LOS	B	B	B	B	B	B	D	A	C	D	A	D
Approach Vol, veh/h		1299			837			249			267	
Approach Delay, s/veh		13.0			18.0			34.4			41.0	
Approach LOS		B			B			C			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		26.0	8.7	55.3		26.0	15.9	48.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		21.5	6.5	48.5		21.5	24.5	30.5				
Max Q Clear Time (g_c+I1), s		19.4	4.1	21.1		15.3	10.6	17.6				
Green Ext Time (p_c), s		0.3	0.0	7.4		0.7	0.8	4.0				
Intersection Summary												
HCM 6th Ctrl Delay			19.4									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	0	135	22	1	379	0	48	0	0	0	0	0
Future Vol, veh/h	0	135	22	1	379	0	48	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	75	79	25	97	92	63	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	180	28	4	391	0	76	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	208	0	0	593	593	194	593	607	391
Stage 1	-	-	-	-	-	-	194	194	-	399	399	-
Stage 2	-	-	-	-	-	-	399	399	-	194	208	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1168	-	-	1363	-	-	417	418	847	417	411	658
Stage 1	-	-	-	-	-	-	808	740	-	627	602	-
Stage 2	-	-	-	-	-	-	627	602	-	808	730	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1168	-	-	1363	-	-	416	417	847	416	410	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	487	-	505	483	-
Stage 1	-	-	-	-	-	-	808	740	-	627	600	-
Stage 2	-	-	-	-	-	-	625	600	-	808	730	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	13.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	504	1168	-	-	1363	-	-	-
HCM Lane V/C Ratio	0.151	-	-	-	0.003	-	-	-
HCM Control Delay (s)	13.4	0	-	-	7.6	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✥			✥	
Traffic Vol, veh/h	1	416	51	1	292	0	38	0	0	0	0	1
Future Vol, veh/h	1	416	51	1	292	0	38	0	0	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	87	85	25	80	92	73	92	92	92	92	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	478	60	4	365	0	52	0	0	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	538	0	0	891	889	508	889	919	365
Stage 1	-	-	-	-	-	-	516	516	-	373	373	-
Stage 2	-	-	-	-	-	-	375	373	-	516	546	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1194	-	-	1030	-	-	263	282	565	264	271	680
Stage 1	-	-	-	-	-	-	542	534	-	648	618	-
Stage 2	-	-	-	-	-	-	646	618	-	542	518	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1194	-	-	1030	-	-	260	280	565	262	269	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	384	386	-	385	376	-
Stage 1	-	-	-	-	-	-	540	532	-	646	616	-
Stage 2	-	-	-	-	-	-	640	616	-	540	516	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	15.8	10.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	1194	-	-	1030	-	-	680
HCM Lane V/C Ratio	0.136	0.003	-	-	0.004	-	-	0.006
HCM Control Delay (s)	15.8	8	-	-	8.5	-	-	10.3
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0

HCM 6th TWSC
3: El Camino Drive/Gysel Place & Dell Range Boulevard

2040 Total AM.syn
10/30/2018

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	350	30	15	700	10	65	0	10	15	0	15
Future Vol, veh/h	10	350	30	15	700	10	65	0	10	15	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	97	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	380	33	16	722	11	71	0	11	16	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	413	0	0	1187	1184	397	1184	1195	728
Stage 1	-	-	-	-	-	-	419	419	-	760	760	-
Stage 2	-	-	-	-	-	-	768	765	-	424	435	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	872	-	-	1146	-	-	165	189	652	166	186	423
Stage 1	-	-	-	-	-	-	612	590	-	398	414	-
Stage 2	-	-	-	-	-	-	394	412	-	608	580	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	872	-	-	1146	-	-	155	184	652	160	181	423
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	294	-	282	294	-
Stage 1	-	-	-	-	-	-	604	582	-	393	408	-
Stage 2	-	-	-	-	-	-	374	406	-	590	572	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	21.9	16.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	872	-	-	1146	-	-	338
HCM Lane V/C Ratio	0.277	0.012	-	-	0.014	-	-	0.096
HCM Control Delay (s)	21.9	9.2	-	-	8.2	-	-	16.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.3

HCM 6th TWSC
3: El Camino Drive/Gysel Place & Dell Range Boulevard

2040 Total PM.syn
10/30/2018

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	855	70	20	710	20	50	0	20	15	0	20
Future Vol, veh/h	20	855	70	20	710	20	50	0	20	15	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	929	76	22	772	22	54	0	22	16	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	794	0	0	1005	0	0	1849	1849	967	1849	1876	783
Stage 1	-	-	-	-	-	-	1011	1011	-	827	827	-
Stage 2	-	-	-	-	-	-	838	838	-	1022	1049	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	827	-	-	689	-	-	57	74	308	57	72	394
Stage 1	-	-	-	-	-	-	289	317	-	366	386	-
Stage 2	-	-	-	-	-	-	361	382	-	285	304	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	827	-	-	689	-	-	~ 51	70	308	51	68	394
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	181	-	152	174	-
Stage 1	-	-	-	-	-	-	281	308	-	356	374	-
Stage 2	-	-	-	-	-	-	330	370	-	258	296	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	38	23.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	827	-	-	689	-	-	234
HCM Lane V/C Ratio	0.416	0.026	-	-	0.032	-	-	0.163
HCM Control Delay (s)	38	9.5	-	-	10.4	-	-	23.3
HCM Lane LOS	E	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0.1	-	-	0.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	10	350	30	15	700	10	65	0	10	15	0	15
Future Vol, veh/h	10	350	30	15	700	10	65	0	10	15	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	97	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	380	33	16	722	11	71	0	11	16	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	733	0	0	413	0	0	1187	1184	397	1184	1195	728
Stage 1	-	-	-	-	-	-	419	419	-	760	760	-
Stage 2	-	-	-	-	-	-	768	765	-	424	435	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	872	-	-	1146	-	-	165	189	652	166	186	423
Stage 1	-	-	-	-	-	-	612	590	-	398	414	-
Stage 2	-	-	-	-	-	-	394	412	-	608	580	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	872	-	-	1146	-	-	155	184	652	160	181	423
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	294	-	282	294	-
Stage 1	-	-	-	-	-	-	604	582	-	393	408	-
Stage 2	-	-	-	-	-	-	374	406	-	590	572	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	21.9	16.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	872	-	-	1146	-	-	338
HCM Lane V/C Ratio	0.277	0.012	-	-	0.014	-	-	0.096
HCM Control Delay (s)	21.9	9.2	-	-	8.2	-	-	16.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	20	855	70	20	710	20	50	0	20	15	0	20
Future Vol, veh/h	20	855	70	20	710	20	50	0	20	15	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	929	76	22	772	22	54	0	22	16	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	794	0	0	1005	0	0	1849	1849	967	1849	1876	783
Stage 1	-	-	-	-	-	-	1011	1011	-	827	827	-
Stage 2	-	-	-	-	-	-	838	838	-	1022	1049	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	827	-	-	689	-	-	57	74	308	57	72	394
Stage 1	-	-	-	-	-	-	289	317	-	366	386	-
Stage 2	-	-	-	-	-	-	361	382	-	285	304	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	827	-	-	689	-	-	~ 51	70	308	51	68	394
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	181	-	152	174	-
Stage 1	-	-	-	-	-	-	281	308	-	356	374	-
Stage 2	-	-	-	-	-	-	330	370	-	258	296	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	38	23.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	827	-	-	689	-	-	234
HCM Lane V/C Ratio	0.416	0.026	-	-	0.032	-	-	0.163
HCM Control Delay (s)	38	9.5	-	-	10.4	-	-	23.3
HCM Lane LOS	E	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0.1	-	-	0.6

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	134	0	0	381	0	0	0	0	1	0	1
Future Vol, veh/h	0	134	0	0	381	0	0	0	0	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	71	92	92	96	92	92	92	92	25	92	25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	189	0	0	397	0	0	0	0	4	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	397	0	0	189	0	0	588	586	189	586	586	397
Stage 1	-	-	-	-	-	-	189	189	-	397	397	-
Stage 2	-	-	-	-	-	-	399	397	-	189	189	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1162	-	-	1385	-	-	421	422	853	422	422	652
Stage 1	-	-	-	-	-	-	813	744	-	629	603	-
Stage 2	-	-	-	-	-	-	627	603	-	813	744	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1162	-	-	1385	-	-	418	422	853	422	422	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	422	-	422	422	-
Stage 1	-	-	-	-	-	-	813	744	-	629	603	-
Stage 2	-	-	-	-	-	-	623	603	-	813	744	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	12.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1162	-	-	1385	-	-	512
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.016
HCM Control Delay (s)	0	0	-	-	0	-	-	12.1
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	412	0	0	294	0	1	0	0	0	0	0
Future Vol, veh/h	1	412	0	0	294	0	1	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	90	92	92	75	92	25	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	458	0	0	392	0	4	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	458	0	0	858	858	458	858	858	392
Stage 1	-	-	-	-	-	-	466	466	-	392	392	-
Stage 2	-	-	-	-	-	-	392	392	-	466	466	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	-	1103	-	-	277	294	603	277	294	657
Stage 1	-	-	-	-	-	-	577	562	-	633	606	-
Stage 2	-	-	-	-	-	-	633	606	-	577	562	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	1103	-	-	276	293	603	276	293	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	276	293	-	276	293	-
Stage 1	-	-	-	-	-	-	574	559	-	630	606	-
Stage 2	-	-	-	-	-	-	633	606	-	574	559	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	18.2	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	276	1167	-	-	1103	-	-	-
HCM Lane V/C Ratio	0.014	0.003	-	-	-	-	-	-
HCM Control Delay (s)	18.2	8.1	0	-	0	-	-	0
HCM Lane LOS	C	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	365	0	0	710	5	0	0	0	5	0	15
Future Vol, veh/h	10	365	0	0	710	5	0	0	0	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	96	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	397	0	0	740	5	0	0	0	5	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	745	0	0	397	0	0	1170	1164	397	1162	1162	743
Stage 1	-	-	-	-	-	-	419	419	-	743	743	-
Stage 2	-	-	-	-	-	-	751	745	-	419	419	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	863	-	-	1162	-	-	170	194	652	172	195	415
Stage 1	-	-	-	-	-	-	612	590	-	407	422	-
Stage 2	-	-	-	-	-	-	403	421	-	612	590	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	863	-	-	1162	-	-	161	191	652	170	192	415
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	191	-	170	192	-
Stage 1	-	-	-	-	-	-	602	581	-	400	422	-
Stage 2	-	-	-	-	-	-	387	421	-	602	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	17.7
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	863	-	-	1162	-	-	305
HCM Lane V/C Ratio	-	0.013	-	-	-	-	-	0.071
HCM Control Delay (s)	0	9.2	0	-	0	-	-	17.7
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	870	0	0	735	10	0	0	0	5	0	15
Future Vol, veh/h	20	870	0	0	735	10	0	0	0	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	946	0	0	799	11	0	0	0	5	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	810	0	0	946	0	0	1803	1800	946	1795	1795	805
Stage 1	-	-	-	-	-	-	990	990	-	805	805	-
Stage 2	-	-	-	-	-	-	813	810	-	990	990	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	816	-	-	725	-	-	62	80	317	62	80	382
Stage 1	-	-	-	-	-	-	297	324	-	376	395	-
Stage 2	-	-	-	-	-	-	372	393	-	297	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	816	-	-	725	-	-	57	75	317	59	75	382
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	75	-	59	75	-
Stage 1	-	-	-	-	-	-	280	306	-	355	395	-
Stage 2	-	-	-	-	-	-	356	393	-	280	306	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	30.8
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	816	-	-	725	-	-	161
HCM Lane V/C Ratio	-	0.027	-	-	-	-	-	0.135
HCM Control Delay (s)	0	9.5	0	-	0	-	-	30.8
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	10	365	0	0	710	5	0	0	0	5	0	15
Future Vol, veh/h	10	365	0	0	710	5	0	0	0	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	96	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	397	0	0	740	5	0	0	0	5	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	745	0	0	397	0	0	1170	1164	397	1162	1162	743
Stage 1	-	-	-	-	-	-	419	419	-	743	743	-
Stage 2	-	-	-	-	-	-	751	745	-	419	419	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	863	-	-	1162	-	-	170	194	652	172	195	415
Stage 1	-	-	-	-	-	-	612	590	-	407	422	-
Stage 2	-	-	-	-	-	-	403	421	-	612	590	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	863	-	-	1162	-	-	162	191	652	170	192	415
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	303	-	293	307	-
Stage 1	-	-	-	-	-	-	604	582	-	402	422	-
Stage 2	-	-	-	-	-	-	387	421	-	604	582	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	15.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	863	-	-	1162	-	-	376
HCM Lane V/C Ratio	-	0.013	-	-	-	-	-	0.058
HCM Control Delay (s)	0	9.2	-	-	0	-	-	15.2
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			✣			✣	
Traffic Vol, veh/h	20	870	0	0	735	10	0	0	0	5	0	15
Future Vol, veh/h	20	870	0	0	735	10	0	0	0	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	946	0	0	799	11	0	0	0	5	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	810	0	0	946	0	0	1803	1800	946	1795	1795	805
Stage 1	-	-	-	-	-	-	990	990	-	805	805	-
Stage 2	-	-	-	-	-	-	813	810	-	990	990	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	816	-	-	725	-	-	62	80	317	62	80	382
Stage 1	-	-	-	-	-	-	297	324	-	376	395	-
Stage 2	-	-	-	-	-	-	372	393	-	297	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	816	-	-	725	-	-	58	78	317	61	78	382
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	191	-	175	195	-
Stage 1	-	-	-	-	-	-	289	315	-	366	395	-
Stage 2	-	-	-	-	-	-	356	393	-	289	315	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	18.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	816	-	-	725	-	-	295
HCM Lane V/C Ratio	-	0.027	-	-	-	-	-	0.074
HCM Control Delay (s)	0	9.5	-	-	0	-	-	18.2
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.2

HCM 6th TWSC
5: Whitney Road & Dell Range Boulevard

2017-2018 Existing AM.syn
10/18/2018

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Vol, veh/h	11	64	44	4	208	3	81	22	2	2	110	80
Future Vol, veh/h	11	64	44	4	208	3	81	22	2	2	110	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	80	61	50	84	25	72	79	25	50	79	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	80	72	8	248	12	113	28	8	4	139	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	260	0	0	152	0	0	538	424	116	436	454	254
Stage 1	-	-	-	-	-	-	148	148	-	270	270	-
Stage 2	-	-	-	-	-	-	390	276	-	166	184	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1304	-	-	1429	-	-	454	522	936	531	502	785
Stage 1	-	-	-	-	-	-	855	775	-	736	686	-
Stage 2	-	-	-	-	-	-	634	682	-	836	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1304	-	-	1429	-	-	314	512	936	499	492	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	368	553	-	571	545	-
Stage 1	-	-	-	-	-	-	845	766	-	727	681	-
Stage 2	-	-	-	-	-	-	437	677	-	789	738	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	18.8	14.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	407	1304	-	-	1429	-	-	624
HCM Lane V/C Ratio	0.364	0.012	-	-	0.006	-	-	0.39
HCM Control Delay (s)	18.8	7.8	-	-	7.5	0	-	14.4
HCM Lane LOS	C	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	1.8

HCM 6th TWSC
5: Whitney Road & Dell Range Boulevard

2017-2018 Existing PM.syn
10/18/2018

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱			✥			✥			✥	
Traffic Vol, veh/h	62	224	110	3	139	4	94	78	3	2	36	44
Future Vol, veh/h	62	224	110	3	139	4	94	78	3	2	36	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	92	79	75	83	50	78	81	38	50	69	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	243	139	4	167	8	121	96	8	4	52	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	382	0	0	692	640	313	688	705	171
Stage 1	-	-	-	-	-	-	457	457	-	179	179	-
Stage 2	-	-	-	-	-	-	235	183	-	509	526	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1401	-	-	1176	-	-	358	393	727	360	361	873
Stage 1	-	-	-	-	-	-	583	568	-	823	751	-
Stage 2	-	-	-	-	-	-	768	748	-	547	529	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1176	-	-	289	371	727	284	341	873
Mov Cap-2 Maneuver	-	-	-	-	-	-	392	437	-	356	415	-
Stage 1	-	-	-	-	-	-	553	539	-	781	748	-
Stage 2	-	-	-	-	-	-	662	745	-	422	502	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.2	23.3	13
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	417	1401	-	-	1176	-	-	565
HCM Lane V/C Ratio	0.539	0.051	-	-	0.003	-	-	0.206
HCM Control Delay (s)	23.3	7.7	-	-	8.1	0	-	13
HCM Lane LOS	C	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	3.1	0.2	-	-	0	-	-	0.8

Intersection												
Int Delay, s/veh	141.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	225	80	25	460	40	110	170	10	65	385	105
Future Vol, veh/h	70	225	80	25	460	40	110	170	10	65	385	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	245	87	27	500	43	120	185	11	71	418	114

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	543	0	0	332	0	0	1283	1038	289	1115	1060	522
Stage 1	-	-	-	-	-	-	441	441	-	576	576	-
Stage 2	-	-	-	-	-	-	842	597	-	539	484	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1026	-	-	1227	-	-	142	231	750	185	~ 224	555
Stage 1	-	-	-	-	-	-	595	577	-	503	502	-
Stage 2	-	-	-	-	-	-	359	491	-	527	552	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1026	-	-	1227	-	-	-	207	750	86	~ 201	555
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ -37	299	-	199	~ 313	-
Stage 1	-	-	-	-	-	-	551	534	-	466	486	-
Stage 2	-	-	-	-	-	-	~ 38	475	-	314	511	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.4		$ 442.7
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1026	-	-	1227	-	-	318
HCM Lane V/C Ratio	-	0.074	-	-	0.022	-	-	1.897
HCM Control Delay (s)	-	8.8	-	-	8	0	-	$ 442.7
HCM Lane LOS	-	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0.2	-	-	0.1	-	-	41.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	0.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	500	145	15	300	100	125	460	10	80	345	60
Future Vol, veh/h	100	500	145	15	300	100	125	460	10	80	345	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	109	543	158	16	326	109	136	500	11	87	375	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	435	0	0	701	0	0	1473	1307	622	1509	1332	381
Stage 1	-	-	-	-	-	-	840	840	-	413	413	-
Stage 2	-	-	-	-	-	-	633	467	-	1096	919	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1125	-	-	896	-	-	~ 105	~ 160	487	99	~ 154	666
Stage 1	-	-	-	-	-	-	360	~ 381	-	616	594	-
Stage 2	-	-	-	-	-	-	468	562	-	259	~ 350	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1125	-	-	896	-	-	-	~ 141	487	-	~ 136	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	~ 239	-	~ -16	~ 234	-
Stage 1	-	-	-	-	-	-	325	~ 344	-	556	580	-
Stage 2	-	-	-	-	-	-	146	549	-	-	~ 316	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1125	-	-	896	-	-	-
HCM Lane V/C Ratio	-	0.097	-	-	0.018	-	-	-
HCM Control Delay (s)	-	8.5	-	-	9.1	0	-	-
HCM Lane LOS	-	A	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-	0.1	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

MOVEMENT SUMMARY

Site: 101 [2040 Total AM]

Dell Range Blvd and Whitney Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop Queued	Effective Stop Rate	Aver. No Cycles	Average Speed mph
South: Whitney Road												
3	L2	120	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.7
8	T1	185	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.6
18	R2	11	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	31.8
Approach		315	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.6
East: Dell Range Boulevard												
1	L2	27	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.9
6	T1	500	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.9
16	R2	43	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.1
Approach		571	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.8
North: Whitney Road												
7	L2	71	3.0	0.888	37.1	LOS E	15.5	396.7	1.00	1.64	2.89	23.4
4	T1	418	3.0	0.888	37.1	LOS E	15.5	396.7	1.00	1.64	2.89	23.4
14	R2	114	3.0	0.888	37.1	LOS E	15.5	396.7	1.00	1.64	2.89	22.9
Approach		603	3.0	0.888	37.1	LOS E	15.5	396.7	1.00	1.64	2.89	23.3
West: Dell Range Boulevard												
5	L2	76	3.0	0.523	12.2	LOS B	3.8	98.0	0.73	0.85	1.05	31.3
2	T1	245	3.0	0.523	12.2	LOS B	3.8	98.0	0.73	0.85	1.05	31.2
12	R2	87	3.0	0.523	12.2	LOS B	3.8	98.0	0.73	0.85	1.05	30.4
Approach		408	3.0	0.523	12.2	LOS B	3.8	98.0	0.73	0.85	1.05	31.1
All Vehicles		1897	3.0	0.888	19.9	LOS C	15.5	396.7	0.80	1.07	1.62	28.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2040 Total PM]

Dell Range Blvd and Whitney Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop Queued	Effective Stop Rate	Aver. No Cycles	Average Speed mph
South: Whitney Road												
3	L2	136	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
8	T1	500	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
18	R2	11	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.5
Approach		647	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
East: Dell Range Boulevard												
1	L2	16	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.6
6	T1	326	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.6
16	R2	109	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	26.9
Approach		451	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.4
North: Whitney Road												
7	L2	87	3.0	0.647	15.4	LOS C	6.7	172.1	0.80	1.02	1.38	30.0
4	T1	375	3.0	0.647	15.4	LOS C	6.7	172.1	0.80	1.02	1.38	30.0
14	R2	65	3.0	0.647	15.4	LOS C	6.7	172.1	0.80	1.02	1.38	29.2
Approach		527	3.0	0.647	15.4	LOS C	6.7	172.1	0.80	1.02	1.38	29.9
West: Dell Range Boulevard												
5	L2	109	3.0	0.999	53.9	LOS F	35.0	897.3	1.00	2.18	4.12	19.9
2	T1	543	3.0	0.999	53.9	LOS F	35.0	897.3	1.00	2.18	4.12	19.9
12	R2	158	3.0	0.999	53.9	LOS F	35.0	897.3	1.00	2.18	4.12	19.6
Approach		810	3.0	0.999	53.9	LOS F	35.0	897.3	1.00	2.18	4.12	19.8
All Vehicles		2435	3.0	1.049	45.5	LOS E	35.0	897.3	0.93	1.79	3.38	21.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2040 Total AM w EB/SB RTL]

Dell Range Blvd and Whitney Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles													
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road												
3	L2	120	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.7
8	T1	185	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.6
18	R2	11	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	31.8
Approach		315	3.0	0.355	8.0	LOS A	1.8	45.1	0.59	0.53	0.59	32.6
East: Dell Range Boulevard												
1	L2	27	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.9
6	T1	500	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.9
16	R2	43	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.1
Approach		571	3.0	0.635	13.9	LOS B	7.0	180.1	0.76	0.91	1.23	30.8
North: Whitney Road												
7	L2	71	3.0	0.650	16.5	LOS C	5.7	146.9	0.80	1.03	1.46	29.7
4	T1	418	3.0	0.650	16.5	LOS C	5.7	146.9	0.80	1.03	1.46	29.6
14	R2	114	3.0	0.152	6.4	LOS A	0.6	14.6	0.57	0.55	0.57	33.2
Approach		603	3.0	0.650	14.6	LOS B	5.7	146.9	0.75	0.94	1.29	30.2
West: Dell Range Boulevard												
5	L2	76	3.0	0.377	8.7	LOS A	1.8	45.9	0.61	0.62	0.65	32.8
2	T1	245	3.0	0.377	8.7	LOS A	1.8	45.9	0.61	0.62	0.65	32.7
12	R2	87	3.0	0.102	5.2	LOS A	0.4	9.8	0.51	0.44	0.51	33.8
Approach		408	3.0	0.377	7.9	LOS A	1.8	45.9	0.59	0.58	0.62	32.9
All Vehicles		1897	3.0	0.650	11.9	LOS B	7.0	180.1	0.69	0.78	1.01	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2040 Total PM w EB/SB RTL]

Dell Range Blvd and Whitney Road
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Whitney Road												
3	L2	136	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
8	T1	500	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
18	R2	11	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.5
Approach		647	3.0	1.049	75.6	LOS F	30.8	789.4	1.00	2.37	5.21	16.7
East: Dell Range Boulevard												
1	L2	16	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.6
6	T1	326	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.6
16	R2	109	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	26.9
Approach		451	3.0	0.719	22.6	LOS C	6.8	174.6	0.86	1.16	1.77	27.4
North: Whitney Road												
7	L2	87	3.0	0.522	11.0	LOS B	3.8	97.5	0.68	0.78	0.96	31.8
4	T1	375	3.0	0.522	11.0	LOS B	3.8	97.5	0.68	0.78	0.96	31.8
14	R2	65	3.0	0.074	4.8	LOS A	0.3	7.0	0.48	0.39	0.48	34.0
Approach		527	3.0	0.522	10.3	LOS B	3.8	97.5	0.65	0.73	0.90	32.0
West: Dell Range Boulevard												
5	L2	109	3.0	0.741	18.5	LOS C	10.1	259.2	0.85	1.18	1.73	28.9
2	T1	543	3.0	0.741	18.5	LOS C	10.1	259.2	0.85	1.18	1.73	28.8
12	R2	158	3.0	0.179	5.9	LOS A	0.7	18.2	0.52	0.46	0.52	33.5
Approach		810	3.0	0.741	16.0	LOS C	10.1	259.2	0.78	1.04	1.49	29.6
All Vehicles		2435	3.0	1.049	31.8	LOS D	30.8	789.4	0.83	1.35	2.40	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	70	225	80	25	460	40	110	170	10	65	385	105
Future Volume (veh/h)	70	225	80	25	460	40	110	170	10	65	385	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	76	245	87	27	500	43	120	185	11	71	418	81
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	549	195	448	568	49	186	597	35	426	520	101
Arrive On Green	0.05	0.49	0.49	0.40	0.40	0.40	0.13	0.13	0.13	0.41	0.41	0.41
Sat Flow, veh/h	1500	1110	394	1048	1430	123	899	1472	88	1187	1282	248
Grp Volume(v), veh/h	76	0	332	27	0	543	120	0	196	71	0	499
Grp Sat Flow(s),veh/h/ln	1500	0	1504	1048	0	1553	899	0	1559	1187	0	1530
Q Serve(g_s), s	2.6	0.0	12.9	1.5	0.0	29.2	10.6	0.0	10.2	4.1	0.0	25.9
Cycle Q Clear(g_c), s	2.6	0.0	12.9	5.7	0.0	29.2	36.5	0.0	10.2	14.3	0.0	25.9
Prop In Lane	1.00		0.26	1.00		0.08	1.00		0.06	1.00		0.16
Lane Grp Cap(c), veh/h	214	0	744	448	0	617	186	0	632	426	0	621
V/C Ratio(X)	0.36	0.00	0.45	0.06	0.00	0.88	0.65	0.00	0.31	0.17	0.00	0.80
Avail Cap(c_a), veh/h	235	0	744	448	0	617	186	0	632	426	0	621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	14.8	19.4	0.0	25.1	52.5	0.0	27.6	24.0	0.0	23.6
Incr Delay (d2), s/veh	1.0	0.0	1.9	0.3	0.0	16.4	15.1	0.0	1.2	0.8	0.0	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	4.6	0.4	0.0	13.0	3.7	0.0	4.4	1.2	0.0	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	16.7	19.7	0.0	41.6	67.6	0.0	28.8	24.8	0.0	34.2
LnGrp LOS	C	A	B	B	A	D	E	A	C	C	A	C
Approach Vol, veh/h		408			570			316			570	
Approach Delay, s/veh		17.4			40.6			43.5			33.0	
Approach LOS		B			D			D			C	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		41.0		49.0		41.0	8.8	40.2				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		36.5		44.5		36.5	5.5	34.5				
Max Q Clear Time (g_c+I1), s		38.5		14.9		27.9	4.6	31.2				
Green Ext Time (p_c), s		0.0		2.2		2.3	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			33.7									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	100	500	145	15	300	100	125	460	10	80	345	60
Future Volume (veh/h)	100	500	145	15	300	100	125	460	10	80	345	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	109	543	131	16	326	82	136	500	11	87	375	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	620	150	166	482	121	223	606	13	255	516	89
Arrive On Green	0.06	0.51	0.51	0.40	0.40	0.40	0.79	0.79	0.79	0.39	0.39	0.39
Sat Flow, veh/h	1500	1226	296	764	1215	306	949	1535	34	889	1308	227
Grp Volume(v), veh/h	109	0	674	16	0	408	136	0	511	87	0	440
Grp Sat Flow(s),veh/h/ln	1500	0	1522	764	0	1520	949	0	1569	889	0	1534
Q Serve(g_s), s	3.7	0.0	35.4	1.7	0.0	19.9	12.6	0.0	17.8	7.8	0.0	21.9
Cycle Q Clear(g_c), s	3.7	0.0	35.4	27.3	0.0	19.9	34.5	0.0	17.8	25.6	0.0	21.9
Prop In Lane	1.00		0.19	1.00		0.20	1.00		0.02	1.00		0.15
Lane Grp Cap(c), veh/h	340	0	769	166	0	603	223	0	619	255	0	605
V/C Ratio(X)	0.32	0.00	0.88	0.10	0.00	0.68	0.61	0.00	0.83	0.34	0.00	0.73
Avail Cap(c_a), veh/h	343	0	769	166	0	603	223	0	619	255	0	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.76	0.00	0.76	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	0.0	19.7	36.2	0.0	22.4	20.1	0.0	7.6	32.1	0.0	23.1
Incr Delay (d2), s/veh	0.5	0.0	13.3	1.2	0.0	6.0	9.1	0.0	9.4	3.6	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	14.3	0.4	0.0	7.8	2.8	0.0	4.1	1.9	0.0	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	0.0	33.1	37.4	0.0	28.4	29.2	0.0	17.0	35.7	0.0	30.6
LnGrp LOS	B	A	C	D	A	C	C	A	B	D	A	C
Approach Vol, veh/h		783			424			647			527	
Approach Delay, s/veh		30.8			28.7			19.6			31.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0	9.8	40.2				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		35.5		45.5		35.5	5.5	35.5				
Max Q Clear Time (g_c+I1), s		36.5		37.4		27.6	5.7	29.3				
Green Ext Time (p_c), s		0.0		2.9		2.0	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			27.5									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	58	141	59	267	413	10	83	401	146	7	488	85
Future Volume (veh/h)	58	141	59	267	413	10	83	401	146	7	488	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	63	153	0	290	449	11	90	436	159	8	530	92
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	1132		691	1370	611	200	863	385	232	609	105
Arrive On Green	0.04	0.38	0.00	0.12	0.46	0.46	0.06	0.29	0.29	0.01	0.24	0.24
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	1500	2551	441
Grp Volume(v), veh/h	63	153	0	290	449	11	90	436	159	8	310	312
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	1500	1496	1496
Q Serve(g_s), s	2.3	3.0	0.0	10.3	8.6	0.4	3.9	10.9	8.7	0.4	17.9	18.1
Cycle Q Clear(g_c), s	2.3	3.0	0.0	10.3	8.6	0.4	3.9	10.9	8.7	0.4	17.9	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	483	1132		691	1370	611	200	863	385	232	357	357
V/C Ratio(X)	0.13	0.14		0.42	0.33	0.02	0.45	0.51	0.41	0.03	0.87	0.87
Avail Cap(c_a), veh/h	602	1132		691	1370	611	296	863	385	402	401	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	18.3	0.0	12.8	15.6	13.3	24.6	26.7	25.9	25.8	32.9	32.9
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.4	0.6	0.1	1.6	0.5	0.7	0.1	16.7	17.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.1	0.0	3.3	2.9	0.1	1.4	3.9	2.8	0.1	8.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	18.6	0.0	13.2	16.2	13.4	26.2	27.2	26.6	25.8	49.5	50.3
LnGrp LOS	B	B		B	B	B	C	C	C	C	D	D
Approach Vol, veh/h		216	A		750			685			630	
Approach Delay, s/veh		17.8			15.0			26.9			49.6	
Approach LOS		B			B			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.4	30.4	15.6	38.6	9.9	26.0	8.5	45.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.1	24.1	11.1	25.7	11.1	24.1	11.1	25.7				
Max Q Clear Time (g_c+I1), s	2.4	12.9	12.3	5.0	5.9	20.1	4.3	10.6				
Green Ext Time (p_c), s	0.0	2.6	0.0	0.8	0.1	1.4	0.1	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			28.4									
HCM 6th LOS			C									
Notes												

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	138	472	109	211	243	7	119	691	329	29	507	121
Future Volume (veh/h)	138	472	109	211	243	7	119	691	329	29	507	121
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	150	513	0	229	264	8	129	751	358	32	551	132
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	561	1037		444	1136	507	225	913	407	163	612	146
Arrive On Green	0.08	0.35	0.00	0.12	0.38	0.38	0.08	0.31	0.31	0.03	0.26	0.26
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	1500	2396	572
Grp Volume(v), veh/h	150	513	0	229	264	8	129	751	358	32	343	340
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	1500	1496	1472
Q Serve(g_s), s	5.7	12.2	0.0	8.6	5.4	0.3	5.4	21.0	22.9	1.4	20.0	20.1
Cycle Q Clear(g_c), s	5.7	12.2	0.0	8.6	5.4	0.3	5.4	21.0	22.9	1.4	20.0	20.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	561	1037		444	1136	507	225	913	407	163	382	376
V/C Ratio(X)	0.27	0.49		0.52	0.23	0.02	0.57	0.82	0.88	0.20	0.90	0.90
Avail Cap(c_a), veh/h	619	1037		453	1136	507	289	913	407	302	401	394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	23.2	0.0	16.1	19.0	17.4	23.5	29.0	29.7	25.1	32.4	32.4
Incr Delay (d2), s/veh	0.3	1.7	0.0	1.0	0.5	0.1	2.3	6.1	19.3	0.6	21.9	23.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	4.4	0.0	2.9	1.9	0.1	2.0	8.0	9.3	0.5	9.3	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.5	24.9	0.0	17.1	19.5	17.5	25.8	35.2	49.0	25.6	54.3	55.5
LnGrp LOS	B	C		B	B	B	C	D	D	C	D	E
Approach Vol, veh/h		663	A		501			1238			715	
Approach Delay, s/veh		23.0			18.4			38.2			53.6	
Approach LOS		C			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	32.0	15.1	35.7	11.7	27.5	12.1	38.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.1	24.1	11.1	25.7	11.1	24.1	11.1	25.7				
Max Q Clear Time (g_c+I1), s	3.4	24.9	10.6	14.2	7.4	22.1	7.7	7.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.1	0.9	0.1	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			35.3									
HCM 6th LOS			D									
Notes												

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: College Drive & US-30 /US-30

2040 Total AM.syn
10/31/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	285	80	445	755	45	115	600	280	10	700	125
Future Volume (veh/h)	130	285	80	445	755	45	115	600	280	10	700	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	141	310	0	484	821	49	125	652	304	11	761	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	992		537	1117	498	196	993	443	185	679	121
Arrive On Green	0.08	0.33	0.00	0.12	0.37	0.37	0.08	0.33	0.33	0.01	0.27	0.27
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	1500	2537	453
Grp Volume(v), veh/h	141	310	0	484	821	49	125	652	304	11	449	448
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	1500	1496	1493
Q Serve(g_s), s	5.5	7.0	0.0	11.1	21.3	2.2	5.2	16.8	17.7	0.5	24.1	24.1
Cycle Q Clear(g_c), s	5.5	7.0	0.0	11.1	21.3	2.2	5.2	16.8	17.7	0.5	24.1	24.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	289	992		537	1117	498	196	993	443	185	401	400
V/C Ratio(X)	0.49	0.31		0.90	0.74	0.10	0.64	0.66	0.69	0.06	1.12	1.12
Avail Cap(c_a), veh/h	352	992		537	1117	498	265	993	443	350	401	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	22.4	0.0	24.6	24.4	18.4	23.4	25.7	26.0	24.1	33.0	33.0
Incr Delay (d2), s/veh	1.3	0.8	0.0	18.3	4.3	0.4	3.4	1.6	4.4	0.1	81.8	82.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.5	0.0	8.2	7.9	0.7	1.9	6.0	6.0	0.2	17.5	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	23.2	0.0	42.9	28.7	18.8	26.9	27.3	30.4	24.2	114.7	114.9
LnGrp LOS	C	C		D	C	B	C	C	C	C	F	F
Approach Vol, veh/h		451	A		1354			1081			908	
Approach Delay, s/veh		22.4			33.4			28.1			113.7	
Approach LOS		C			C			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	34.4	15.6	34.3	11.5	28.6	11.9	38.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.1	24.1	11.1	25.7	11.1	24.1	11.1	25.7				
Max Q Clear Time (g_c+I1), s	2.5	19.7	13.1	9.0	7.2	26.1	7.5	23.3				
Green Ext Time (p_c), s	0.0	2.2	0.0	1.8	0.1	0.0	0.1	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			49.8									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: College Drive & US-30 /US-30

2040 Total PM.syn
10/31/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	950	145	390	700	35	155	1030	595	40	745	180
Future Volume (veh/h)	250	950	145	390	700	35	155	1030	595	40	745	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	272	1033	0	424	761	38	168	1120	158	43	810	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	888		255	1054	470	229	1047	467	135	941	0
Arrive On Green	0.06	0.30	0.00	0.12	0.35	0.35	0.07	0.35	0.35	0.04	0.31	0.00
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	1500	3071	0
Grp Volume(v), veh/h	272	1033	0	424	761	38	168	1120	158	43	810	0
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	1500	1496	0
Q Serve(g_s), s	5.5	26.7	0.0	10.5	19.9	1.7	6.5	31.5	7.9	1.7	22.9	0.0
Cycle Q Clear(g_c), s	5.5	26.7	0.0	10.5	19.9	1.7	6.5	31.5	7.9	1.7	22.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	261	888		255	1054	470	229	1047	467	135	941	0
V/C Ratio(X)	1.04	1.16		1.66	0.72	0.08	0.73	1.07	0.34	0.32	0.86	0.00
Avail Cap(c_a), veh/h	261	888		255	1054	470	229	1047	467	188	1047	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.6	31.6	0.0	22.2	25.3	19.4	23.6	29.3	21.6	24.0	29.0	0.0
Incr Delay (d2), s/veh	67.0	85.8	0.0	315.0	4.3	0.3	11.6	48.3	0.4	1.3	6.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	19.9	0.0	25.8	7.4	0.6	3.0	17.8	2.4	0.6	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.7	117.5	0.0	337.2	29.6	19.8	35.2	77.6	22.0	25.3	35.9	0.0
LnGrp LOS	F	F		F	C	B	D	F	C	C	D	A
Approach Vol, veh/h		1305	A		1223			1446			853	
Approach Delay, s/veh		113.8			135.9			66.6			35.4	
Approach LOS		F			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.8	36.0	15.0	31.2	11.0	32.8	10.0	36.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	31.5	10.5	23.5	6.5	31.5	5.5	28.5				
Max Q Clear Time (g_c+I1), s	3.7	33.5	12.5	28.7	8.5	24.9	7.5	21.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.0	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay			91.4									
HCM 6th LOS			F									

Notes

User approved pedestrian interval to be less than phase max green.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: College Drive & US-30 /US-30

2040 Total AM_Improved.syn
02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	130	285	80	445	755	45	115	600	280	10	700	125
Future Volume (veh/h)	130	285	80	445	755	45	115	600	280	10	700	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	141	310	0	484	821	49	125	652	304	11	761	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	1070		1037	1219	544	195	1031	600	187	905	404
Arrive On Green	0.05	0.36	0.00	0.10	0.41	0.41	0.05	0.34	0.34	0.01	0.30	0.30
Sat Flow, veh/h	1500	2993	1335	2910	2993	1335	1500	2993	1335	1500	2993	1335
Grp Volume(v), veh/h	141	310	0	484	821	49	125	652	304	11	761	136
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1455	1496	1335	1500	1496	1335	1500	1496	1335
Q Serve(g_s), s	5.5	7.4	0.0	10.3	22.4	2.3	5.5	18.3	16.2	0.5	23.8	7.9
Cycle Q Clear(g_c), s	5.5	7.4	0.0	10.3	22.4	2.3	5.5	18.3	16.2	0.5	23.8	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	1070		1037	1219	544	195	1031	600	187	905	404
V/C Ratio(X)	0.52	0.29		0.47	0.67	0.09	0.64	0.63	0.51	0.06	0.84	0.34
Avail Cap(c_a), veh/h	271	1070		1037	1219	544	195	1122	641	250	1122	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	23.0	0.0	16.6	24.2	18.2	26.1	27.5	19.6	24.6	32.6	27.1
Incr Delay (d2), s/veh	1.8	0.7	0.0	0.3	3.0	0.3	7.0	1.0	0.7	0.1	4.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.7	0.0	3.4	8.2	0.7	2.3	6.5	5.0	0.2	9.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	23.7	0.0	17.0	27.2	18.6	33.0	28.5	20.3	24.7	37.5	27.6
LnGrp LOS	C	C		B	C	B	C	C	C	C	D	C
Approach Vol, veh/h		451	A		1354			1081			908	
Approach Delay, s/veh		23.8			23.2			26.7			35.8	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	38.9	15.0	40.2	10.0	34.8	10.0	45.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	37.5	10.5	28.5	5.5	37.5	5.5	33.5				
Max Q Clear Time (g_c+I1), s	2.5	20.3	12.3	9.4	7.5	25.8	7.5	24.4				
Green Ext Time (p_c), s	0.0	5.3	0.0	1.9	0.0	4.5	0.0	3.9				
Intersection Summary												
HCM 6th Ctrl Delay			27.3									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
6: College Drive & US-30 /US-30

2040 Total PM_Improved.syn
02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	250	950	145	390	700	35	155	1030	595	40	745	180
Future Volume (veh/h)	250	950	145	390	700	35	155	1030	595	40	745	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	272	1033	0	424	761	38	168	1120	451	43	810	196
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	1063		407	1003	447	196	1032	574	124	972	434
Arrive On Green	0.10	0.36	0.00	0.09	0.34	0.34	0.05	0.34	0.34	0.03	0.32	0.32
Sat Flow, veh/h	1500	2993	1335	2910	2993	1335	1500	2993	1335	1500	2993	1335
Grp Volume(v), veh/h	272	1033	0	424	761	38	168	1120	451	43	810	196
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1455	1496	1335	1500	1496	1335	1500	1496	1335
Q Serve(g_s), s	10.5	34.0	0.0	8.5	22.7	1.9	5.5	34.5	29.1	1.9	25.1	11.6
Cycle Q Clear(g_c), s	10.5	34.0	0.0	8.5	22.7	1.9	5.5	34.5	29.1	1.9	25.1	11.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	1063		407	1003	447	196	1032	574	124	972	434
V/C Ratio(X)	0.90	0.97		1.04	0.76	0.08	0.86	1.08	0.79	0.35	0.83	0.45
Avail Cap(c_a), veh/h	303	1063		407	1003	447	196	1032	574	147	1017	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	31.8	0.0	27.0	29.6	22.7	31.8	32.8	24.5	26.4	31.2	26.7
Incr Delay (d2), s/veh	27.3	21.6	0.0	55.5	5.4	0.4	29.2	53.9	7.1	1.6	5.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	15.0	0.0	6.3	8.7	0.7	3.5	19.8	9.9	0.7	9.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	53.4	0.0	82.6	35.0	23.1	61.0	86.7	31.6	28.0	37.1	27.5
LnGrp LOS	D	D		F	D	C	E	F	C	C	D	C
Approach Vol, veh/h		1305	A		1223			1739			1049	
Approach Delay, s/veh		53.4			51.1			69.9			34.9	
Approach LOS		D			D			E			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	39.0	13.0	40.0	10.0	37.0	15.0	38.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.5	8.5	34.0	5.5	34.0	10.5	32.0				
Max Q Clear Time (g_c+I1), s	3.9	36.5	10.5	36.0	7.5	27.1	12.5	24.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.5	0.0	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			54.6									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	140	32	186	408	4	40	186	79	2	445	460
Future Volume (veh/h)	116	140	32	186	408	4	40	186	79	2	445	460
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	126	152	0	202	443	0	43	202	86	2	484	500
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	458		346	871		385	1823	813	714	1823	813
Arrive On Green	0.29	0.29	0.00	0.29	0.29	0.00	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	947	1575	1335	1235	2993	1335	572	2993	1335	1091	2993	1335
Grp Volume(v), veh/h	126	152	0	202	443	0	43	202	86	2	484	500
Grp Sat Flow(s),veh/h/ln	947	1575	1335	1235	1496	1335	572	1496	1335	1091	1496	1335
Q Serve(g_s), s	11.5	6.8	0.0	13.8	11.1	0.0	3.4	2.5	2.4	0.1	6.8	21.1
Cycle Q Clear(g_c), s	22.6	6.8	0.0	20.6	11.1	0.0	10.2	2.5	2.4	2.6	6.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	239	458		346	871		385	1823	813	714	1823	813
V/C Ratio(X)	0.53	0.33		0.58	0.51		0.11	0.11	0.11	0.00	0.27	0.62
Avail Cap(c_a), veh/h	404	733		562	1393		385	1823	813	714	1823	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	25.0	0.0	33.1	26.6	0.0	10.6	7.4	7.4	7.9	8.2	11.0
Incr Delay (d2), s/veh	1.8	0.4	0.0	1.6	0.5	0.0	0.6	0.1	0.3	0.0	0.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.6	0.0	4.2	3.9	0.0	0.5	0.8	0.7	0.0	2.1	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	25.5	0.0	34.7	27.0	0.0	11.2	7.5	7.6	7.9	8.6	14.5
LnGrp LOS	D	C		C	C		B	A	A	A	A	B
Approach Vol, veh/h		278	A		645	A		331			986	
Approach Delay, s/veh		31.0			29.4			8.0			11.6	
Approach LOS		C			C			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		59.3		30.7		59.3		30.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		39.1		41.9		39.1		41.9				
Max Q Clear Time (g_c+I1), s		12.2		24.6		23.1		22.6				
Green Ext Time (p_c), s		2.1		1.3		4.9		3.6				
Intersection Summary												
HCM 6th Ctrl Delay			18.6									
HCM 6th LOS			B									
Notes												

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	407	105	119	259	6	78	535	181	6	306	155
Future Volume (veh/h)	327	407	105	119	259	6	78	535	181	6	306	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	355	442	0	129	282	0	85	582	197	7	333	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	472	658		261	1251		454	1442	643	327	1442	643
Arrive On Green	0.42	0.42	0.00	0.42	0.42	0.00	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1097	1575	1335	947	2993	1335	897	2993	1335	693	2993	1335
Grp Volume(v), veh/h	355	442	0	129	282	0	85	582	197	7	333	168
Grp Sat Flow(s),veh/h/ln	1097	1575	1335	947	1496	1335	897	1496	1335	693	1496	1335
Q Serve(g_s), s	27.7	20.4	0.0	11.5	5.4	0.0	5.5	11.3	8.1	0.6	5.8	6.7
Cycle Q Clear(g_c), s	33.1	20.4	0.0	31.9	5.4	0.0	11.3	11.3	8.1	11.8	5.8	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	472	658		261	1251		454	1442	643	327	1442	643
V/C Ratio(X)	0.75	0.67		0.49	0.23		0.19	0.40	0.31	0.02	0.23	0.26
Avail Cap(c_a), veh/h	524	733		306	1393		454	1442	643	327	1442	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	21.2	0.0	34.1	16.8	0.0	16.9	15.0	14.2	18.8	13.6	13.8
Incr Delay (d2), s/veh	5.4	2.1	0.0	1.4	0.1	0.0	0.9	0.8	1.2	0.1	0.4	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	7.5	0.0	2.7	1.8	0.0	1.2	3.8	2.5	0.1	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	23.3	0.0	35.5	16.9	0.0	17.8	15.8	15.4	18.9	14.0	14.8
LnGrp LOS	C	C		D	B		B	B	B	B	B	B
Approach Vol, veh/h		797	A		411	A		864			508	
Approach Delay, s/veh		27.6			22.8			15.9			14.3	
Approach LOS		C			C			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.9		42.1		47.9		42.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		39.1		41.9		39.1		41.9				
Max Q Clear Time (g_c+I1), s		13.3		35.1		13.8		33.9				
Green Ext Time (p_c), s		5.6		2.5		2.9		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			20.3									
HCM 6th LOS			C									
Notes												

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: US-30 & Pershing Boulevard

2040 Total AM.syn
10/31/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	180	185	100	245	535	30	160	440	105	20	930	590
Future Volume (veh/h)	180	185	100	245	535	30	160	440	105	20	930	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	196	201	0	266	582	0	174	478	114	22	1011	641
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	640		458	1217		151	1476	659	408	1476	659
Arrive On Green	0.41	0.41	0.00	0.41	0.41	0.00	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	833	1575	1335	1181	2993	1335	302	2993	1335	825	2993	1335
Grp Volume(v), veh/h	196	201	0	266	582	0	174	478	114	22	1011	641
Grp Sat Flow(s),veh/h/ln	833	1575	1335	1181	1496	1335	302	1496	1335	825	1496	1335
Q Serve(g_s), s	20.4	7.8	0.0	17.8	12.9	0.0	21.1	8.7	4.3	1.5	23.3	42.1
Cycle Q Clear(g_c), s	33.3	7.8	0.0	25.6	12.9	0.0	44.4	8.7	4.3	10.2	23.3	42.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	299	640		458	1217		151	1476	659	408	1476	659
V/C Ratio(X)	0.65	0.31		0.58	0.48		1.15	0.32	0.17	0.05	0.68	0.97
Avail Cap(c_a), veh/h	348	733		527	1393		151	1476	659	408	1476	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	18.2	0.0	26.9	19.7	0.0	40.0	13.7	12.6	16.8	17.4	22.2
Incr Delay (d2), s/veh	3.5	0.3	0.0	1.2	0.3	0.0	120.1	0.6	0.6	0.3	2.6	29.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	2.8	0.0	5.0	4.4	0.0	8.4	2.9	1.3	0.3	8.0	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	18.4	0.0	28.1	20.0	0.0	160.1	14.3	13.2	17.1	20.0	51.3
LnGrp LOS	D	B		C	B		F	B	B	B	C	D
Approach Vol, veh/h		397	A		848	A		766			1674	
Approach Delay, s/veh		26.8			22.5			47.3			32.0	
Approach LOS		C			C			D			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.9		41.1		48.9		41.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		39.1		41.9		39.1		41.9				
Max Q Clear Time (g_c+I1), s		46.4		35.3		44.1		27.6				
Green Ext Time (p_c), s		0.0		1.3		0.0		4.4				
Intersection Summary												
HCM 6th Ctrl Delay			32.4									
HCM 6th LOS			C									
Notes												

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
7: US-30 & Pershing Boulevard

2040 Total PM.syn
10/31/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	480	745	140	155	340	25	135	1220	240	25	830	220
Future Volume (veh/h)	480	745	140	155	340	25	135	1220	240	25	830	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	522	810	0	168	370	0	147	1326	261	27	902	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	744		80	1413		169	1280	571	80	1280	571
Arrive On Green	0.47	0.47	0.00	0.47	0.47	0.00	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1012	1575	1335	673	2993	1335	493	2993	1335	322	2993	1335
Grp Volume(v), veh/h	522	810	0	168	370	0	147	1326	261	27	902	239
Grp Sat Flow(s),veh/h/ln	1012	1575	1335	673	1496	1335	493	1496	1335	322	1496	1335
Q Serve(g_s), s	35.8	42.5	0.0	0.0	6.7	0.0	16.3	38.5	12.5	0.0	22.2	11.2
Cycle Q Clear(g_c), s	42.5	42.5	0.0	42.5	6.7	0.0	38.5	38.5	12.5	38.5	22.2	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	744		80	1413		169	1280	571	80	1280	571
V/C Ratio(X)	1.08	1.09		2.10	0.26		0.87	1.04	0.46	0.34	0.70	0.42
Avail Cap(c_a), veh/h	483	744		80	1413		169	1280	571	80	1280	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	23.8	0.0	45.0	14.3	0.0	40.1	25.8	18.3	45.0	21.1	17.9
Incr Delay (d2), s/veh	64.8	59.9	0.0	534.8	0.1	0.0	41.4	34.9	2.6	11.1	3.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.3	26.9	0.0	13.7	2.2	0.0	5.2	19.0	4.1	0.8	7.9	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.8	83.6	0.0	579.8	14.4	0.0	81.5	60.6	20.9	56.1	24.4	20.2
LnGrp LOS	F	F		F	B		F	F	C	E	C	C
Approach Vol, veh/h		1332	A		538	A		1734			1168	
Approach Delay, s/veh		88.0			190.9			56.4			24.2	
Approach LOS		F			F			E			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.0		47.0		43.0		47.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		38.5		42.5		38.5		42.5				
Max Q Clear Time (g_c+I1), s		40.5		44.5		40.5		44.5				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			72.5									
HCM 6th LOS			E									
Notes												

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	180	185	100	245	535	30	160	440	105	20	930	590
Future Volume (veh/h)	180	185	100	245	535	30	160	440	105	20	930	590
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	196	201	0	266	582	0	174	478	114	22	1011	380
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	538		381	671		240	1690	754	454	1358	606
Arrive On Green	0.06	0.18	0.00	0.11	0.22	0.00	0.06	0.56	0.56	0.45	0.45	0.45
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	825	2993	1335
Grp Volume(v), veh/h	196	201	0	266	582	0	174	478	114	22	1011	380
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	825	1496	1335
Q Serve(g_s), s	5.5	5.3	0.0	9.5	16.9	0.0	5.5	7.4	3.7	1.3	25.1	19.6
Cycle Q Clear(g_c), s	5.5	5.3	0.0	9.5	16.9	0.0	5.5	7.4	3.7	1.3	25.1	19.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	538		381	671		240	1690	754	454	1358	606
V/C Ratio(X)	0.97	0.37		0.70	0.87		0.73	0.28	0.15	0.05	0.74	0.63
Avail Cap(c_a), veh/h	202	615		381	748		240	1690	754	454	1358	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	32.5	0.0	29.0	33.6	0.0	18.0	10.1	9.3	13.8	20.3	18.8
Incr Delay (d2), s/veh	54.1	0.4	0.0	5.5	9.8	0.0	10.5	0.4	0.4	0.2	3.7	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.9	0.0	2.0	6.9	0.0	2.4	2.4	1.1	0.3	8.9	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.0	32.9	0.0	34.5	43.5	0.0	28.5	10.6	9.7	14.0	24.0	23.6
LnGrp LOS	F	C		C	D		C	B	A	B	C	C
Approach Vol, veh/h		397	A		848	A		766			1413	
Approach Delay, s/veh		61.1			40.7			14.5			23.8	
Approach LOS		E			D			B			C	
Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		55.3	14.0	20.7	10.0	45.3	10.0	24.7				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		48.5	9.5	18.5	5.5	38.5	5.5	22.5				
Max Q Clear Time (g_c+I1), s		9.4	11.5	7.3	7.5	27.1	7.5	18.9				
Green Ext Time (p_c), s		4.0	0.0	0.8	0.0	6.5	0.0	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			30.2									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	480	745	140	155	340	25	135	1220	240	25	830	220
Future Volume (veh/h)	480	745	140	155	340	25	135	1220	240	25	830	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	522	810	0	168	370	0	147	1326	261	27	902	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	454	929		225	497		206	1399	624	94	1083	483
Arrive On Green	0.22	0.31	0.00	0.07	0.17	0.00	0.06	0.47	0.47	0.36	0.36	0.36
Sat Flow, veh/h	1500	2993	1335	1500	2993	1335	1500	2993	1335	322	2993	1335
Grp Volume(v), veh/h	522	810	0	168	370	0	147	1326	261	27	902	239
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1500	1496	1335	1500	1496	1335	322	1496	1335
Q Serve(g_s), s	19.5	23.0	0.0	6.5	10.6	0.0	5.0	38.1	11.7	3.9	24.8	12.5
Cycle Q Clear(g_c), s	19.5	23.0	0.0	6.5	10.6	0.0	5.0	38.1	11.7	32.6	24.8	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	929		225	497		206	1399	624	94	1083	483
V/C Ratio(X)	1.15	0.87		0.75	0.74		0.71	0.95	0.42	0.29	0.83	0.49
Avail Cap(c_a), veh/h	454	1047		225	615		206	1399	624	94	1083	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	29.3	0.0	32.7	35.7	0.0	22.9	22.9	15.9	44.0	26.2	22.3
Incr Delay (d2), s/veh	90.2	7.5	0.0	12.8	3.8	0.0	11.1	14.5	2.1	7.5	7.5	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.1	8.9	0.0	1.8	4.1	0.0	2.4	15.2	3.7	0.8	9.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.9	36.9	0.0	45.5	39.6	0.0	33.9	37.4	17.9	51.5	33.8	25.9
LnGrp LOS	F	D		D	D		C	D	B	D	C	C
Approach Vol, veh/h		1332	A		538	A		1734			1168	
Approach Delay, s/veh		67.8			41.4			34.2			32.6	
Approach LOS		E			D			C			C	
Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		46.6	11.0	32.4	9.5	37.1	24.0	19.4				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		38.5	6.5	31.5	5.0	29.0	19.5	18.5				
Max Q Clear Time (g_c+I1), s		40.1	8.5	25.0	7.0	34.6	21.5	12.6				
Green Ext Time (p_c), s		0.0	0.0	2.9	0.0	0.0	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			44.0									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✣			✣	
Traffic Vol, veh/h	2	300	0	18	967	22	1	0	6	5	2	9
Future Vol, veh/h	2	300	0	18	967	22	1	0	6	5	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	95	95	95	88	88	88	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	417	0	19	1018	23	1	0	7	6	3	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1041	0	0	417	0	0	972	1502	209	1283	1491	521
Stage 1	-	-	-	-	-	-	423	423	-	1068	1068	-
Stage 2	-	-	-	-	-	-	549	1079	-	215	423	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	664	-	-	1138	-	-	207	121	797	122	123	500
Stage 1	-	-	-	-	-	-	579	586	-	237	296	-
Stage 2	-	-	-	-	-	-	488	293	-	767	586	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	664	-	-	1138	-	-	197	118	797	119	120	500
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	220	-	198	222	-
Stage 1	-	-	-	-	-	-	576	583	-	236	291	-
Stage 2	-	-	-	-	-	-	465	288	-	757	583	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	10.5	17.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	658	664	-	-	1138	-	-	306
HCM Lane V/C Ratio	0.012	0.004	-	-	0.017	-	-	0.065
HCM Control Delay (s)	10.5	10.4	-	-	8.2	-	-	17.6
HCM Lane LOS	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱			✣			✣	
Traffic Vol, veh/h	4	845	3	29	473	13	2	5	43	22	11	8
Future Vol, veh/h	4	845	3	29	473	13	2	5	43	22	11	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	95	95	95	78	78	78	51	51	51
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1070	4	31	498	14	3	6	55	43	22	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	512	0	0	1074	0	0	1404	1656	537	1115	1651	256
Stage 1	-	-	-	-	-	-	1082	1082	-	567	567	-
Stage 2	-	-	-	-	-	-	322	574	-	548	1084	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1050	-	-	645	-	-	99	97	488	163	98	743
Stage 1	-	-	-	-	-	-	232	292	-	476	505	-
Stage 2	-	-	-	-	-	-	664	501	-	488	291	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1050	-	-	645	-	-	85	92	488	135	93	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	203	-	256	191	-
Stage 1	-	-	-	-	-	-	231	291	-	474	481	-
Stage 2	-	-	-	-	-	-	591	477	-	421	290	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	15.6	24.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	404	1050	-	-	645	-	-	266
HCM Lane V/C Ratio	0.159	0.005	-	-	0.047	-	-	0.302
HCM Control Delay (s)	15.6	8.4	-	-	10.9	-	-	24.3
HCM Lane LOS	C	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	1.2

Intersection												
Int Delay, s/veh	0.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	630	5	25	1500	30	5	5	10	10	5	15
Future Vol, veh/h	5	630	5	25	1500	30	5	5	10	10	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	685	5	26	1579	32	5	5	11	11	5	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1611	0	0	690	0	0	1542	2361	345	2002	2347	806
Stage 1	-	-	-	-	-	-	698	698	-	1647	1647	-
Stage 2	-	-	-	-	-	-	844	1663	-	355	700	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	401	-	-	900	-	-	78	35	651	35	36	325
Stage 1	-	-	-	-	-	-	397	440	-	103	155	-
Stage 2	-	-	-	-	-	-	324	152	-	635	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	401	-	-	900	-	-	69	34	651	32	35	325
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	109	-	86	113	-
Stage 1	-	-	-	-	-	-	392	435	-	102	151	-
Stage 2	-	-	-	-	-	-	288	148	-	609	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	22.7	36.9
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	225	401	-	-	900	-	-	145
HCM Lane V/C Ratio	0.097	0.014	-	-	0.029	-	-	0.225
HCM Control Delay (s)	22.7	14.1	-	-	9.1	-	-	36.9
HCM Lane LOS	C	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.8

Intersection												
Int Delay, s/veh	3.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	1705	5	40	1015	20	5	5	55	30	15	15
Future Vol, veh/h	5	1705	5	40	1015	20	5	5	55	30	15	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	1853	5	42	1068	21	5	5	60	33	16	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1089	0	0	1858	0	0	2492	3039	929	2102	3031	545
Stage 1	-	-	-	-	-	-	1866	1866	-	1163	1163	-
Stage 2	-	-	-	-	-	-	626	1173	-	939	1868	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	636	-	-	322	-	-	15	13	269	~ 30	~ 13	482
Stage 1	-	-	-	-	-	-	75	121	-	207	267	-
Stage 2	-	-	-	-	-	-	439	264	-	284	120	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	636	-	-	322	-	-	10	11	269	~ 20	~ 11	482
Mov Cap-2 Maneuver	-	-	-	-	-	-	58	76	-	93	56	-
Stage 1	-	-	-	-	-	-	74	120	-	205	232	-
Stage 2	-	-	-	-	-	-	343	230	-	209	119	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	36.8	97.5
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	182	636	-	-	322	-	-	97
HCM Lane V/C Ratio	0.388	0.009	-	-	0.131	-	-	0.672
HCM Control Delay (s)	36.8	10.7	-	-	17.9	-	-	97.5
HCM Lane LOS	E	B	-	-	C	-	-	F
HCM 95th %tile Q(veh)	1.7	0	-	-	0.4	-	-	3.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	0	630	5	0	1500	30	0	0	10	0	0	15
Future Vol, veh/h	0	630	5	0	1500	30	0	0	10	0	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	685	5	0	1579	32	0	0	11	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	345	-	-	806
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	651	0	0	325
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	651	-	-	325
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.6	16.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	651	-	-	-	-	325
HCM Lane V/C Ratio	0.017	-	-	-	-	0.05
HCM Control Delay (s)	10.6	-	-	-	-	16.7
HCM Lane LOS	B	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	0	1705	5	0	1015	20	0	0	55	0	0	15
Future Vol, veh/h	0	1705	5	0	1015	20	0	0	55	0	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1853	5	0	1068	21	0	0	60	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	929	-	-	545
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	269	0	0	482
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	269	-	-	482
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	22.2	12.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	269	-	-	-	-	482
HCM Lane V/C Ratio	0.222	-	-	-	-	0.034
HCM Control Delay (s)	22.2	-	-	-	-	12.7
HCM Lane LOS	C	-	-	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	-	0.1

Intersection						
Int Delay, s/veh	2.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	228	859	10	9	134
Future Vol, veh/h	64	228	859	10	9	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	90	62	56	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	285	954	16	16	176

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	970	0	-	0	1265	485
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	303	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	706	-	-	-	161	528
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	706	-	-	-	143	528
Mov Cap-2 Maneuver	-	-	-	-	236	-
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	723	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	706	-	-	-	479
HCM Lane V/C Ratio	0.113	-	-	-	0.402
HCM Control Delay (s)	10.8	-	-	-	17.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	-	1.9

Intersection						
Int Delay, s/veh	1.9					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	143	716	353	15	16	75
Future Vol, veh/h	143	716	353	15	16	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	85	89	54	80	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	161	842	397	28	20	100

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	425	0	-	0	1154	213
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	743	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1131	-	-	-	190	792
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1131	-	-	-	163	792
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	431	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1131	-	-	-	558
HCM Lane V/C Ratio	0.142	-	-	-	0.215
HCM Control Delay (s)	8.7	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

Intersection						
Int Delay, s/veh	19.9					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	160	470	1250	155	15	305
Future Vol, veh/h	160	470	1250	155	15	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	511	1359	168	16	332

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1527	0	-	0	2047	764
Stage 1	-	-	-	-	1443	-
Stage 2	-	-	-	-	604	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	432	-	-	-	48	346
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	432	-	-	-	29	346
Mov Cap-2 Maneuver	-	-	-	-	85	-
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	4.8	0	136.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	432	-	-	-	302
HCM Lane V/C Ratio	0.403	-	-	-	1.152
HCM Control Delay (s)	18.8	-	-	-	136.8
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	1.9	-	-	-	14.6

Intersection						
Int Delay, s/veh	3.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	380	1415	820	20	5	255
Future Vol, veh/h	380	1415	820	20	5	255
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	413	1538	891	22	5	277

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	913	0	-	0	2497	457
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	1595	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	742	-	-	-	24	551
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	152	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	742	-	-	-	11	551
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	152	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	742	-	-	-	542
HCM Lane V/C Ratio	0.557	-	-	-	0.521
HCM Control Delay (s)	15.8	-	-	-	18.7
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	3.5	-	-	-	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	160	470	15	20	1250	155	100	20	10	20	5	305
Future Volume (veh/h)	160	470	15	20	1250	155	100	20	10	20	5	305
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	174	511	16	22	1359	103	109	22	11	22	5	169
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	2057	64	586	1629	123	185	204	102	338	8	268
Arrive On Green	0.07	0.69	0.69	0.58	0.58	0.58	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1500	2962	93	876	2820	213	1211	991	495	1376	39	1302
Grp Volume(v), veh/h	174	258	269	22	719	743	109	0	33	22	0	174
Grp Sat Flow(s),veh/h/ln	1500	1496	1558	876	1496	1537	1211	0	1486	1376	0	1341
Q Serve(g_s), s	3.9	5.7	5.7	1.0	35.2	35.6	7.8	0.0	1.6	1.2	0.0	10.7
Cycle Q Clear(g_c), s	3.9	5.7	5.7	1.0	35.2	35.6	18.5	0.0	1.6	2.8	0.0	10.7
Prop In Lane	1.00		0.06	1.00		0.14	1.00		0.33	1.00		0.97
Lane Grp Cap(c), veh/h	246	1039	1082	586	864	888	185	0	305	338	0	276
V/C Ratio(X)	0.71	0.25	0.25	0.04	0.83	0.84	0.59	0.00	0.11	0.07	0.00	0.63
Avail Cap(c_a), veh/h	305	1039	1082	586	864	888	185	0	305	338	0	276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.83	0.00	0.83
Uniform Delay (d), s/veh	18.7	5.1	5.1	8.2	15.4	15.5	41.2	0.0	29.0	30.2	0.0	32.6
Incr Delay (d2), s/veh	5.5	0.6	0.5	0.1	9.2	9.2	4.8	0.0	0.2	0.3	0.0	8.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.6	1.7	0.2	12.9	13.3	2.6	0.0	0.6	0.4	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	5.6	5.6	8.4	24.6	24.8	46.0	0.0	29.2	30.5	0.0	41.5
LnGrp LOS	C	A	A	A	C	C	D	A	C	C	A	D
Approach Vol, veh/h		701			1484			142			196	
Approach Delay, s/veh		10.3			24.5			42.1			40.2	
Approach LOS		B			C			D			D	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0		67.0		23.0	10.5	56.5				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5		62.5		18.5	9.5	48.5				
Max Q Clear Time (g_c+I1), s		20.5		7.7		12.7	5.9	37.6				
Green Ext Time (p_c), s		0.0		3.6		0.5	0.1	7.2				
Intersection Summary												
HCM 6th Ctrl Delay			22.7									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	400	1415	15	25	820	20	55	25	10	15	25	255
Future Volume (veh/h)	400	1415	15	25	820	20	55	25	10	15	25	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	435	1538	16	27	891	22	60	27	11	16	27	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1873	19	195	1415	35	167	219	89	333	39	241
Arrive On Green	0.17	0.62	0.62	0.03	0.47	0.47	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1500	3034	32	1500	2984	74	1188	1064	433	1370	189	1175
Grp Volume(v), veh/h	435	758	796	27	447	466	60	0	38	16	0	195
Grp Sat Flow(s),veh/h/ln	1500	1496	1569	1500	1496	1562	1188	0	1497	1370	0	1364
Q Serve(g_s), s	12.3	35.4	35.5	0.8	20.1	20.1	4.4	0.0	1.9	0.9	0.0	11.9
Cycle Q Clear(g_c), s	12.3	35.4	35.5	0.8	20.1	20.1	16.4	0.0	1.9	2.7	0.0	11.9
Prop In Lane	1.00		0.02	1.00		0.05	1.00		0.29	1.00		0.86
Lane Grp Cap(c), veh/h	488	923	969	195	709	741	167	0	308	333	0	280
V/C Ratio(X)	0.89	0.82	0.82	0.14	0.63	0.63	0.36	0.00	0.12	0.05	0.00	0.70
Avail Cap(c_a), veh/h	641	923	969	239	709	741	167	0	308	333	0	280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.60	0.00	0.60
Uniform Delay (d), s/veh	14.2	13.4	13.4	14.5	17.7	17.7	40.7	0.0	29.1	30.3	0.0	33.1
Incr Delay (d2), s/veh	11.9	8.1	7.8	0.3	4.2	4.0	1.3	0.0	0.2	0.2	0.0	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	12.4	12.9	0.3	7.4	7.7	1.3	0.0	0.7	0.3	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	21.5	21.2	14.8	21.9	21.8	42.0	0.0	29.3	30.4	0.0	41.4
LnGrp LOS	C	C	C	B	C	C	D	A	C	C	A	D
Approach Vol, veh/h		1989			940			98			211	
Approach Delay, s/veh		22.4			21.7			37.1			40.6	
Approach LOS		C			C			D			D	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	7.0	60.0		23.0	19.8	47.2				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5	5.1	52.9		18.5	24.5	33.5				
Max Q Clear Time (g_c+I1), s		18.4	2.8	37.5		13.9	14.3	22.1				
Green Ext Time (p_c), s		0.0	0.0	9.7		0.5	1.1	4.5				
Intersection Summary												
HCM 6th Ctrl Delay			23.8									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✣			✣	
Traffic Vol, veh/h	23	206	20	4	685	1	75	16	7	2	4	106
Future Vol, veh/h	23	206	20	4	685	1	75	16	7	2	4	106
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	79	62	33	87	25	69	67	44	50	100	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	261	32	12	787	4	109	24	16	4	4	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	791	0	0	293	0	0	745	1140	131	1020	1170	396
Stage 1	-	-	-	-	-	-	325	325	-	813	813	-
Stage 2	-	-	-	-	-	-	420	815	-	207	357	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	825	-	-	1265	-	-	302	200	894	191	192	603
Stage 1	-	-	-	-	-	-	661	648	-	339	390	-
Stage 2	-	-	-	-	-	-	581	389	-	776	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	825	-	-	1265	-	-	227	190	894	169	183	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	326	282	-	265	291	-
Stage 1	-	-	-	-	-	-	635	623	-	326	386	-
Stage 2	-	-	-	-	-	-	449	385	-	705	603	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	23.5	13.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	341	825	-	-	1265	-	-	564
HCM Lane V/C Ratio	0.435	0.039	-	-	0.01	-	-	0.241
HCM Control Delay (s)	23.5	9.5	-	-	7.9	-	-	13.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.1	0.1	-	-	0	-	-	0.9

Intersection												
Int Delay, s/veh	4.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✣			✣	
Traffic Vol, veh/h	91	566	82	6	278	6	41	17	7	6	20	50
Future Vol, veh/h	91	566	82	6	278	6	41	17	7	6	20	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	87	79	38	88	75	68	42	58	38	71	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	651	104	16	316	8	60	40	12	16	28	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	324	0	0	755	0	0	1111	1263	326	954	1363	162
Stage 1	-	-	-	-	-	-	907	907	-	352	352	-
Stage 2	-	-	-	-	-	-	204	356	-	602	1011	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1233	-	-	851	-	-	164	168	670	213	147	854
Stage 1	-	-	-	-	-	-	297	353	-	638	630	-
Stage 2	-	-	-	-	-	-	779	628	-	453	315	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1233	-	-	851	-	-	125	148	670	166	129	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	238	-	259	215	-
Stage 1	-	-	-	-	-	-	266	316	-	572	618	-
Stage 2	-	-	-	-	-	-	678	616	-	348	282	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.4	33.1	17.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	238	1233	-	-	851	-	-	397
HCM Lane V/C Ratio	0.474	0.104	-	-	0.019	-	-	0.262
HCM Control Delay (s)	33.1	8.3	-	-	9.3	-	-	17.3
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.4	0.3	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	40	440	25	5	1150	5	100	20	10	5	5	155
Future Vol, veh/h	40	440	25	5	1150	5	100	20	10	5	5	155
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	100	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	478	27	5	1250	5	109	22	11	5	5	168

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1255	0	0	505	0	0	1202	1829	239	1599	1854	628
Stage 1	-	-	-	-	-	-	564	564	-	1263	1263	-
Stage 2	-	-	-	-	-	-	638	1265	-	336	591	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	550	-	-	1056	-	-	140	76	762	71	73	426
Stage 1	-	-	-	-	-	-	478	507	-	180	239	-
Stage 2	-	-	-	-	-	-	431	239	-	652	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	550	-	-	1056	-	-	~78	70	762	58	67	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	151	-	134	169	-
Stage 1	-	-	-	-	-	-	441	467	-	166	238	-
Stage 2	-	-	-	-	-	-	254	238	-	565	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0	86.3	22.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	169	550	-	-	1056	-	-	384
HCM Lane V/C Ratio	0.836	0.079	-	-	0.005	-	-	0.466
HCM Control Delay (s)	86.3	12.1	-	-	8.4	-	-	22.3
HCM Lane LOS	F	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	5.8	0.3	-	-	0	-	-	2.4

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	140	1170	110	10	700	10	55	25	10	10	25	85
Future Vol, veh/h	140	1170	110	10	700	10	55	25	10	10	25	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	150	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	152	1272	120	11	761	11	60	27	11	11	27	92

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	772	0	0	1392	0	0	1992	2370	636	1743	2485	386
Stage 1	-	-	-	-	-	-	1576	1576	-	789	789	-
Stage 2	-	-	-	-	-	-	416	794	-	954	1696	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	839	-	-	487	-	-	~36	34	421	55	29	612
Stage 1	-	-	-	-	-	-	115	168	-	350	400	-
Stage 2	-	-	-	-	-	-	585	398	-	278	147	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	839	-	-	487	-	-	~20	~27	421	35	~23	612
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	91	-	111	85	-
Stage 1	-	-	-	-	-	-	94	138	-	287	391	-
Stage 2	-	-	-	-	-	-	452	389	-	178	120	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	233.3	39.7
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	85	839	-	-	487	-	-	229
HCM Lane V/C Ratio	1.151	0.181	-	-	0.022	-	-	0.57
HCM Control Delay (s)	233.3	10.2	-	-	12.6	-	-	39.7
HCM Lane LOS	F	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	6.9	0.7	-	-	0.1	-	-	3.2

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	1.9											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↑↑	↱	↰	↑↑↱				↱			↱
Traffic Vol, veh/h	40	440	25	5	1150	5	0	0	10	0	0	155
Future Vol, veh/h	40	440	25	5	1150	5	0	0	10	0	0	155
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	150	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	100	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	478	27	5	1250	5	0	0	11	0	0	168

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1255	0	0	505	0	0	-	-	239	-	-	628
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	550	-	-	1056	-	-	0	0	762	0	0	426
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	550	-	-	1056	-	-	-	-	762	-	-	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0	9.8	18.9
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	550	-	-	1056	-	-	426
HCM Lane V/C Ratio	0.014	0.079	-	-	0.005	-	-	0.395
HCM Control Delay (s)	9.8	12.1	-	-	8.4	-	-	18.9
HCM Lane LOS	A	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	1.9

Intersection												
Int Delay, s/veh	1.2											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↑↑	↱	↰	↑↑↱				↱			↱
Traffic Vol, veh/h	120	1170	110	10	700	10	0	0	10	0	0	85
Future Vol, veh/h	120	1170	110	10	700	10	0	0	10	0	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	150	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	130	1272	120	11	761	11	0	0	11	0	0	92

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	772	0	0	1392	0	0	-	-	636	-	-	386
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	839	-	-	487	-	-	0	0	421	0	0	612
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	839	-	-	487	-	-	-	-	421	-	-	612
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	13.8	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	421	839	-	-	487	-	-	612
HCM Lane V/C Ratio	0.026	0.155	-	-	0.022	-	-	0.151
HCM Control Delay (s)	13.8	10.1	-	-	12.6	-	-	11.9
HCM Lane LOS	B	B	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.1	0.5	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↳			✣	
Traffic Vol, veh/h	32	119	31	3	502	33	46	49	3	4	29	131
Future Vol, veh/h	32	119	31	3	502	33	46	49	3	4	29	131
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	68	48	38	85	59	77	68	75	50	60	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	175	65	8	591	56	60	72	4	8	48	177

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	647	0	0	240	0	0	1003	918	175	933	927	591
Stage 1	-	-	-	-	-	-	255	255	-	607	607	-
Stage 2	-	-	-	-	-	-	748	663	-	326	320	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	939	-	-	1327	-	-	221	272	868	246	268	507
Stage 1	-	-	-	-	-	-	749	696	-	483	486	-
Stage 2	-	-	-	-	-	-	404	459	-	687	652	-
Platoon blocked, %		-	-		-	-	-					
Mov Cap-1 Maneuver	939	-	-	1327	-	-	124	259	868	198	255	507
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	340	-	323	360	-
Stage 1	-	-	-	-	-	-	717	666	-	462	483	-
Stage 2	-	-	-	-	-	-	235	456	-	584	624	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	26.4	20.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	351	939	-	-	1327	-	-	459
HCM Lane V/C Ratio	0.349	0.217	0.043	-	-	0.006	-	-	0.508
HCM Control Delay (s)	37	18.1	9	-	-	7.7	-	-	20.7
HCM Lane LOS	E	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.5	0.8	0.1	-	-	0	-	-	2.8

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↳			✣	
Traffic Vol, veh/h	86	392	67	30	178	4	31	58	6	17	71	53
Future Vol, veh/h	86	392	67	30	178	4	31	58	6	17	71	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	93	93	33	97	68	78	81	50	61	74	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	422	72	91	184	6	40	72	12	28	96	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	494	0	0	1131	1050	422	1122	1116	184
Stage 1	-	-	-	-	-	-	678	678	-	366	366	-
Stage 2	-	-	-	-	-	-	453	372	-	756	750	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1384	-	-	1070	-	-	181	227	632	183	208	858
Stage 1	-	-	-	-	-	-	442	452	-	653	623	-
Stage 2	-	-	-	-	-	-	586	619	-	400	419	-
Platoon blocked, %		-	-		-	-	-					
Mov Cap-1 Maneuver	1384	-	-	1070	-	-	100	189	632	126	173	858
Mov Cap-2 Maneuver	-	-	-	-	-	-	194	279	-	175	240	-
Stage 1	-	-	-	-	-	-	401	410	-	593	570	-
Stage 2	-	-	-	-	-	-	409	566	-	294	380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	2.8	23.6	35.9
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	194	303	1384	-	-	1070	-	-	304
HCM Lane V/C Ratio	0.205	0.276	0.093	-	-	0.085	-	-	0.643
HCM Control Delay (s)	28.3	21.3	7.9	-	-	8.7	-	-	35.9
HCM Lane LOS	D	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.7	1.1	0.3	-	-	0.3	-	-	4.1

Intersection	
Int Delay, s/veh	47.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	180	235	40	5	675	45	70	65	5	5	40	410
Future Vol, veh/h	180	235	40	5	675	45	70	65	5	5	40	410
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	196	255	43	5	734	49	76	71	5	5	43	446

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	783	0	0	298	0	0	1660	1440	255	1451	1434	734
Stage 1	-	-	-	-	-	-	647	647	-	744	744	-
Stage 2	-	-	-	-	-	-	1013	793	-	707	690	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	835	-	-	1263	-	-	78	133	784	109	134	~ 420
Stage 1	-	-	-	-	-	-	460	467	-	407	421	-
Stage 2	-	-	-	-	-	-	288	400	-	426	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	835	-	-	1263	-	-	-	101	784	58	102	~ 420
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ -403	158	-	154	216	-
Stage 1	-	-	-	-	-	-	352	357	-	311	419	-
Stage 2	-	-	-	-	-	-	-	398	-	260	341	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	0.1		181.6
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	168	835	-	-	1263	-	-	381
HCM Lane V/C Ratio	-	0.453	0.234	-	-	0.004	-	-	1.298
HCM Control Delay (s)	-	43	10.6	-	-	7.9	-	-	181.6
HCM Lane LOS	-	E	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	2.1	0.9	-	-	0	-	-	22.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	470	630	90	40	310	65	45	75	15	25	95	370
Future Vol, veh/h	470	630	90	40	310	65	45	75	15	25	95	370
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	375	-	375	375	-	375	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	93	93	92	97	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	511	677	97	43	320	71	49	82	16	27	103	402

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	774	0	0	2393	2176	677	2203	2202	320
Stage 1	-	-	-	-	-	-	1699	1699	-	406	406	-
Stage 2	-	-	-	-	-	-	694	477	-	1797	1796	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1168	-	-	842	-	-	~ 23	~ 46	453	32	~ 45	721
Stage 1	-	-	-	-	-	-	117	148	-	622	598	-
Stage 2	-	-	-	-	-	-	433	556	-	102	132	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1168	-	-	842	-	-	-	~ 25	453	-	~ 24	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	~ 14	-	~ -43	~ 28	-
Stage 1	-	-	-	-	-	-	66	83	-	350	568	-
Stage 2	-	-	-	-	-	-	149	528	-	~ 1	~ 74	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.2	1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	17	1168	-	-	842	-	-	-
HCM Lane V/C Ratio	-	5.754	0.437	-	-	0.052	-	-	-
HCM Control Delay (s)		$2587.6	10.5	-	-	9.5	-	-	-
HCM Lane LOS	-	F	B	-	-	A	-	-	-
HCM 95th %tile Q(veh)	-	12.9	2.3	-	-	0.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑	↱
Traffic Volume (veh/h)	180	235	40	5	525	45	210	110	5	5	40	410
Future Volume (veh/h)	180	235	40	5	525	45	210	110	5	5	40	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	196	255	43	5	571	49	228	120	5	5	43	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	1746	779	567	1347	601	394	475	20	406	499	423
Arrive On Green	0.08	0.58	0.58	0.45	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1500	2993	1335	1081	2993	1335	1054	1501	63	1266	1575	1335
Grp Volume(v), veh/h	196	255	43	5	571	49	228	0	125	5	43	283
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1081	1496	1335	1054	0	1564	1266	1575	1335
Q Serve(g_s), s	6.0	3.5	1.2	0.2	11.7	1.9	17.5	0.0	5.3	0.3	1.7	16.5
Cycle Q Clear(g_c), s	6.0	3.5	1.2	0.2	11.7	1.9	19.2	0.0	5.3	5.6	1.7	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	462	1746	779	567	1347	601	394	0	495	406	499	423
V/C Ratio(X)	0.42	0.15	0.06	0.01	0.42	0.08	0.58	0.00	0.25	0.01	0.09	0.67
Avail Cap(c_a), veh/h	462	1746	779	567	1347	601	394	0	495	406	499	423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.51	0.51	0.51
Uniform Delay (d), s/veh	11.6	8.5	8.1	13.7	16.8	14.1	28.3	0.0	22.8	24.9	21.6	26.7
Incr Delay (d2), s/veh	0.6	0.2	0.1	0.0	1.0	0.3	6.1	0.0	1.2	0.0	0.2	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.1	0.4	0.1	4.0	0.6	4.9	0.0	2.1	0.1	0.7	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	8.7	8.2	13.7	17.8	14.4	34.4	0.0	24.1	24.9	21.8	30.9
LnGrp LOS	B	A	A	B	B	B	C	A	C	C	C	C
Approach Vol, veh/h		494			625			353			331	
Approach Delay, s/veh		10.1			17.5			30.8			29.7	
Approach LOS		B			B			C			C	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		33.0		57.0		33.0	12.0	45.0				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		28.5		52.5		28.5	7.5	40.5				
Max Q Clear Time (g_c+I1), s		21.2		5.5		18.5	8.0	13.7				
Green Ext Time (p_c), s		1.0		2.0		0.9	0.0	4.3				
Intersection Summary												
HCM 6th Ctrl Delay			20.3									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑	↱
Traffic Volume (veh/h)	470	630	90	40	235	65	115	95	15	25	95	370
Future Volume (veh/h)	470	630	90	40	235	65	115	95	15	25	95	370
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	511	677	97	43	242	71	125	103	16	27	103	239
Peak Hour Factor	0.92	0.93	0.93	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	739	1879	838	312	999	446	300	362	56	349	429	363
Arrive On Green	0.24	0.63	0.63	0.33	0.33	0.33	0.27	0.27	0.27	0.09	0.09	0.09
Sat Flow, veh/h	1500	2993	1335	696	2993	1335	1039	1331	207	1273	1575	1335
Grp Volume(v), veh/h	511	677	97	43	242	71	125	0	119	27	103	239
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	696	1496	1335	1039	0	1538	1273	1575	1335
Q Serve(g_s), s	18.6	9.8	2.6	3.9	5.3	3.4	9.7	0.0	5.5	1.8	5.5	15.6
Cycle Q Clear(g_c), s	18.6	9.8	2.6	3.9	5.3	3.4	15.2	0.0	5.5	7.3	5.5	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	739	1879	838	312	999	446	300	0	419	349	429	363
V/C Ratio(X)	0.69	0.36	0.12	0.14	0.24	0.16	0.42	0.00	0.28	0.08	0.24	0.66
Avail Cap(c_a), veh/h	898	1879	838	312	999	446	300	0	419	349	429	363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	11.5	8.1	6.7	21.3	21.7	21.1	31.8	0.0	25.8	35.7	32.3	36.9
Incr Delay (d2), s/veh	1.7	0.5	0.3	0.9	0.6	0.8	4.2	0.0	1.7	0.3	0.9	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	0.7	0.7	1.9	1.1	2.7	0.0	2.2	0.6	2.2	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	8.6	7.0	22.2	22.3	21.9	36.1	0.0	27.5	36.0	33.2	42.9
LnGrp LOS	B	A	A	C	C	C	D	A	C	D	C	D
Approach Vol, veh/h		1285			356			244			369	
Approach Delay, s/veh		10.3			22.2			31.9			39.6	
Approach LOS		B			C			C			D	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	26.5	34.5				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		24.5		56.5		24.5	31.5	20.5				
Max Q Clear Time (g_c+I1), s		17.2		11.8		17.6	20.6	7.3				
Green Ext Time (p_c), s		0.7		5.9		0.9	1.4	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			19.3									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	0	88	41	23	407	3	140	15	3	1	4	2
Future Vol, veh/h	0	88	41	23	407	3	140	15	3	1	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	87	87	87	84	84	84	35	35	35
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	98	46	26	468	3	167	18	4	3	11	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	471	0	0	144	0	0	628	621	98	654	666	470
Stage 1	-	-	-	-	-	-	98	98	-	522	522	-
Stage 2	-	-	-	-	-	-	530	523	-	132	144	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1091	-	-	1438	-	-	395	403	958	380	380	594
Stage 1	-	-	-	-	-	-	908	814	-	538	531	-
Stage 2	-	-	-	-	-	-	533	530	-	871	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1091	-	-	1438	-	-	378	396	958	362	373	594
Mov Cap-2 Maneuver	-	-	-	-	-	-	440	449	-	447	438	-
Stage 1	-	-	-	-	-	-	908	814	-	538	521	-
Stage 2	-	-	-	-	-	-	507	520	-	849	778	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	18.9	12.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	1091	-	-	1438	-	-	475
HCM Lane V/C Ratio	0.423	-	-	-	0.018	-	-	0.042
HCM Control Delay (s)	18.9	0	-	-	7.5	-	-	12.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.1	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	0	326	115	7	140	0	67	9	7	2	13	1
Future Vol, veh/h	0	326	115	7	140	0	67	9	7	2	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	84	84	84	86	86	86	40	40	40
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	402	142	8	167	0	78	10	8	5	33	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	544	0	0	603	585	402	665	727	167
Stage 1	-	-	-	-	-	-	402	402	-	183	183	-
Stage 2	-	-	-	-	-	-	201	183	-	482	544	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1025	-	-	411	423	648	374	351	877
Stage 1	-	-	-	-	-	-	625	600	-	819	748	-
Stage 2	-	-	-	-	-	-	801	748	-	565	519	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1025	-	-	383	420	648	361	348	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	484	489	-	447	423	-
Stage 1	-	-	-	-	-	-	625	600	-	819	742	-
Stage 2	-	-	-	-	-	-	758	742	-	548	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	14	14
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	495	1411	-	-	1025	-	-	440
HCM Lane V/C Ratio	0.195	-	-	-	0.008	-	-	0.091
HCM Control Delay (s)	14	0	-	-	8.5	-	-	14
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	185	55	30	535	5	185	20	5	5	5	5
Future Vol, veh/h	5	185	55	30	535	5	185	20	5	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	201	60	33	582	5	201	22	5	5	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	587	0	0	261	0	0	867	864	201	906	922	585
Stage 1	-	-	-	-	-	-	211	211	-	651	651	-
Stage 2	-	-	-	-	-	-	656	653	-	255	271	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	988	-	-	1303	-	-	273	292	840	257	270	511
Stage 1	-	-	-	-	-	-	791	728	-	457	465	-
Stage 2	-	-	-	-	-	-	454	464	-	749	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	988	-	-	1303	-	-	261	283	840	238	262	511
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	368	-	351	356	-
Stage 1	-	-	-	-	-	-	787	724	-	455	453	-
Stage 2	-	-	-	-	-	-	433	452	-	718	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	30.8	14.5
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	360	988	-	-	1303	-	-	394
HCM Lane V/C Ratio	0.634	0.006	-	-	0.025	-	-	0.041
HCM Control Delay (s)	30.8	8.7	-	-	7.8	-	-	14.5
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	4.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	515	150	10	320	5	90	15	10	5	20	5
Future Vol, veh/h	5	515	150	10	320	5	90	15	10	5	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	560	163	11	348	5	98	16	11	5	22	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	353	0	0	723	0	0	956	945	560	1038	1106	351
Stage 1	-	-	-	-	-	-	570	570	-	373	373	-
Stage 2	-	-	-	-	-	-	386	375	-	665	733	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1206	-	-	879	-	-	238	262	528	209	210	692
Stage 1	-	-	-	-	-	-	506	505	-	648	618	-
Stage 2	-	-	-	-	-	-	637	617	-	449	426	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1206	-	-	879	-	-	221	258	528	195	206	692
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	367	-	312	313	-
Stage 1	-	-	-	-	-	-	504	503	-	645	610	-
Stage 2	-	-	-	-	-	-	602	609	-	424	424	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	20.1	16.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	1206	-	-	879	-	-	344
HCM Lane V/C Ratio	0.345	0.005	-	-	0.012	-	-	0.095
HCM Control Delay (s)	20.1	8	-	-	9.1	-	-	16.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.5	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↱				↱			↱
Traffic Vol, veh/h	0	185	55	30	535	5	0	0	5	0	0	5
Future Vol, veh/h	0	185	55	30	535	5	0	0	5	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	300	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	201	60	33	582	5	0	0	5	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	261	0	0	-	-	101	-	-	294
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	1300	-	-	0	0	935	0	0	702
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	1300	-	-	-	-	935	-	-	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	8.9	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	935	-	-	1300	-	-	702
HCM Lane V/C Ratio	0.006	-	-	0.025	-	-	0.008
HCM Control Delay (s)	8.9	-	-	7.8	-	-	10.2
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↱				↱			↱
Traffic Vol, veh/h	0	515	150	10	320	5	0	0	10	0	0	5
Future Vol, veh/h	0	515	150	10	320	5	0	0	10	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	150	300	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	560	163	11	348	5	0	0	11	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	723	0	0	-	-	280	-	-	177
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	875	-	-	0	0	717	0	0	835
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	875	-	-	-	-	717	-	-	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	10.1	9.3
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	717	-	-	875	-	-	835
HCM Lane V/C Ratio	0.015	-	-	0.012	-	-	0.007
HCM Control Delay (s)	10.1	-	-	9.2	-	-	9.3
HCM Lane LOS	B	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↑	↱		✣			✣	
Traffic Vol, veh/h	7	91	0	1	378	198	0	2	0	62	0	10
Future Vol, veh/h	7	91	0	1	378	198	0	2	0	62	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	29	81	92	25	79	87	92	50	92	78	92	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	112	0	4	478	228	0	4	0	79	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	478	0	0	112	0	0	656	646	112	648	646	478
Stage 1	-	-	-	-	-	-	160	160	-	486	486	-
Stage 2	-	-	-	-	-	-	496	486	-	162	160	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1084	-	-	1478	-	0	379	390	941	383	390	587
Stage 1	-	-	-	-	-	0	842	766	-	563	551	-
Stage 2	-	-	-	-	-	0	556	551	-	840	766	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1084	-	-	1478	-	-	359	380	941	373	380	587
Mov Cap-2 Maneuver	-	-	-	-	-	-	433	442	-	456	452	-
Stage 1	-	-	-	-	-	-	823	749	-	551	549	-
Stage 2	-	-	-	-	-	-	536	549	-	817	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	13.2	14.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	442	1084	-	-	1478	-	477
HCM Lane V/C Ratio	0.009	0.022	-	-	0.003	-	0.209
HCM Control Delay (s)	13.2	8.4	-	-	7.4	-	14.5
HCM Lane LOS	B	A	-	-	A	-	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	0.8

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↑	↱		✣			✣	
Traffic Vol, veh/h	7	306	0	0	147	140	1	1	0	209	4	5
Future Vol, veh/h	7	306	0	0	147	140	1	1	0	209	4	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	89	92	92	83	78	25	25	92	86	50	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	344	0	0	177	179	4	4	0	243	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	344	0	0	553	545	344	547	545	177
Stage 1	-	-	-	-	-	-	368	368	-	177	177	-
Stage 2	-	-	-	-	-	-	185	177	-	370	368	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1399	-	-	1215	-	0	444	446	699	448	446	866
Stage 1	-	-	-	-	-	0	652	621	-	825	753	-
Stage 2	-	-	-	-	-	0	817	753	-	650	621	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1399	-	-	1215	-	-	432	442	699	442	442	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	517	504	-	522	505	-
Stage 1	-	-	-	-	-	-	646	615	-	818	753	-
Stage 2	-	-	-	-	-	-	801	753	-	640	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	12.2	18.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	510	1399	-	-	1215	-	528
HCM Lane V/C Ratio	0.016	0.009	-	-	-	-	0.491
HCM Control Delay (s)	12.2	7.6	-	-	0	-	18.2
HCM Lane LOS	B	A	-	-	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	2.7

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	185	0	0	535	480	0	0	0	210	0	15
Future Vol, veh/h	10	185	0	0	535	480	0	0	0	210	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	201	0	0	582	522	0	0	0	228	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	582	0	0	201	0	0	813	805	201	805	805	582
Stage 1	-	-	-	-	-	-	223	223	-	582	582	-
Stage 2	-	-	-	-	-	-	590	582	-	223	223	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	992	-	-	1371	-	0	297	316	840	301	316	513
Stage 1	-	-	-	-	-	0	780	719	-	499	499	-
Stage 2	-	-	-	-	-	0	494	499	-	780	719	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	992	-	-	1371	-	-	285	313	840	299	313	513
Mov Cap-2 Maneuver	-	-	-	-	-	-	381	397	-	399	401	-
Stage 1	-	-	-	-	-	-	771	711	-	494	499	-
Stage 2	-	-	-	-	-	-	478	499	-	771	711	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	26.5
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	992	-	-	1371	-	405
HCM Lane V/C Ratio	-	0.011	-	-	-	-	0.604
HCM Control Delay (s)	0	8.7	-	-	0	-	26.5
HCM Lane LOS	A	A	-	-	A	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	3.8

Intersection	
Int Delay, s/veh	61.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	500	0	0	325	375	0	0	0	435	0	10
Future Vol, veh/h	10	500	0	0	325	375	0	0	0	435	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	350	-	-	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	543	0	0	353	408	0	0	0	473	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	353	0	0	543	0	0	924	918	543	918	918	353
Stage 1	-	-	-	-	-	-	565	565	-	353	353	-
Stage 2	-	-	-	-	-	-	359	353	-	565	565	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1206	-	-	1026	-	0	250	272	540	~ 252	272	691
Stage 1	-	-	-	-	-	0	510	508	-	664	631	-
Stage 2	-	-	-	-	-	0	659	631	-	510	508	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1206	-	-	1026	-	-	244	270	540	~ 250	270	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	366	374	-	~ 372	376	-
Stage 1	-	-	-	-	-	-	505	503	-	658	631	-
Stage 2	-	-	-	-	-	-	649	631	-	505	503	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	177.5
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	-	1206	-	-	1026	-	376
HCM Lane V/C Ratio	-	0.009	-	-	-	-	1.286
HCM Control Delay (s)	0	8	-	-	0	-	177.5
HCM Lane LOS	A	A	-	-	A	-	F
HCM 95th %tile Q(veh)	-	0	-	-	0	-	21.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s   +: Computation Not Defined   *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑	↱	↰	↱		↰	↱	
Traffic Volume (veh/h)	10	185	10	10	535	480	10	0	10	210	0	15
Future Volume (veh/h)	10	185	10	10	535	480	10	0	10	210	0	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	11	201	11	11	582	0	11	0	11	228	0	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	630	1908	104	823	1978		401	0	319	406	0	319
Arrive On Green	0.66	0.66	0.66	1.00	1.00	0.00	0.24	0.00	0.24	0.24	0.00	0.24
Sat Flow, veh/h	833	2886	157	1170	2993	1335	1397	0	1335	1404	0	1335
Grp Volume(v), veh/h	11	104	108	11	582	0	11	0	11	228	0	16
Grp Sat Flow(s),veh/h/ln	833	1496	1547	1170	1496	1335	1397	0	1335	1404	0	1335
Q Serve(g_s), s	0.4	2.3	2.3	0.0	0.0	0.0	0.6	0.0	0.6	13.4	0.0	0.8
Cycle Q Clear(g_c), s	0.4	2.3	2.3	2.3	0.0	0.0	1.4	0.0	0.6	14.0	0.0	0.8
Prop In Lane	1.00		0.10	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	630	989	1023	823	1978		401	0	319	406	0	319
V/C Ratio(X)	0.02	0.10	0.11	0.01	0.29		0.03	0.00	0.03	0.56	0.00	0.05
Avail Cap(c_a), veh/h	630	989	1023	823	1978		401	0	319	406	0	319
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.19	0.19	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.2	5.6	5.6	0.0	0.0	0.0	26.9	0.0	26.3	31.6	0.0	26.4
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.1	0.0	0.1	0.0	0.2	5.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.7	0.7	0.0	0.0	0.0	0.2	0.0	0.2	5.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.3	5.8	5.8	0.1	0.1	0.0	27.0	0.0	26.5	37.2	0.0	26.7
LnGrp LOS	A	A	A	A	A		C	A	C	D	A	C
Approach Vol, veh/h		223			593	A		22			244	
Approach Delay, s/veh		5.7			0.1			26.8			36.5	
Approach LOS		A			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.0		64.0		26.0		64.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		21.5		59.5		21.5		59.5				
Max Q Clear Time (g_c+I1), s		3.4		4.3		16.0		4.3				
Green Ext Time (p_c), s		0.0		1.4		0.4		4.7				
Intersection Summary												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			A									
Notes												

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑↑	↱	↰	↱		↰	↱	
Traffic Volume (veh/h)	10	500	10	10	325	375	10	0	10	435	0	10
Future Volume (veh/h)	10	500	10	10	325	375	10	0	10	435	0	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	11	543	11	11	353	0	11	0	11	473	0	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	983	20	233	981		878	0	764	878	0	764
Arrive On Green	0.33	0.33	0.33	0.11	0.11	0.00	0.57	0.00	0.57	0.57	0.00	0.57
Sat Flow, veh/h	1028	3000	61	854	2993	1335	1404	0	1335	1404	0	1335
Grp Volume(v), veh/h	11	271	283	11	353	0	11	0	11	473	0	11
Grp Sat Flow(s),veh/h/ln	1028	1496	1564	854	1496	1335	1404	0	1335	1404	0	1335
Q Serve(g_s), s	0.8	13.4	13.4	1.1	9.9	0.0	0.3	0.0	0.3	19.7	0.0	0.3
Cycle Q Clear(g_c), s	10.6	13.4	13.4	14.5	9.9	0.0	0.6	0.0	0.3	20.1	0.0	0.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	490	513	233	981		878	0	764	878	0	764
V/C Ratio(X)	0.04	0.55	0.55	0.05	0.36		0.01	0.00	0.01	0.54	0.00	0.01
Avail Cap(c_a), veh/h	304	490	513	233	981		878	0	764	878	0	764
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.74	0.74	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.8	24.8	24.8	39.8	31.4	0.0	8.4	0.0	8.3	12.6	0.0	8.3
Incr Delay (d2), s/veh	0.2	4.4	4.2	0.3	0.8	0.0	0.0	0.0	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.2	5.4	0.3	4.0	0.0	0.1	0.0	0.1	6.2	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	29.2	29.1	40.0	32.1	0.0	8.5	0.0	8.3	15.0	0.0	8.3
LnGrp LOS	C	C	C	D	C		A	A	A	B	A	A
Approach Vol, veh/h		565			364	A		22			484	
Approach Delay, s/veh		29.1			32.4			8.4			14.8	
Approach LOS		C			C			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		56.0		34.0		56.0		34.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		51.5		29.5		51.5		29.5				
Max Q Clear Time (g_c+I1), s		2.6		15.4		22.1		16.5				
Green Ext Time (p_c), s		0.1		2.9		1.6		1.9				
Intersection Summary												
HCM 6th Ctrl Delay			24.8									
HCM 6th LOS			C									
Notes												

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	3.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		Y	
Traffic Vol, veh/h	15	127	509	4	6	135
Future Vol, veh/h	15	127	509	4	6	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	91	91	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	146	559	4	7	165

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	563	0	-	0	741	561
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	180	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1008	-	-	-	384	527
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1008	-	-	-	377	527
Mov Cap-2 Maneuver	-	-	-	-	464	-
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1008	-	-	-	524
HCM Lane V/C Ratio	0.017	-	-	-	0.328
HCM Control Delay (s)	8.6	-	-	-	15.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.4

Intersection						
Int Delay, s/veh	1.7					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		Y	
Traffic Vol, veh/h	98	425	268	1	2	50
Future Vol, veh/h	98	425	268	1	2	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	79	79	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	518	339	1	2	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	340	0	-	0	1098	340
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	758	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1219	-	-	-	235	702
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	463	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1219	-	-	-	212	702
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1219	-	-	-	665
HCM Lane V/C Ratio	0.098	-	-	-	0.097
HCM Control Delay (s)	8.3	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.3

Intersection												
Int Delay, s/veh	304.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	270	90	130	610	20	260	35	25	20	90	145
Future Vol, veh/h	35	270	90	130	610	20	260	35	25	20	90	145
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	-	150	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	293	98	141	663	22	283	38	27	22	98	158

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	685	0	0	391	0	0	1502	1385	342	1407	1423	674
Stage 1	-	-	-	-	-	-	418	418	-	956	956	-
Stage 2	-	-	-	-	-	-	1084	967	-	451	467	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	908	-	-	1168	-	-	~ 100	143	701	117	136	455
Stage 1	-	-	-	-	-	-	612	591	-	310	336	-
Stage 2	-	-	-	-	-	-	~ 263	333	-	588	562	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	908	-	-	1168	-	-	~ 36	120	701	85	115	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 56	204	-	188	205	-
Stage 1	-	-	-	-	-	-	586	566	-	297	295	-
Stage 2	-	-	-	-	-	-	~ 101	293	-	505	538	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.5	$ 1602.3	51.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	56	290	908	-	-	1168	-	-	188	310
HCM Lane V/C Ratio	5.047	0.225	0.042	-	-	0.121	-	-	0.116	0.824
HCM Control Delay (s)	$ 1967.2	21	9.1	-	-	8.5	-	-	26.6	53.7
HCM Lane LOS	F	C	A	-	-	A	-	-	D	F
HCM 95th %tile Q(veh)	31.7	0.8	0.1	-	-	0.4	-	-	0.4	7

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	41.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	580	270	50	490	15	125	125	135	15	50	85
Future Vol, veh/h	105	580	270	50	490	15	125	125	135	15	50	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	-	150	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	630	293	54	533	16	136	136	147	16	54	92

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	549	0	0	923	0	0	1727	1662	777	1795	1800	541
Stage 1	-	-	-	-	-	-	1005	1005	-	649	649	-
Stage 2	-	-	-	-	-	-	722	657	-	1146	1151	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1021	-	-	740	-	-	~ 70	~ 97	397	62	80	541
Stage 1	-	-	-	-	-	-	291	319	-	458	466	-
Stage 2	-	-	-	-	-	-	418	462	-	242	272	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1021	-	-	740	-	-	~ 36	~ 80	397	~ 12	66	541
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 108	172	-	~ 15	144	-
Stage 1	-	-	-	-	-	-	258	283	-	407	432	-
Stage 2	-	-	-	-	-	-	281	428	-	70	242	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.9	181	91
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	108	244	1021	-	-	740	-	-	15	268
HCM Lane V/C Ratio	1.258	1.158	0.112	-	-	0.073	-	-	1.087	0.548
HCM Control Delay (s)	245.5	150	9	-	-	10.2	-	-	$ 607.7	33.6
HCM Lane LOS	F	F	A	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	9.1	13	0.4	-	-	0.2	-	-	2.6	3

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary — 2040 Total AM_Improved.syn
14: US-30 & Christensen Road — 02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	35	270	90	130	610	20	260	35	25	20	90	145
Future Volume (veh/h)	35	270	90	130	610	20	260	35	25	20	90	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	38	293	98	141	663	22	283	38	27	22	98	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	884	749	477	723	24	331	290	206	492	213	272
Arrive On Green	0.01	0.19	0.19	0.48	0.48	0.48	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1500	1575	1335	993	1516	50	1158	857	609	1337	629	802
Grp Volume(v), veh/h	38	293	98	141	0	685	283	0	65	22	0	223
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	993	0	1566	1158	0	1465	1337	0	1431
Q Serve(g_s), s	1.1	14.5	5.5	8.9	0.0	36.6	19.5	0.0	2.8	1.0	0.0	11.0
Cycle Q Clear(g_c), s	1.1	14.5	5.5	15.9	0.0	36.6	30.5	0.0	2.8	3.8	0.0	11.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.42	1.00		0.56
Lane Grp Cap(c), veh/h	184	884	749	477	0	747	331	0	497	492	0	485
V/C Ratio(X)	0.21	0.33	0.13	0.30	0.00	0.92	0.85	0.00	0.13	0.04	0.00	0.46
Avail Cap(c_a), veh/h	258	884	749	477	0	747	331	0	497	492	0	485
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	22.0	18.3	18.9	0.0	21.9	36.3	0.0	20.6	21.9	0.0	23.3
Incr Delay (d2), s/veh	0.5	0.9	0.3	1.6	0.0	18.0	23.5	0.0	0.5	0.2	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.3	1.8	2.2	0.0	16.1	8.4	0.0	1.0	0.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.7	22.9	18.7	20.5	0.0	39.8	59.9	0.0	21.1	22.1	0.0	26.4
LnGrp LOS	B	C	B	C	A	D	E	A	C	C	A	C
Approach Vol, veh/h		429			826			348			245	
Approach Delay, s/veh		21.6			36.5			52.6			26.0	
Approach LOS		C			D			D			C	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		35.0		55.0		35.0	7.6	47.4				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		30.5		50.5		30.5	7.5	38.5				
Max Q Clear Time (g_c+I1), s		32.5		16.5		13.0	3.1	38.6				
Green Ext Time (p_c), s		0.0		2.2		1.3	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			34.7									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary — 2040 Total PM_Improved.syn
14: US-30 & Christensen Road — 02/11/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	105	580	270	50	490	15	125	125	135	15	50	85
Future Volume (veh/h)	105	580	270	50	490	15	125	125	135	15	50	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	114	630	293	54	533	16	136	136	114	16	54	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	404	1006	853	278	816	25	334	207	173	202	180	196
Arrive On Green	0.04	0.43	0.43	0.54	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1500	1575	1335	606	1521	46	1280	792	664	1130	688	752
Grp Volume(v), veh/h	114	630	293	54	0	549	136	0	250	16	0	113
Grp Sat Flow(s),veh/h/ln	1500	1575	1335	606	0	1567	1280	0	1456	1130	0	1440
Q Serve(g_s), s	2.9	28.1	13.2	5.9	0.0	22.5	8.6	0.0	13.8	1.2	0.0	5.7
Cycle Q Clear(g_c), s	2.9	28.1	13.2	24.9	0.0	22.5	14.2	0.0	13.8	14.9	0.0	5.7
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.46	1.00		0.52
Lane Grp Cap(c), veh/h	404	1006	853	278	0	841	334	0	380	202	0	376
V/C Ratio(X)	0.28	0.63	0.34	0.19	0.00	0.65	0.41	0.00	0.66	0.08	0.00	0.30
Avail Cap(c_a), veh/h	434	1006	853	278	0	841	334	0	380	202	0	376
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	17.3	13.1	22.4	0.0	14.9	32.4	0.0	29.7	36.3	0.0	26.7
Incr Delay (d2), s/veh	0.3	2.2	0.8	1.6	0.0	3.9	3.7	0.0	8.6	0.8	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	11.2	4.4	0.9	0.0	8.3	2.9	0.0	5.6	0.4	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	19.5	13.9	24.0	0.0	18.8	36.0	0.0	38.3	37.1	0.0	28.7
LnGrp LOS	B	B	B	C	A	B	D	A	D	D	A	C
Approach Vol, veh/h		1037			603			386			129	
Approach Delay, s/veh		17.1			19.3			37.5			29.7	
Approach LOS		B			B			D			C	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		28.0		62.0		28.0	9.2	52.8				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		23.5		57.5		23.5	6.5	46.5				
Max Q Clear Time (g_c+I1), s		16.2		30.1		16.9	4.9	26.9				
Green Ext Time (p_c), s		1.2		5.9		0.3	0.0	4.1				
Intersection Summary												
HCM 6th Ctrl Delay			22.1									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✣			✣	
Traffic Vol, veh/h	9	99	17	3	403	0	12	4	4	1	6	72
Future Vol, veh/h	9	99	17	3	403	0	12	4	4	1	6	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	95	95	95	71	71	71	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	111	19	3	424	0	17	6	6	1	8	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	424	0	0	130	0	0	610	561	111	577	580	424
Stage 1	-	-	-	-	-	-	131	131	-	430	430	-
Stage 2	-	-	-	-	-	-	479	430	-	147	150	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1135	-	-	1455	-	-	407	436	942	428	426	630
Stage 1	-	-	-	-	-	-	873	788	-	603	583	-
Stage 2	-	-	-	-	-	-	568	583	-	856	773	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1135	-	-	1455	-	-	342	431	942	418	421	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	485	-	496	484	-
Stage 1	-	-	-	-	-	-	865	781	-	598	582	-
Stage 2	-	-	-	-	-	-	480	582	-	837	766	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	13	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	476	1135	-	-	1455	-	-	614
HCM Lane V/C Ratio	0.059	0.009	-	-	0.002	-	-	0.161
HCM Control Delay (s)	13	8.2	-	-	7.5	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✣			✣	
Traffic Vol, veh/h	64	385	13	4	198	2	16	12	14	3	1	22
Future Vol, veh/h	64	385	13	4	198	2	16	12	14	3	1	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	78	78	78	75	75	75	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	74	443	15	5	254	3	21	16	19	5	2	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	257	0	0	458	0	0	875	858	443	880	870	254
Stage 1	-	-	-	-	-	-	591	591	-	264	264	-
Stage 2	-	-	-	-	-	-	284	267	-	616	606	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1308	-	-	1103	-	-	270	294	615	268	290	785
Stage 1	-	-	-	-	-	-	493	494	-	741	690	-
Stage 2	-	-	-	-	-	-	723	688	-	478	487	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1308	-	-	1103	-	-	245	276	615	240	272	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	363	-	336	364	-
Stage 1	-	-	-	-	-	-	465	466	-	699	687	-
Stage 2	-	-	-	-	-	-	687	685	-	422	459	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	15.1	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	413	1308	-	-	1103	-	-	655
HCM Lane V/C Ratio	0.136	0.056	-	-	0.005	-	-	0.061
HCM Control Delay (s)	15.1	7.9	-	-	8.3	-	-	10.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0	-	-	0.2

Intersection												
Int Delay, s/veh	3.4											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✥			✥	
Traffic Vol, veh/h	15	255	35	30	550	5	60	5	5	5	10	95
Future Vol, veh/h	15	255	35	30	550	5	60	5	5	5	10	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	277	38	32	579	5	65	5	5	5	11	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	315	0	0	1012	957	277	976	990	579
Stage 1	-	-	-	-	-	-	309	309	-	643	643	-
Stage 2	-	-	-	-	-	-	703	648	-	333	347	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	991	-	-	1245	-	-	218	258	762	230	246	515
Stage 1	-	-	-	-	-	-	701	660	-	462	468	-
Stage 2	-	-	-	-	-	-	428	466	-	681	635	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	991	-	-	1245	-	-	165	247	762	219	236	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	344	-	337	340	-
Stage 1	-	-	-	-	-	-	690	649	-	455	456	-
Stage 2	-	-	-	-	-	-	325	454	-	660	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	23.3	14.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	272	991	-	-	1245	-	-	481
HCM Lane V/C Ratio	0.28	0.016	-	-	0.025	-	-	0.249
HCM Control Delay (s)	23.3	8.7	-	-	8	-	-	14.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	1

Intersection												
Int Delay, s/veh	2.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✥			✥	
Traffic Vol, veh/h	85	550	90	30	400	5	50	15	20	5	5	30
Future Vol, veh/h	85	550	90	30	400	5	50	15	20	5	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	598	98	33	435	5	54	16	22	5	5	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	696	0	0	1305	1288	598	1351	1381	435
Stage 1	-	-	-	-	-	-	782	782	-	501	501	-
Stage 2	-	-	-	-	-	-	523	506	-	850	880	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1120	-	-	900	-	-	137	164	502	127	144	621
Stage 1	-	-	-	-	-	-	387	405	-	552	543	-
Stage 2	-	-	-	-	-	-	537	540	-	355	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	900	-	-	116	145	502	105	127	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	223	247	-	200	227	-
Stage 1	-	-	-	-	-	-	355	372	-	507	523	-
Stage 2	-	-	-	-	-	-	485	520	-	298	335	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.6	26	14.6
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	262	1120	-	-	900	-	-	420
HCM Lane V/C Ratio	0.353	0.082	-	-	0.036	-	-	0.104
HCM Control Delay (s)	26	8.5	-	-	9.2	-	-	14.6
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.5	0.3	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✥			✥	
Traffic Vol, veh/h	15	255	35	30	550	5	60	5	5	5	10	95
Future Vol, veh/h	15	255	35	30	550	5	60	5	5	5	10	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	95	95	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	277	38	32	579	5	65	5	5	5	11	103

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	315	0	0	1012	957	277	976	990	579
Stage 1	-	-	-	-	-	-	309	309	-	643	643	-
Stage 2	-	-	-	-	-	-	703	648	-	333	347	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	991	-	-	1245	-	-	218	258	762	230	246	515
Stage 1	-	-	-	-	-	-	701	660	-	462	468	-
Stage 2	-	-	-	-	-	-	428	466	-	681	635	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	991	-	-	1245	-	-	165	247	762	219	236	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	344	-	337	340	-
Stage 1	-	-	-	-	-	-	690	649	-	455	456	-
Stage 2	-	-	-	-	-	-	325	454	-	660	625	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	23.3	14.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	272	991	-	-	1245	-	-	481
HCM Lane V/C Ratio	0.28	0.016	-	-	0.025	-	-	0.249
HCM Control Delay (s)	23.3	8.7	-	-	8	-	-	14.9
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱		✥			✥	
Traffic Vol, veh/h	85	550	90	30	400	5	50	15	20	5	5	30
Future Vol, veh/h	85	550	90	30	400	5	50	15	20	5	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	325	325	-	325	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	598	98	33	435	5	54	16	22	5	5	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	696	0	0	1305	1288	598	1351	1381	435
Stage 1	-	-	-	-	-	-	782	782	-	501	501	-
Stage 2	-	-	-	-	-	-	523	506	-	850	880	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1120	-	-	900	-	-	137	164	502	127	144	621
Stage 1	-	-	-	-	-	-	387	405	-	552	543	-
Stage 2	-	-	-	-	-	-	537	540	-	355	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	900	-	-	116	145	502	105	127	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	223	247	-	200	227	-
Stage 1	-	-	-	-	-	-	355	372	-	507	523	-
Stage 2	-	-	-	-	-	-	485	520	-	298	335	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.6	26	14.6
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	262	1120	-	-	900	-	-	420
HCM Lane V/C Ratio	0.353	0.082	-	-	0.036	-	-	0.104
HCM Control Delay (s)	26	8.5	-	-	9.2	-	-	14.6
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.5	0.3	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		↰↱	
Traffic Vol, veh/h	6	99	353	6	7	39
Future Vol, veh/h	6	99	353	6	7	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	92	92	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	116	384	7	8	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	518	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1168	-	-	-	518	660
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	896	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1168	-	-	-	515	660
Mov Cap-2 Maneuver	-	-	-	-	576	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	646
HCM Lane V/C Ratio	0.006	-	-	-	0.081
HCM Control Delay (s)	8.1	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		↰↱	
Traffic Vol, veh/h	37	321	204	4	4	18
Future Vol, veh/h	37	321	204	4	4	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	76	76	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	401	268	5	6	26

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	273	0	-	0	764	271
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	493	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1290	-	-	-	372	768
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1290	-	-	-	359	768
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1290	-	-	-	681
HCM Lane V/C Ratio	0.036	-	-	-	0.047
HCM Control Delay (s)	7.9	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	225	415	20	40	115
Future Vol, veh/h	20	225	415	20	40	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	245	451	22	43	125

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	751	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	378	600
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	370	600
Mov Cap-2 Maneuver	-	-	-	-	474	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	561
HCM Lane V/C Ratio	0.02	-	-	-	0.3
HCM Control Delay (s)	8.4	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	95	500	405	20	35	50
Future Vol, veh/h	95	500	405	20	35	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	543	440	22	38	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	462	0	-	0	1200	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	749	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1099	-	-	-	204	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1099	-	-	-	185	608
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1099	-	-	-	412
HCM Lane V/C Ratio	0.094	-	-	-	0.224
HCM Control Delay (s)	8.6	-	-	-	16.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

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Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		⅄	
Traffic Vol, veh/h	20	225	415	20	40	115
Future Vol, veh/h	20	225	415	20	40	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	245	451	22	43	125

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	473	0	-	0	751	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1089	-	-	-	378	600
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	370	600
Mov Cap-2 Maneuver	-	-	-	-	474	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	760	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	561
HCM Lane V/C Ratio	0.02	-	-	-	0.3
HCM Control Delay (s)	8.4	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		⅄	
Traffic Vol, veh/h	95	500	405	20	35	50
Future Vol, veh/h	95	500	405	20	35	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	325	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	543	440	22	38	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	462	0	-	0	1200	451
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	749	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1099	-	-	-	204	608
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1099	-	-	-	185	608
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1099	-	-	-	412
HCM Lane V/C Ratio	0.094	-	-	-	0.224
HCM Control Delay (s)	8.6	-	-	-	16.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	2	35	84	79	197	1	74	1	40	0	6	0
Future Vol, veh/h	2	35	84	79	197	1	74	1	40	0	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	87	87	87	87	87	87	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	50	120	91	226	1	85	1	46	0	8	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	227	0	0	170	0	0	469	465	50	549	585	227
Stage 1	-	-	-	-	-	-	56	56	-	409	409	-
Stage 2	-	-	-	-	-	-	413	409	-	140	176	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1341	-	-	1407	-	-	505	495	1018	446	423	812
Stage 1	-	-	-	-	-	-	956	848	-	619	596	-
Stage 2	-	-	-	-	-	-	616	596	-	863	753	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1341	-	-	1407	-	-	473	462	1018	403	395	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	502	490	-	486	452	-
Stage 1	-	-	-	-	-	-	954	846	-	618	557	-
Stage 2	-	-	-	-	-	-	568	557	-	821	751	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.2	12.5	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	609	1341	-	-	1407	-	-	452
HCM Lane V/C Ratio	0.217	0.002	-	-	0.065	-	-	0.018
HCM Control Delay (s)	12.5	7.7	-	-	7.7	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	1	170	101	56	87	3	121	0	90	3	3	5
Future Vol, veh/h	1	170	101	56	87	3	121	0	90	3	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	91	91	91	80	80	80	34	34	34
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	202	120	62	96	3	151	0	113	9	9	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	322	0	0	438	427	202	543	546	98
Stage 1	-	-	-	-	-	-	204	204	-	222	222	-
Stage 2	-	-	-	-	-	-	234	223	-	321	324	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1494	-	-	1238	-	-	529	520	839	451	445	958
Stage 1	-	-	-	-	-	-	798	733	-	780	720	-
Stage 2	-	-	-	-	-	-	769	719	-	691	650	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1238	-	-	494	493	839	375	422	958
Mov Cap-2 Maneuver	-	-	-	-	-	-	566	546	-	447	478	-
Stage 1	-	-	-	-	-	-	797	732	-	779	684	-
Stage 2	-	-	-	-	-	-	710	683	-	598	649	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.1	14.1	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	657	1494	-	-	1238	-	-	604
HCM Lane V/C Ratio	0.401	0.001	-	-	0.05	-	-	0.054
HCM Control Delay (s)	14.1	7.4	-	-	8.1	-	-	11.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0.2	-	-	0.2

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	125	140	105	310	5	120	5	135	5	10	5
Future Vol, veh/h	5	125	140	105	310	5	120	5	135	5	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	136	152	114	337	5	130	5	147	5	11	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	0	288	0	0	722	716	136	866	866	340
Stage 1	-	-	-	-	-	-	146	146	-	568	568	-
Stage 2	-	-	-	-	-	-	576	570	-	298	298	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1217	-	-	1274	-	-	342	356	913	274	291	702
Stage 1	-	-	-	-	-	-	857	776	-	508	506	-
Stage 2	-	-	-	-	-	-	503	505	-	711	667	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1217	-	-	1274	-	-	308	323	913	211	264	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	378	388	-	320	348	-
Stage 1	-	-	-	-	-	-	854	773	-	506	461	-
Stage 2	-	-	-	-	-	-	444	460	-	590	664	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	18.6	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	1217	-	-	1274	-	-	388
HCM Lane V/C Ratio	0.52	0.004	-	-	0.09	-	-	0.056
HCM Control Delay (s)	18.6	8	-	-	8.1	-	-	14.8
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	300	135	75	200	5	200	5	120	5	5	5
Future Vol, veh/h	5	300	135	75	200	5	200	5	120	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	326	147	82	217	5	217	5	130	5	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	222	0	0	473	0	0	725	722	326	861	867	220
Stage 1	-	-	-	-	-	-	336	336	-	384	384	-
Stage 2	-	-	-	-	-	-	389	386	-	477	483	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1347	-	-	1089	-	-	340	353	715	276	291	820
Stage 1	-	-	-	-	-	-	678	642	-	639	611	-
Stage 2	-	-	-	-	-	-	635	610	-	569	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1347	-	-	1089	-	-	314	325	715	210	268	820
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	419	-	302	354	-
Stage 1	-	-	-	-	-	-	675	639	-	636	565	-
Stage 2	-	-	-	-	-	-	578	564	-	460	551	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.3	27.8	14.2
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	499	1347	-	-	1089	-	-	408
HCM Lane V/C Ratio	0.708	0.004	-	-	0.075	-	-	0.04
HCM Control Delay (s)	27.8	7.7	-	-	8.6	-	-	14.2
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	5.6	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	125	140	105	310	5	120	5	135	5	10	5
Future Vol, veh/h	5	125	140	105	310	5	120	5	135	5	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	136	152	114	337	5	130	5	147	5	11	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	342	0	0	288	0	0	722	716	136	866	866	340
Stage 1	-	-	-	-	-	-	146	146	-	568	568	-
Stage 2	-	-	-	-	-	-	576	570	-	298	298	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1217	-	-	1274	-	-	342	356	913	274	291	702
Stage 1	-	-	-	-	-	-	857	776	-	508	506	-
Stage 2	-	-	-	-	-	-	503	505	-	711	667	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1217	-	-	1274	-	-	308	323	913	211	264	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	378	388	-	320	348	-
Stage 1	-	-	-	-	-	-	854	773	-	506	461	-
Stage 2	-	-	-	-	-	-	444	460	-	590	664	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	18.6	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	1217	-	-	1274	-	-	388
HCM Lane V/C Ratio	0.52	0.004	-	-	0.09	-	-	0.056
HCM Control Delay (s)	18.6	8	-	-	8.1	-	-	14.8
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱			✥			✥	
Traffic Vol, veh/h	5	300	135	75	200	5	200	5	120	5	5	5
Future Vol, veh/h	5	300	135	75	200	5	200	5	120	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	326	147	82	217	5	217	5	130	5	5	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	222	0	0	473	0	0	725	722	326	861	867	220
Stage 1	-	-	-	-	-	-	336	336	-	384	384	-
Stage 2	-	-	-	-	-	-	389	386	-	477	483	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1347	-	-	1089	-	-	340	353	715	276	291	820
Stage 1	-	-	-	-	-	-	678	642	-	639	611	-
Stage 2	-	-	-	-	-	-	635	610	-	569	553	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1347	-	-	1089	-	-	314	325	715	210	268	820
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	419	-	302	354	-
Stage 1	-	-	-	-	-	-	675	639	-	636	565	-
Stage 2	-	-	-	-	-	-	578	564	-	460	551	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.3	27.8	14.2
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	499	1347	-	-	1089	-	-	408
HCM Lane V/C Ratio	0.708	0.004	-	-	0.075	-	-	0.04
HCM Control Delay (s)	27.8	7.7	-	-	8.6	-	-	14.2
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	5.6	0	-	-	0.2	-	-	0.1

Timings
11: Whitney Road & US-30

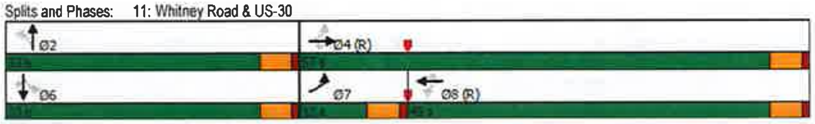
2040 Total AM_Improved.syn
03/20/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	180	235	40	5	525	45	210	110	5	40	410
Future Volume (vph)	180	235	40	5	525	45	210	110	5	40	410
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	7	4	4	8	8	8	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	57.0	57.0	45.0	45.0	45.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	13.3%	63.3%	63.3%	50.0%	50.0%	50.0%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effct Green (s)	52.5	52.5	52.5	40.5	40.5	40.5	28.5	28.5	28.5	28.5	28.5
Actuated g/C Ratio	0.58	0.58	0.58	0.45	0.45	0.45	0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.50	0.15	0.05	0.01	0.43	0.08	0.63	0.25	0.01	0.09	0.68
Control Delay	14.7	7.0	1.7	10.2	15.5	2.6	35.4	24.2	35.6	36.7	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	7.0	1.7	10.2	15.5	2.6	35.4	24.2	35.6	36.7	27.5
LOS	B	A	A	B	B	A	D	C	D	D	C
Approach Delay		9.6			14.4			31.4		28.4	
Approach LOS		A			B			C		C	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 19.8 — Intersection LOS: B
Intersection Capacity Utilization 72.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 11: Whitney Road & US-30



HCM 6th Signalized Intersection Summary
11: Whitney Road & US-30

2040 Total AM_Improved.syn
03/20/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	235	40	5	525	45	210	110	5	5	40	410
Future Volume (veh/h)	180	235	40	5	525	45	210	110	5	5	40	410
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	196	255	43	5	571	49	228	120	5	5	43	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	1746	779	567	1347	601	394	475	20	406	499	423
Arrive On Green	0.08	0.58	0.58	0.45	0.45	0.45	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1500	2993	1335	1081	2993	1335	1054	1501	63	1266	1575	1335
Grp Volume(v), veh/h	196	255	43	5	571	49	228	0	125	5	43	283
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	1081	1496	1335	1054	0	1564	1266	1575	1335
Q Serve(g_s), s	6.0	3.5	1.2	0.2	11.7	1.9	17.5	0.0	5.3	0.3	1.7	16.5
Cycle Q Clear(g_c), s	6.0	3.5	1.2	0.2	11.7	1.9	19.2	0.0	5.3	5.6	1.7	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	462	1746	779	567	1347	601	394	0	495	406	499	423
V/C Ratio(X)	0.42	0.15	0.06	0.01	0.42	0.08	0.58	0.00	0.25	0.01	0.09	0.67
Avail Cap(c_a), veh/h	462	1746	779	567	1347	601	394	0	495	406	499	423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.48	0.48	0.48
Uniform Delay (d), s/veh	11.6	8.5	8.1	13.7	16.8	14.1	28.3	0.0	22.8	24.9	21.6	26.7
Incr Delay (d2), s/veh	0.6	0.2	0.1	0.0	1.0	0.3	6.1	0.0	1.2	0.0	0.2	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.1	0.4	0.1	4.0	0.6	4.9	0.0	2.1	0.1	0.6	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	8.7	8.2	13.7	17.8	14.4	34.4	0.0	24.1	24.9	21.8	30.7
LnGrp LOS	B	A	A	B	B	B	C	A	C	C	C	C
Approach Vol, veh/h		494			625			353			331	
Approach Delay, s/veh		10.1			17.5			30.8			29.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	33.0	57.0	33.0	12.0	45.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.5	52.5	28.5	7.5	40.5
Max Q Clear Time (g_c+I1), s	21.2	5.5	18.5	8.0	13.7
Green Ext Time (p_c), s	1.0	2.0	0.9	0.0	4.3

Intersection Summary

HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱	↰	↑	↱
Traffic Volume (vph)	470	630	90	40	235	65	115	95	25	95	370
Future Volume (vph)	470	630	90	40	235	65	115	95	25	95	370
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	7	4			8			2		6	
Permitted Phases	4		4	8		8	2		6		6
Detector Phase	7	4	4	8	8	8	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	36.0	61.0	61.0	25.0	25.0	25.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	40.0%	67.8%	67.8%	27.8%	27.8%	27.8%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max
Act Effct Green (s)	56.5	56.5	56.5	28.8	28.8	28.8	24.5	24.5	24.5	24.5	24.5
Actuated g/C Ratio	0.63	0.63	0.63	0.32	0.32	0.32	0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.75	0.36	0.11	0.22	0.25	0.15	0.43	0.28	0.09	0.24	0.61
Control Delay	19.0	8.9	3.9	9.7	6.1	3.5	32.4	26.0	25.5	27.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	8.9	3.9	9.7	6.1	3.5	32.4	26.0	25.5	27.1	12.6
LOS	B	A	A	A	A	A	C	C	C	C	B
Approach Delay		12.6			6.0			29.3		16.0	
Approach LOS		B			A			C		B	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 14.0 — Intersection LOS: B
Intersection Capacity Utilization 64.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 11: Whitney Road & US-30

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↑	↱	↰	↑↱		↰	↑	↱
Traffic Volume (veh/h)	470	630	90	40	235	65	115	95	15	25	95	370
Future Volume (veh/h)	470	630	90	40	235	65	115	95	15	25	95	370
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575	1575
Adj Flow Rate, veh/h	511	677	97	43	242	71	125	103	16	27	103	239
Peak Hour Factor	0.92	0.93	0.93	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	739	1879	838	312	999	446	300	362	56	349	429	363
Arrive On Green	0.24	0.63	0.63	0.33	0.33	0.33	0.27	0.27	0.27	0.09	0.09	0.09
Sat Flow, veh/h	1500	2993	1335	696	2993	1335	1039	1331	207	1273	1575	1335
Grp Volume(v), veh/h	511	677	97	43	242	71	125	0	119	27	103	239
Grp Sat Flow(s),veh/h/ln	1500	1496	1335	696	1496	1335	1039	0	1538	1273	1575	1335
Q Serve(g_s), s	18.6	9.8	2.6	3.9	5.3	3.4	9.7	0.0	5.5	1.8	5.5	15.6
Cycle Q Clear(g_c), s	18.6	9.8	2.6	3.9	5.3	3.4	15.2	0.0	5.5	7.3	5.5	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	739	1879	838	312	999	446	300	0	419	349	429	363
V/C Ratio(X)	0.69	0.36	0.12	0.14	0.24	0.16	0.42	0.00	0.28	0.08	0.24	0.66
Avail Cap(c_a), veh/h	898	1879	838	312	999	446	300	0	419	349	429	363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	11.5	8.1	6.7	21.3	21.7	21.1	31.8	0.0	25.8	35.7	32.3	36.9
Incr Delay (d2), s/veh	1.7	0.5	0.3	0.9	0.6	0.8	4.2	0.0	1.7	0.3	0.9	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	2.9	0.7	0.7	1.9	1.1	2.7	0.0	2.2	0.6	2.2	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	8.6	7.0	22.2	22.3	21.9	36.1	0.0	27.5	36.0	33.2	42.9
LnGrp LOS	B	A	A	C	C	C	D	A	C	D	C	D
Approach Vol, veh/h		1285			356			244			369	
Approach Delay, s/veh		10.3			22.2			31.9			39.6	
Approach LOS		B			C			C			D	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		29.0		61.0		29.0	26.5	34.5				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		24.5		56.5		24.5	31.5	20.5				
Max Q Clear Time (g_c+I1), s		17.2		11.8		17.6	20.6	7.3				
Green Ext Time (p_c), s		0.7		5.9		0.9	1.4	1.7				
Intersection Summary												
HCM 6th Ctrl Delay			19.3									
HCM 6th LOS			B									

Queues
11: Whitney Road & US-30

2040 Total AM_Improved.syn
03/20/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	196	255	43	5	571	49	228	125	5	43	446
v/c Ratio	0.50	0.15	0.05	0.01	0.43	0.08	0.63	0.25	0.01	0.09	0.68
Control Delay	14.7	7.0	1.7	10.2	15.5	2.6	35.4	24.2	35.6	36.7	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	7.0	1.7	10.2	15.5	2.6	35.4	24.2	35.6	36.7	27.5
Queue Length 50th (ft)	28	19	1	1	145	5	110	51	3	24	140
Queue Length 95th (ft)	53	28	0	m4	204	13	192	96	m4	m34	m193
Internal Link Dist (ft)		1323			1938			1420		1506	
Turn Bay Length (ft)	375		375	375		375	100		150		200
Base Capacity (vph)	391	1738	795	419	1341	640	362	495	335	496	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.15	0.05	0.01	0.43	0.08	0.63	0.25	0.01	0.09	0.68

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Whitney Road & US-30

2040 Total PM_Improved.syn
03/20/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	511	677	97	43	242	71	125	119	27	103	402
v/c Ratio	0.75	0.36	0.11	0.22	0.25	0.15	0.43	0.28	0.09	0.24	0.61
Control Delay	19.0	8.9	3.9	9.7	6.1	3.5	32.4	26.0	25.5	27.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	8.9	3.9	9.7	6.1	3.5	32.4	26.0	25.5	27.1	12.6
Queue Length 50th (ft)	95	57	0	1	4	0	58	49	13	52	90
Queue Length 95th (ft)	m227	m126	m15	55	98	50	112	95	m19	m70	m130
Internal Link Dist (ft)		1323			1938			1420		1506	
Turn Bay Length (ft)	375		375	375		375	100		150		200
Base Capacity (vph)	746	1870	872	197	954	476	294	424	289	427	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.36	0.11	0.22	0.25	0.15	0.43	0.28	0.09	0.24	0.61

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

MEMORANDUM

TO: Tom Cobb, PE – AVI, pc.

FROM: Joseph L. Henderson, PE, PTOE

DATE: June 11, 2018

RE: Summary of the Analysis Performed for the Whitney Road Corridor Study

Based on your request, I have performed the traffic engineering analysis for the Whitney Road Corridor Study. The following sections outline the assumptions used in the analysis and the results of the analysis.

Assumptions

- **Saturation Flow Rate.** The saturation flow rate was assumed to be 1,600 passenger cars / hour / lane based on Wyoming motorists' driving habits and data collected for the Yellowstone Road Corridor Traffic Signal Timing Project.
- **Peak Hour Factor.** The peak hour factor for the existing conditions was based on the data collected for the study. For the Year 2040, the peak hour factor was assumed to be 0.92 for all of the approaches at US 30 and Dell Range Boulevard. At Beckle Road, the peak hour factor was assumed to be 0.85 in the Year 2040.
- **Signal Timing.** At US 30, a 90 second cycle length was assumed for both peak hours with a 70/30 split. At Dell Range Boulevard, a 100 second cycle length was assumed with a 60/40 split during the morning peak hour and a 50/50 split during the evening peak hour.

Roadway Classifications

- **Whitney Road.** Minor arterial south of Dell Range Boulevard, Major Collector north of Dell Range Boulevard
- **Dell Range Boulevard.** Principal arterial
- **US 30.** Principal arterial
- The classifications are based on the Cheyenne Urban Boundary and Functional Classification Concurrence Map (Cheyenne MPO. September 29, 2015).

Speed Limits

- Dell Range Boulevard – 45 MPH
- US 30 – 45 MPH

Traffic Count Data

- Peak hour traffic counts collected on April 4, 2017 were utilized to calculate the level of service for the existing conditions.

- Year 2040 peak hour counts were obtained from the Whitney Ranch Traffic Impact Study, Figure 11 (Kimley Horn. December 14, 2017). These counts were used in the analysis of the Year 2040 conditions.

Signal Warrants

- **Dell Range Road.** A traffic signal is not currently warranted but is expected to be warranted by the Year 2019. The peak hour warrant is expected to be satisfied during the evening peak hour assuming a straight-line increase from the existing peak hour volumes to the Year 2040 peak hour volumes.
- **US 30.** A traffic signal is not currently warranted but is expected to be warranted by the Year 2022. The peak hour warrant is expected to be satisfied during the evening peak hour assuming a straight-line increase from the existing peak hour volumes to the Year 2040 peak hour volumes.

Approach Laneage – Based on Year 2040 Volumes

- Figure 1 shows the laneage for each intersection assuming that Dell Range Boulevard is signalized. If Dell Range Boulevard is a roundabout, all of the approaches would have a single lane. At Whitney Road, Dell Range can operate acceptably in Year 2040 with one through lane in each direction.
- The intersection operation is summarized in Table 1.

Storage Lengths

- The storage lengths for the left and right turn lanes are summarized in Tables 2 and 3. Please note that the southbound through queue at Dell Range Boulevard is expected to be longer than the right turn lane.

Roundabout at Dell Range Boulevard

- I think that it’s a good option for the following reasons:
    - It could be constructed now as compared to waiting for a signal warrant to be satisfied.
    - It might cost less than the signalized intersection.
    - In the Year 2040, it is expected to operate better than the signalized intersection.

Attachments

Figure 1. Lane Configuration and Traffic Control

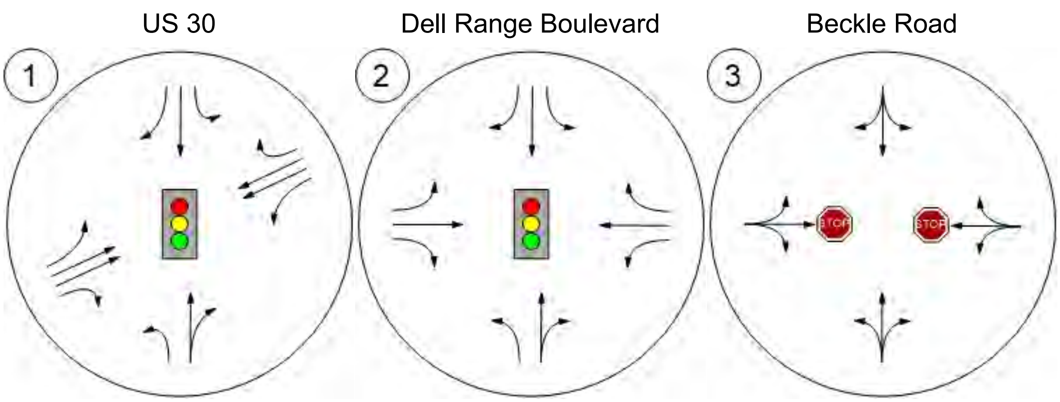


Table 1. Intersection Operational Summary

Signalized Intersection	Existing				Year 2040 - All Movements Stop at the Stop Line				Year 2040 - SBRT at US 30 Does Not Stop			
	Morning		Evening		Morning		Evening		Morning		Evening	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
US 30 / Whitney Road	This intersection is currently stop controlled.				**24.57**	**C**	**19.93**	**B**	**10.04**	**B**	**10.06**	**B**
Northbound Left Turn					25.63	C	29.14	C	42.68	D	43.07	D
Northbound Thru + Right Turn					23.07	C	25.17	C	38.61	D	37.36	D
Southbound Left Turn					25.45	C	28.33	C	41.34	D	41.38	D
Southbound Thru					22.54	C	25.34	C	37.03	D	37.80	D
Southbound Right Turn					53.27	D	47.7	D	0	A	0	A
Eastbound Left Turn					20.52	C	18.15	B	6.41	A	7.35	A
Eastbound Thru					7.39	A	7.64	A	1.97	A	2.84	A
Eastbound Right Turn					6.95	A	6.62	A	1.83	A	2.44	A
Westbound Left Turn					12.92	B	15.45	B	4.9	A	7.1	A
Westbound Thru					14.92	B	10.8	B	5.62	A	5.1	A
Westbound Right Turn					11.38	B	9.82	A	4.27	A	4.61	A
Dell Range Boulevard / Whitney Road	This intersection is currently stop controlled.				**38.46**	**D**	**29.11**	**C**	**38.46**	**D**	**29.11**	**C**
Northbound Left Turn					42.09	D	34.47	C	42.09	D	34.47	C
Northbound Thru + Right Turn					31.62	C	46.04	D	31.62	C	46.04	D
Southbound Left Turn					31.02	C	39.81	D	31.02	C	39.81	D
Southbound Thru					87.75	F	33.31	C	87.75	F	33.31	C
Southbound Right Turn					29.99	C	22.5	C	29.99	C	22.5	C
Eastbound Left Turn					15.84	B	23.28	C	15.84	B	23.28	C
Eastbound Thru					10.55	B	19.51	B	10.55	B	19.51	B
Eastbound Right Turn					9.76	A	15.26	B	9.76	A	15.26	B
Westbound Left Turn					12.24	B	24.28	C	12.24	B	24.28	C
Westbound Thru					12.57	B	17.31	B	12.57	B	17.31	B
Westbound Right Turn					9.58	A	14.51	B	9.58	A	14.51	B

Stop Controlled Intersections	Existing				Year 2040 - All Movements Stop at the Stop Line				Year 2040 Total			
	Morning		Evening		Morning		Evening		Morning		Evening	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
US 30 / Whitney Road					This intersection will be signalized in this scenario.				This intersection will be signalized in this scenario.			
Northbound Left Turn	22.96	C	20.8	C								
Northbound Thru + Right Turn	15.76	C	18.36	C								
Southbound Left Turn + Thru + Right Turn	14.72	B	17.9	C								
Eastbound Left Turn	8.4	A	7.79	A								
Westbound Left Turn	7.53	A	8.19	A								
Dell Range Boulevard / Whitney Road					This intersection will be signalized in this scenario.				This intersection will be signalized in this scenario.			
Northbound Left Turn + Thru + Right Turn	15	B	21.11	C								
Southbound Left Turn + Thru + Right Turn	12.59	B	13.28	B								
Eastbound Left Turn	7.66	A	7.64	A								
Westbound Left Turn	7.42	A	7.91	A								
Beckle Road / Whitney Road												
Northbound Left Turn	---	---	---	---	7.71	A	7.47	A	7.71	A	7.47	A
Southbound Left Turn	7.28	A	7.48	A	7.3	A	7.54	A	7.3	A	7.54	A
Eastbound Left Turn + Thru + Right Turn	---	---	---	---	10.15	B	9.89	A	10.15	B	9.89	A
Westbound Left Turn + Thru + Right Turn	9.55	A	9.19	A	10.79	B	11.06	B	10.79	B	11.06	B

Roundabout	Existing				Year 2040 - All Movements Stop at the Stop Line				Year 2040 Total			
	Morning		Evening		Morning		Evening		Morning		Evening	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Dell Range Boulevard / Whitney Road	This intersection currently stop controlled.				**9.7**	**A**	**16.92**	**C**	**9.7**	**A**	**16.92**	**C**
Northbound Approach					5.88	A	23.27	C	5.88	A	23.27	C
Southbound Approach					14.23	B	11.55	B	14.23	B	11.55	B
Eastbound Approach					7.02	A	16.37	C	7.02	A	16.37	C
Westbound Approach					7.37	A	14.63	B	7.37	A	14.63	B

Table 2. Deceleration Lane Lengths - All Approaches Stop at the Stop Line

Intersection	Movement [1]	Peak Hour Volume		95th Percentile Queue Length (ft)		Storage (ft) [6]	Decel Length (ft)	Taper (ft) [7]	Total (ft)
		AM	PM	AM	PM				
US 30 [2, 3]	Northbound Left Turn	61	41	45	33	50	375	156	425
	Southbound Left Turn	5	23	4	18	50	375	156	425
	Southbound Through	---	---	27	70	---	---	---	---
	Southbound Right Turn	412	368	382	328	382	375	156	757
	Eastbound Left Turn	182	472	78	222	222	435	156	657
	Eastbound Through	---	---	27	93	---	---	---	---
	Eastbound Right Turn	41	89	1	26	50	435	156	485
	Westbound Left Turn	4	40	2	23	50	435	156	485
	Westbound Through	---	---	190	53	---	---	---	---
	Westbound Right Turn	44	5	19	2	50	435	156	485
Dell Range Boulevard [4, 5]	Northbound Left Turn	106	125	85	82	85	375	156	460
	Southbound Left Turn	66	81	48	52	50	275	120	325
	Southbound Through	---	---	515	305	---	---	---	---
	Southbound Right Turn	106	59	83	39	83	275	120	358
	Eastbound Left Turn	15	83	9	65	65	435	156	500
	Eastbound Right Turn	59	146	24	80	80	435	156	515
	Westbound Left Turn	5	4	3	3	50	435	156	485
	Westbound Right Turn	41	99	17	52	50	435	156	485

Notes.

1. A stop condition is assumed on all approaches.

2. US 30 is classified as a principal arterial with a 50 MPH design speed.

3. Whitney Road is classified as a minor arterial north and south of US 30 with a 45 MPH design speed.

4. Dell Range Boulevard is classified as a principal arterial with a 50 MPH design speed.

5. Whitney Road is classified as a minor arterial south of Dell Range Boulevard with a 45 MPH design speed. North of Dell Range Boulevard, Whitney Road is classified as a major collector with a 35 MPH design speed.

6. The storage length is based on the 95th percentile queue length.

7. The taper lengths are based on a 12' wide turn lane. The taper length is included in the deceleration length.

Table 3. Deceleration Lane Lengths - SBRT at US 30 Does Not Stop

Intersection	Movement [1]	Peak Hour Volume		95th Percentile Queue Length (ft)		Storage (ft) [6]	Decel Length (ft)	Taper (ft) [7]	Total (ft)
		AM	PM	AM	PM				
US 30 [2, 3]	Northbound Left Turn	61	41	62	42	62	375	156	437
	Southbound Left Turn	5	23	5	23	50	375	156	425
	Southbound Through	---	---	36	90	---	---	---	---
	Southbound Right Turn	412	368	0	0	0	375	156	375
	Westbound Accel Lane	---	---	---	---	---	760	156	760
	Eastbound Left Turn	182	472	28	104	104	435	156	539
	Eastbound Through	---	---	9	40	---	---	---	---
	Eastbound Right Turn	41	89	1	12	50	435	156	485
	Westbound Left Turn	4	40	1	14	50	435	156	485
	Westbound Through	---	---	95	31	---	---	---	---
	Westbound Right Turn	44	5	10	1	50	435	156	485
Dell Range Boulevard [4, 5]	Northbound Left Turn	106	125	85	82	85	375	156	460
	Southbound Left Turn	66	81	48	52	50	275	120	325
	Southbound Through	---	---	515	305	---	---	---	---
	Southbound Right Turn	106	59	83	39	83	275	120	358
	Eastbound Left Turn	15	83	9	65	65	435	156	500
	Eastbound Right Turn	59	146	24	80	80	435	156	515
	Westbound Left Turn	5	4	3	3	50	435	156	485
	Westbound Right Turn	41	99	17	52	50	435	156	485

Notes.

1. A stop condition is assumed on all approaches.

2. US 30 is classified as a principal arterial with a 50 MPH design speed.

3. Whitney Road is classified as a minor arterial north and south of US 30 with a 45 MPH design speed.

4. Dell Range Boulevard is classified as a principal arterial with a 50 MPH design speed.

5. Whitney Road is classified as a minor arterial south of Dell Range Boulevard with a 45 MPH design speed. North of Dell Range Boulevard, Whitney Road is classified as a major collector with a 35 MPH design speed.

6. The storage length is based on the 95th percentile queue length.

7. The taper lengths are based on a 12' wide turn lane. The taper length is included in the deceleration and acceleration lengths.

Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	30	46	2	18	105	26	19	61	20	7	125	10
Total Analysis Volume [veh/h]	120	185	10	71	418	103	76	245	78	27	500	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	367			607			485			357		
Exiting Flow Rate [veh/h]	492			282			678			305		
Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36
Adjusted Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36

Lanes

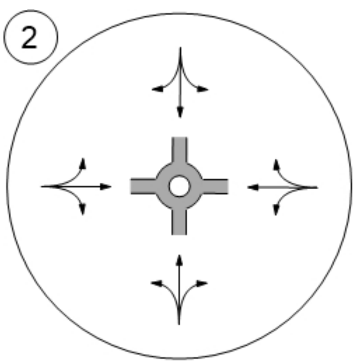
Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	295	556	375	532
Capacity of Entry and Bypass Lanes [veh/h]	949	744	842	959
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	931	729	826	941
X, volume / capacity	0.31	0.75	0.44	0.55

Movement, Approach, & Intersection Results

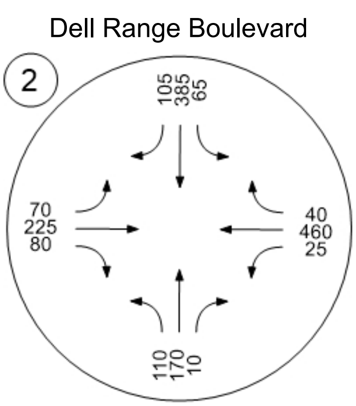
Lane LOS	A	C	B	B
95th-Percentile Queue Length [veh]	1.35	8.18	2.38	3.67
95th-Percentile Queue Length [ft]	33.66	204.51	59.43	91.65
Approach Delay [s/veh]	7.16	22.91	10.06	11.33
Approach LOS	A	C	B	B
Intersection Delay [s/veh]	14.03			
Intersection LOS	B			

Report Figure 0: Lane Configuration and Traffic Control

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	30	46	2	18	105	26	19	61	20	7	125	10
Total Analysis Volume [veh/h]	120	185	10	71	418	103	76	245	78	27	500	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	367			607			485			357		
Exiting Flow Rate [veh/h]	492			282			678			305		
Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36
Adjusted Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36

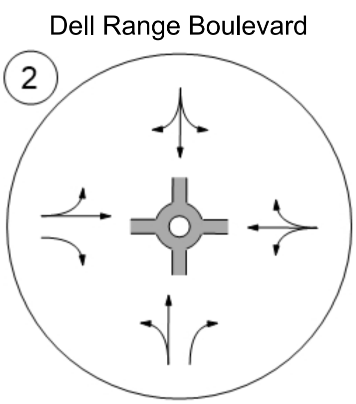
Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00	1380.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	286	10	556	301	74	532
Capacity of Entry and Bypass Lanes [veh/h]	1017	1017	744	914	914	959
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	997	997	729	896	896	941
X, volume / capacity	0.28	0.01	0.75	0.33	0.08	0.55

Movement, Approach, & Intersection Results

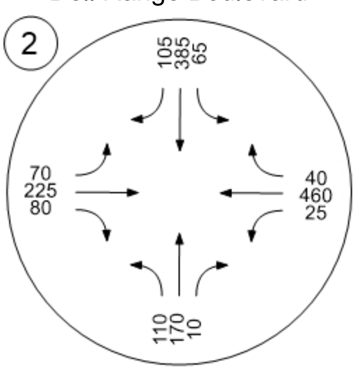
Lane LOS	A	A	C	A	A	B
95th-Percentile Queue Length [veh]	1.17	0.03	8.18	1.47	0.26	3.67
95th-Percentile Queue Length [ft]	29.21	0.68	204.51	36.65	6.55	91.65
Approach Delay [s/veh]	6.34		22.91	7.07		11.33
Approach LOS	A		C	A		B
Intersection Delay [s/veh]	13.25					
Intersection LOS	B					

Report Figure 0: Lane Configuration and Traffic Control



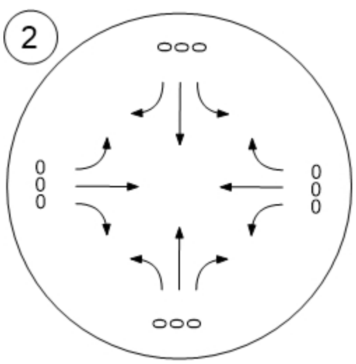
Report Figure 1a: Traffic Volume - Base Volume

Dell Range Boulevard

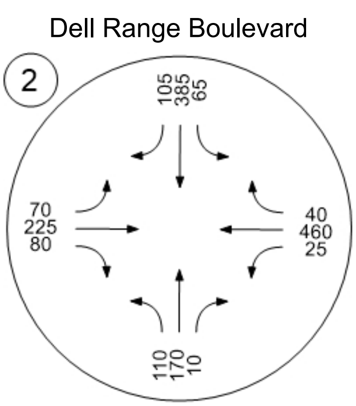


Report Figure 1b: Traffic Volume - In-Process Volume

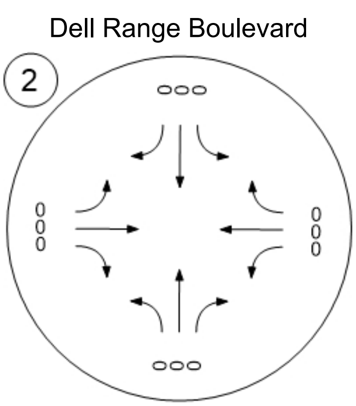
Dell Range Boulevard



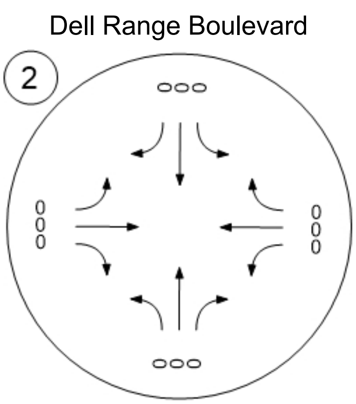
Report Figure 1c: Traffic Volume - Future Background Volume



Report Figure 1d: Traffic Volume - Net New Site Trips

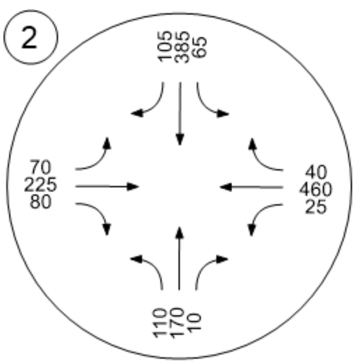


Report Figure 1e: Traffic Volume - Other Volume



Report Figure 1f: Traffic Volume - Future Total Volume

Dell Range Boulevard



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	30	46	2	18	105	26	19	61	20	7	125	10
Total Analysis Volume [veh/h]	120	185	10	71	418	103	76	245	78	27	500	39
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	367			607			485			357		
Exiting Flow Rate [veh/h]	492			282			678			305		
Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36
Adjusted Demand Flow Rate [veh/h]	110	170	9	65	385	95	70	225	72	25	460	36

Lanes

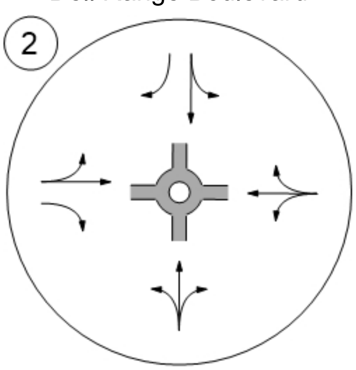
Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1420.00	1420.00	1380.00
B (coefficient)	0.00102	0.00091	0.00091	0.00091	0.00091	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	295	460	97	301	74	532
Capacity of Entry and Bypass Lanes [veh/h]	949	818	818	914	914	959
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	931	802	802	896	896	941
X, volume / capacity	0.31	0.56	0.12	0.33	0.08	0.55

Movement, Approach, & Intersection Results

Lane LOS	A	B	A	A	A	B
95th-Percentile Queue Length [veh]	1.35	3.76	0.40	1.47	0.26	3.67
95th-Percentile Queue Length [ft]	33.66	94.04	10.08	36.65	6.55	91.65
Approach Delay [s/veh]	7.16	11.74		7.07		11.33
Approach LOS	A	B		A		B
Intersection Delay [s/veh]	9.85					
Intersection LOS	A					

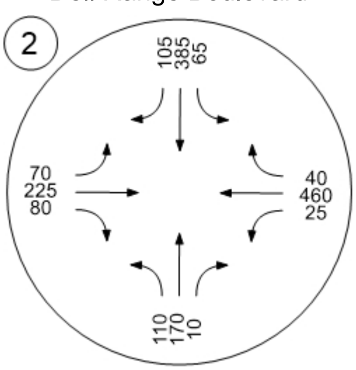
Report Figure 0: Lane Configuration and Traffic Control

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume

Dell Range Boulevard



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.565

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	170	10	65	385	105	70	225	80	25	460	40
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	30	46	2	18	105	26	19	61	20	7	125	10
Total Analysis Volume [veh/h]	120	185	10	71	418	103	76	245	78	27	500	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	30	0	10	30	0	10	60	0	10	60	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	35	0	11	37	0	10	19	0	35	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	36	28	36	28	28	56	49	49	56	47	47
g / C, Green / Cycle	0.36	0.28	0.36	0.28	0.28	0.56	0.49	0.49	0.56	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.05	0.24	0.07	0.07	0.14	0.05	0.02	0.29	0.03
s, saturation flow rate [veh/h]	1147	1561	1289	1575	1339	1037	1575	1339	1208	1575	1339
c, Capacity [veh/h]	207	438	378	435	370	394	772	656	589	744	633
d1, Uniform Delay [s]	39.96	29.23	29.49	34.69	28.21	25.40	15.16	13.73	15.58	19.65	14.30
k, delay calibration	0.11	0.11	0.11	0.19	0.11	0.50	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	0.61	0.21	11.28	0.36	0.99	0.21	0.34	0.14	3.89	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.41	0.17	0.89	0.26	0.18	0.29	0.11	0.04	0.62	0.06
d, Delay for Lane Group [s/veh]	42.08	29.85	29.71	45.97	28.57	26.39	15.36	14.07	15.72	23.54	14.47
Lane Group LOS	D	C	C	D	C	C	B	B	B	C	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.88	3.54	1.03	10.14	1.80	0.80	3.00	0.92	0.26	8.44	0.47
50th-Percentile Queue Length [ft/ln]	46.94	88.43	25.68	253.58	44.98	20.05	75.01	22.96	6.56	211.06	11.63
95th-Percentile Queue Length [veh/ln]	3.38	6.37	1.85	15.37	3.24	1.44	5.40	1.65	0.47	13.21	0.84
95th-Percentile Queue Length [ft/ln]	84.49	159.17	46.23	384.16	80.97	36.09	135.01	41.33	11.81	330.19	20.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.08	29.85	29.85	29.71	45.97	28.57	26.39	15.36	14.07	15.72	23.54	14.47
Movement LOS	D	C	C	C	D	C	C	B	B	B	C	B
d_A, Approach Delay [s/veh]	34.50			41.00			17.21			22.54		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	29.25											
Intersection LOS	C											
Intersection V/C	0.565											

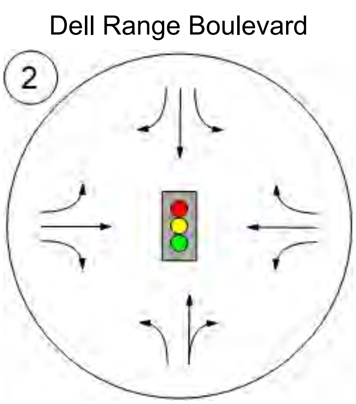
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	620	660	300	800
d_b, Bicycle Delay [s]	23.81	22.45	36.13	18.00
I_b,int, Bicycle LOS Score for Intersection	2.036	2.459	2.165	2.419
Bicycle LOS	B	B	B	B

Sequence

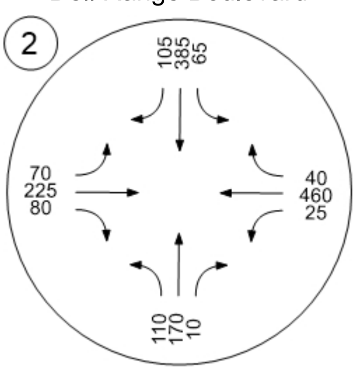
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Report Figure 0: Lane Configuration and Traffic Control

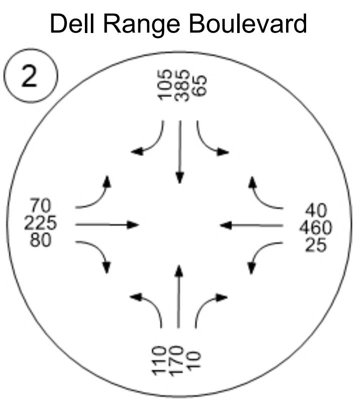


Report Figure 1a: Traffic Volume - Base Volume

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	34	125	2	22	94	15	27	136	35	4	82	24
Total Analysis Volume [veh/h]	136	500	10	87	375	59	109	543	142	16	326	98
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	694			449			449			699		
Exiting Flow Rate [veh/h]	501			663			489			601		
Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90
Adjusted Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90

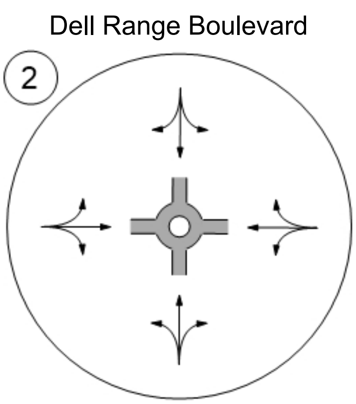
Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	606	489	746	414
Capacity of Entry and Bypass Lanes [veh/h]	681	874	874	677
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	667	856	856	664
X, volume / capacity	0.89	0.56	0.85	0.61

Movement, Approach, & Intersection Results

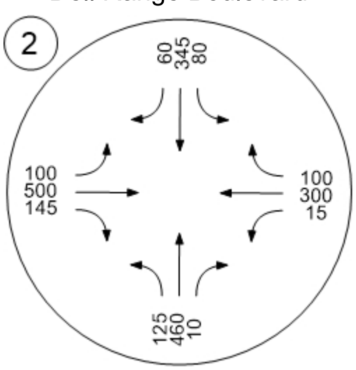
Lane LOS	E	B	D	C
95th-Percentile Queue Length [veh]	16.75	3.74	14.28	4.54
95th-Percentile Queue Length [ft]	418.87	93.44	357.04	113.56
Approach Delay [s/veh]	46.89	12.31	31.12	16.88
Approach LOS	E	B	D	C
Intersection Delay [s/veh]	28.67			
Intersection LOS	D			

Report Figure 0: Lane Configuration and Traffic Control



Report Figure 1f: Traffic Volume - Future Total Volume

Dell Range Boulevard



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	34	125	2	22	94	15	27	136	35	4	82	24
Total Analysis Volume [veh/h]	136	500	10	87	375	59	109	543	142	16	326	98
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	694			449			449			699		
Exiting Flow Rate [veh/h]	501			663			489			601		
Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90
Adjusted Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90

Lanes

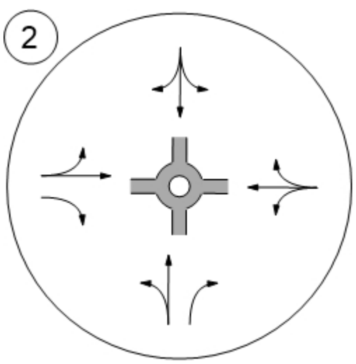
Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1380.00	1420.00	1420.00	1380.00
B (coefficient)	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	597	10	489	612	134	414
Capacity of Entry and Bypass Lanes [veh/h]	756	756	874	944	944	677
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	741	741	856	926	926	664
X, volume / capacity	0.79	0.01	0.56	0.65	0.14	0.61

Movement, Approach, & Intersection Results

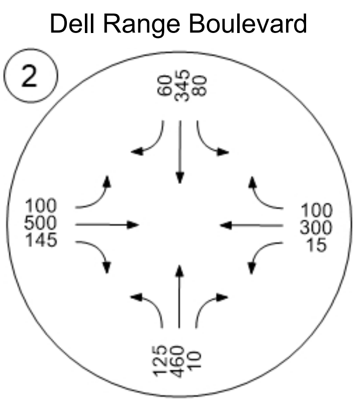
Lane LOS	D	A	B	B	A	C
95th-Percentile Queue Length [veh]	10.00	0.04	3.74	5.36	0.49	4.54
95th-Percentile Queue Length [ft]	249.90	0.92	93.44	133.89	12.35	113.56
Approach Delay [s/veh]	25.96		12.31	12.62		16.88
Approach LOS	D		B	B		C
Intersection Delay [s/veh]	16.92					
Intersection LOS	C					

Report Figure 0: Lane Configuration and Traffic Control

Dell Range Boulevard

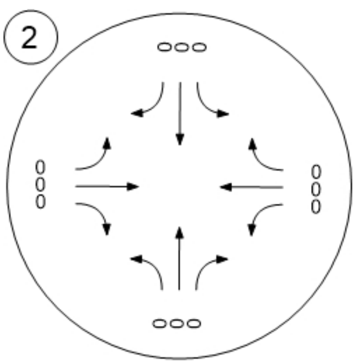


Report Figure 1a: Traffic Volume - Base Volume



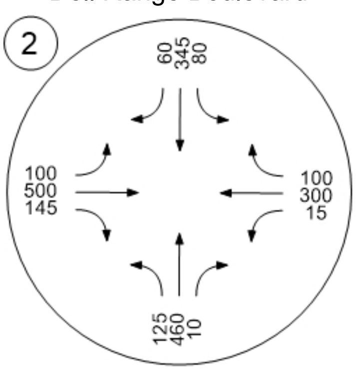
Report Figure 1b: Traffic Volume - In-Process Volume

Dell Range Boulevard

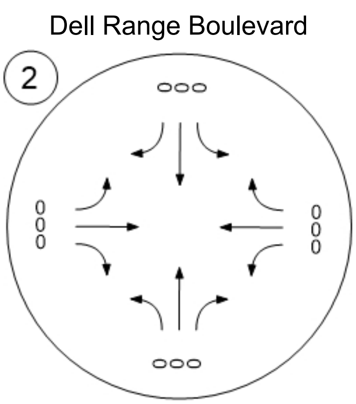


Report Figure 1c: Traffic Volume - Future Background Volume

Dell Range Boulevard

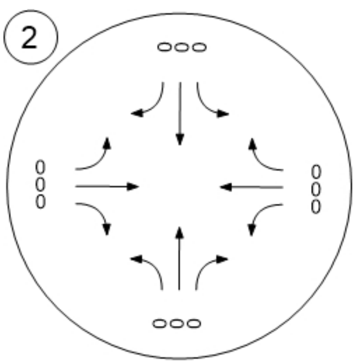


Report Figure 1d: Traffic Volume - Net New Site Trips



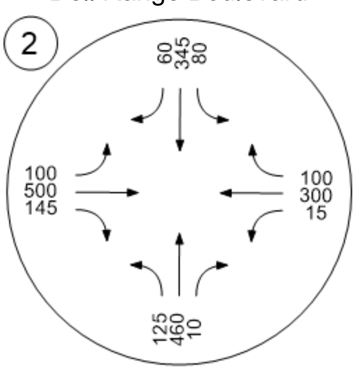
Report Figure 1e: Traffic Volume - Other Volume

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume

Dell Range Boulevard



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Roundabout	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour		

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	34	125	2	22	94	15	27	136	35	4	82	24
Total Analysis Volume [veh/h]	136	500	10	87	375	59	109	543	142	16	326	98
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	694			449			449			699		
Exiting Flow Rate [veh/h]	501			663			489			601		
Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90
Adjusted Demand Flow Rate [veh/h]	125	460	9	80	345	54	100	500	131	15	300	90

Lanes

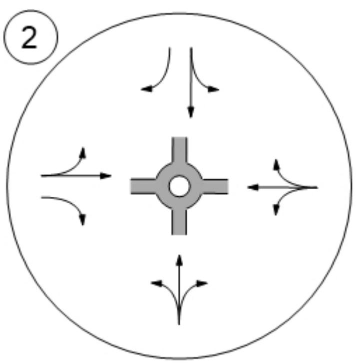
Overwrite Calculated Critical Headway	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1420.00	1420.00	1420.00	1380.00
B (coefficient)	0.00102	0.00091	0.00091	0.00091	0.00091	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	606	434	56	612	134	414
Capacity of Entry and Bypass Lanes [veh/h]	681	944	944	944	944	677
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	667	926	926	926	926	664
X, volume / capacity	0.89	0.46	0.06	0.65	0.14	0.61

Movement, Approach, & Intersection Results

Lane LOS	E	A	A	B	A	C
95th-Percentile Queue Length [veh]	16.75	2.52	0.19	5.36	0.49	4.54
95th-Percentile Queue Length [ft]	418.87	63.07	4.65	133.89	12.35	113.56
Approach Delay [s/veh]	46.89	8.91		12.62		16.88
Approach LOS	E	A		B		C
Intersection Delay [s/veh]	21.81					
Intersection LOS	C					

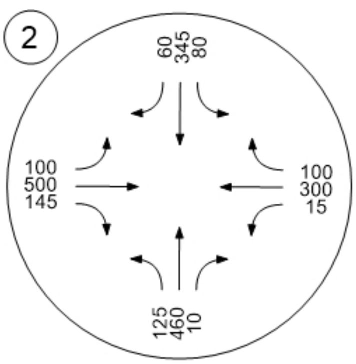
Report Figure 0: Lane Configuration and Traffic Control

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume

Dell Range Boulevard



Intersection Level Of Service Report
Intersection 2: Dell Range Boulevard

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Whitney Road			Whitney Road			Dell Range Boulevard			Dell Range Boulevard		
Base Volume Input [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	460	10	80	345	60	100	500	145	15	300	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000
Total 15-Minute Volume [veh/h]	34	125	2	22	94	15	27	136	35	4	82	24
Total Analysis Volume [veh/h]	136	500	10	87	375	59	109	543	142	16	326	98
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	10	30	0	10	30	0	10	60	0	10	60	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	46	0	10	35	0	12	35	0	9	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	44	35	44	34	34	48	42	42	48	39	39
g / C, Green / Cycle	0.44	0.35	0.44	0.34	0.34	0.48	0.42	0.42	0.48	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.11	0.30	0.08	0.22	0.04	0.09	0.32	0.10	0.02	0.19	0.07
s, saturation flow rate [veh/h]	1161	1569	1061	1575	1339	1173	1575	1339	995	1575	1339
c, Capacity [veh/h]	334	556	229	537	456	436	667	567	267	620	527
d1, Uniform Delay [s]	33.80	29.72	39.50	27.82	22.64	25.25	24.37	18.43	32.68	22.72	19.72
k, delay calibration	0.11	0.36	0.11	0.50	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	12.06	0.92	5.97	0.11	1.23	7.95	0.95	0.40	2.71	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.84	0.35	0.64	0.12	0.23	0.75	0.23	0.06	0.48	0.17
d, Delay for Lane Group [s/veh]	34.49	41.78	40.42	33.79	22.76	26.48	32.32	19.39	33.08	25.43	20.42
Lane Group LOS	C	D	D	C	C	C	C	B	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.80	11.93	1.13	7.70	0.88	1.39	11.09	2.06	0.20	5.64	1.45
50th-Percentile Queue Length [ft/ln]	44.89	298.23	28.27	192.38	22.03	34.64	277.34	51.43	5.12	141.03	36.25
95th-Percentile Queue Length [veh/ln]	3.23	17.59	2.04	12.24	1.59	2.49	16.56	3.70	0.37	9.54	2.61
95th-Percentile Queue Length [ft/ln]	80.80	439.84	50.89	306.11	39.65	62.36	413.90	92.57	9.21	238.41	65.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.49	41.78	41.78	40.42	33.79	22.76	26.48	32.32	19.39	33.08	25.43	20.42
Movement LOS	C	D	D	D	C	C	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	40.25			33.66			29.20			24.60		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	32.29											
Intersection LOS	C											
Intersection V/C	0.623											

Other Modes

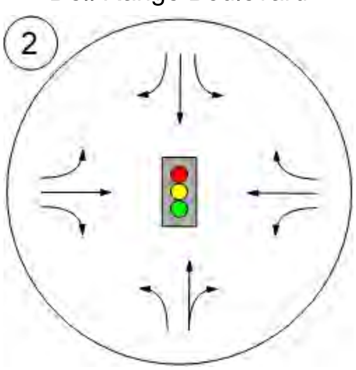
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	840	620	620	560
d_b, Bicycle Delay [s]	16.82	23.81	23.81	25.92
I_b,int, Bicycle LOS Score for Intersection	2.540	2.350	2.766	2.228
Bicycle LOS	B	B	C	B

Sequence

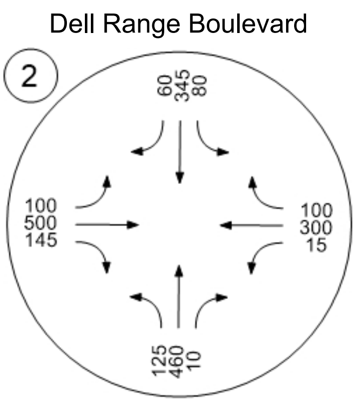
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Report Figure 0: Lane Configuration and Traffic Control

Dell Range Boulevard



Report Figure 1f: Traffic Volume - Future Total Volume



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APPENDIX F

Environmental

ENGINEERING
PLANNING
SURVEYING
PC

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United States Department of Agriculture

NRCS

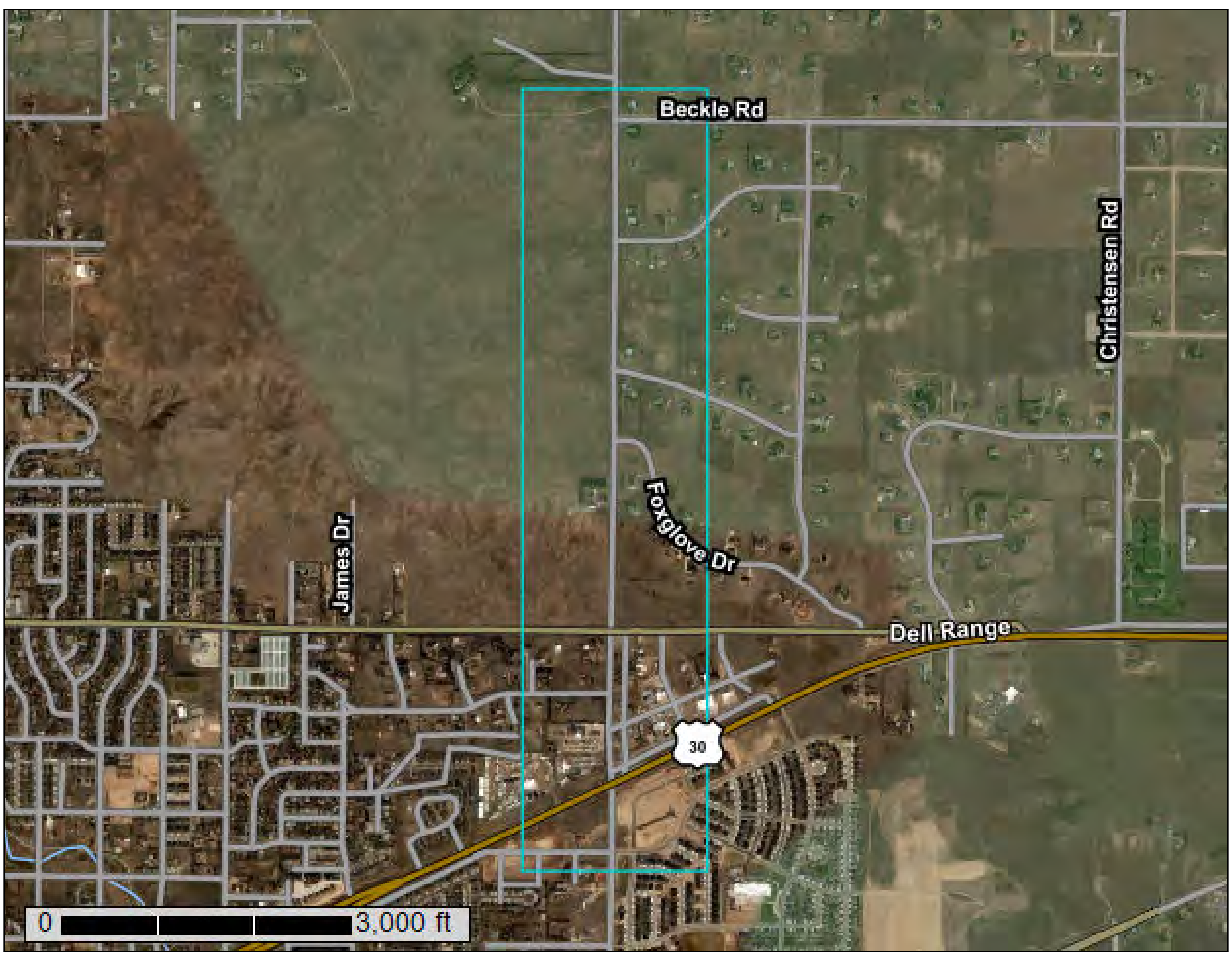
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Laramie County, Wyoming, Western Part

Whitney Road Corridor Study



June 5, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

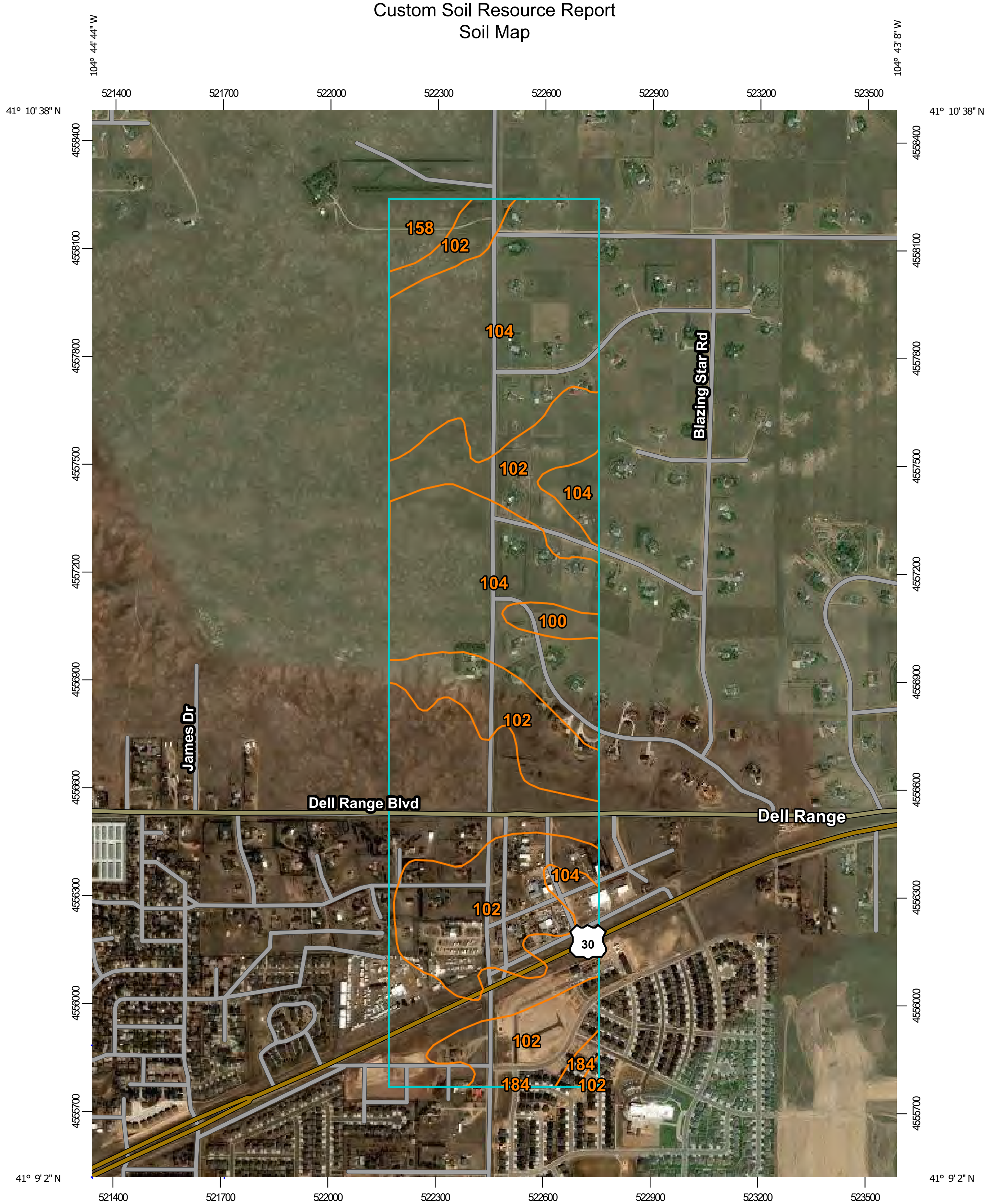
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:14,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Laramie County, Wyoming, Western Part
Survey Area Data: Version 11, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 22, 2016—Apr 5, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
100	Albinas loam, 0 to 6 percent slopes	5.0	1.4%
102	Altvan-Dix complex, 6 to 10 percent slopes	123.0	34.2%
104	Ascalon loam, cool, 0 to 6 percent slopes	221.5	61.6%
158	Poposhia silt loam, 0 to 6 percent slopes	7.5	2.1%
184	Urban land-Ascalon complex, 0 to 6 percent slopes	2.2	0.6%
Totals for Area of Interest		**359.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Laramie County, Wyoming, Western Part

100—Albinas loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 3j4x
Elevation: 4,100 to 6,500 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 125 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Albinas and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Albinas

Setting

Landform: Alluvial fans, terraces, draws
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 3 inches: loam
Bt - 3 to 25 inches: sandy clay loam
Bk - 25 to 60 inches: loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY (15-17SP) (R067XY222WY)
Hydric soil rating: No

Minor Components

Ascalon

Percent of map unit: 10 percent

Ecological site: LOAMY (15-17SP) (R067XY222WY)
Hydric soil rating: No

102—Altvan-Dix complex, 6 to 10 percent slopes

Map Unit Setting

National map unit symbol: 2tlq8
Elevation: 4,800 to 6,330 feet
Mean annual precipitation: 13 to 19 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 135 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Altvan and similar soils: 60 percent
Dix and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Altvan

Setting

Landform: Interfluves on alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loamy alluvium over tertiary aged sandy and gravelly alluvium

Typical profile

A - 0 to 9 inches: loam
Bt1 - 9 to 13 inches: sandy clay loam
Bt2 - 13 to 25 inches: sandy clay loam
Btk - 25 to 28 inches: sandy clay loam
2C - 28 to 80 inches: very gravelly sand

Properties and qualities

Slope: 6 to 8 percent
Depth to restrictive feature: 28 to 34 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Loamy (Ly) 12-17" PZ (R067AY122WY)
Hydric soil rating: No

Description of Dix

Setting

Landform: Interfluves on alluvial fans
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Tertiary aged sandy and gravelly alluvium

Typical profile

A - 0 to 10 inches: very gravelly sandy loam
C1 - 10 to 28 inches: very gravelly coarse sand
C2 - 28 to 80 inches: very gravelly coarse sand

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): 7s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Gravelly (Gr) 12-17" Precipitation Zone (R067AY112WY)
Hydric soil rating: No

Minor Components

Wages

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy (Ly) 12-17" PZ (R067AY122WY)
Hydric soil rating: No

104—Ascalon loam, cool, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tlp8
Elevation: 5,400 to 6,550 feet
Mean annual precipitation: 13 to 19 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 135 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Ascalon, cool, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon, Cool

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked sandy alluvium

Typical profile

Ap - 0 to 6 inches: loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: Loamy (Ly) 12-17" PZ (R067AY122WY)
Hydric soil rating: No

Minor Components

Altvan

Percent of map unit: 8 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy (Ly) 12-17" PZ (R067AY122WY)
Hydric soil rating: No

Wages

Percent of map unit: 7 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy (Ly) 12-17" PZ (R067AY122WY)
Hydric soil rating: No

158—Poposhia silt loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 3j6s
Elevation: 6,500 to 7,500 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 41 to 45 degrees F
Frost-free period: 90 to 115 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Poposhia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Poposhia

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Silty alluvium derived from sandstone and shale

Typical profile

A - 0 to 6 inches: silt loam
Bk - 6 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY (15-17SP) (R067XY222WY)
Hydric soil rating: No

Minor Components

Piezon

Percent of map unit: 8 percent
Ecological site: LOAMY (15-17SP) (R067XY222WY)
Hydric soil rating: No

Blazon

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Hydric soil rating: No

184—Urban land-Ascalon complex, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 3j7m
Elevation: 5,000 to 6,500 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 125 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 65 percent
Ascalon and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Alluvial fans, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy clay loam
H3 - 24 to 60 inches: loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Altvan

Percent of map unit: 5 percent
Hydric soil rating: No

Wages

Percent of map unit: 5 percent
Hydric soil rating: No

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IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

Last login June 05, 2019 03:42 PM MDT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Whitney Road Corridor

LOCATION

Laramie County, Wyoming

DESCRIPTION

Future
reconstruction of existing roadway and potential realignment north of Dell Range
Blvd.

Local office

Wyoming Ecological Services Field Office

(307) 772-2374
(307) 772-2358

5353 Yellowstone Road, Suite 308a
Cheyenne, WY 82009-4178

http://www.fws.gov/wyominges/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species

[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Preble's Meadow Jumping Mouse Zapus hudsonius preblei There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4090	Threatened

Birds

NAME	STATUS
Least Tern Sterna antillarum No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane Grus americana There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS
Pallid Sturgeon Scaphirhynchus albus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Colorado Butterfly Plant Gaura neomexicana var. coloradensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6110	Threatened
Ute Ladies'-tresses Spiranthes diluvialis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened

Western Prairie Fringed Orchid Platanthera praeclara No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669		Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Cassin's Sparrow Aimophila cassinii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9512	Breeds Aug 1 to Oct 10
Chestnut-collared Longspur Calcarius ornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
Golden Eagle Aquila chrysaetos This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lark Bunting Calamospiza melanocorys This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-billed Curlew Numenius americanus — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Mccown's Longspur Calcarius mccownii — Breeds May 1 to Aug 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9292

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Willow Flycatcher Empidonax traillii — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/3482

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

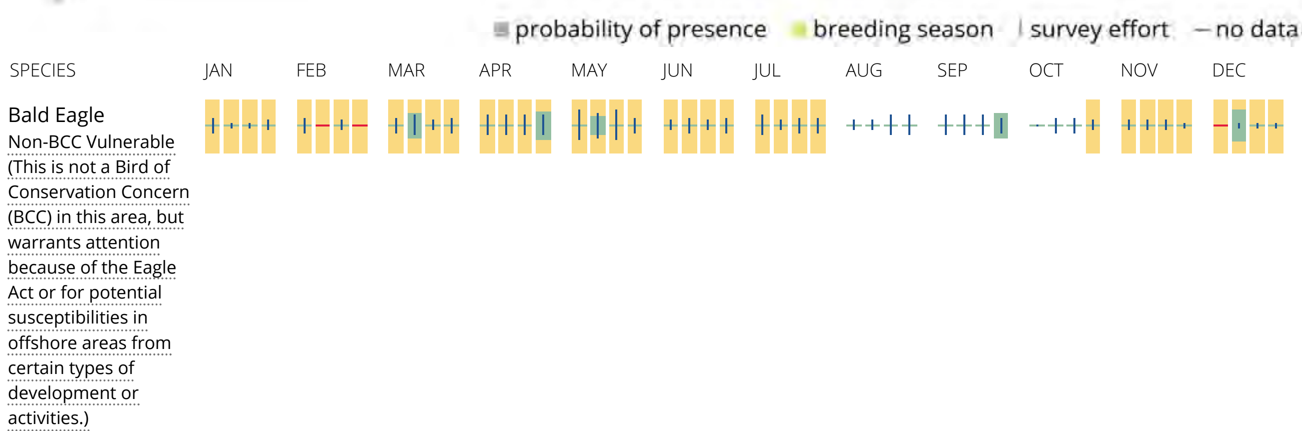
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

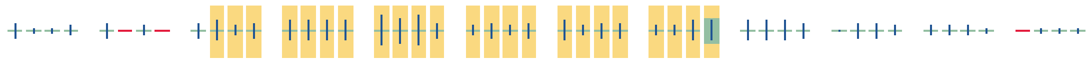
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

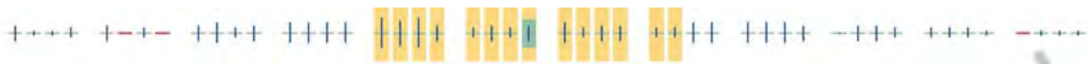


Burrowing Owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Cassin's Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Chestnut-collared Longspur
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

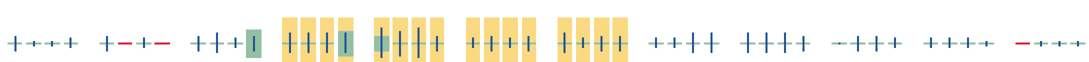


Golden Eagle
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

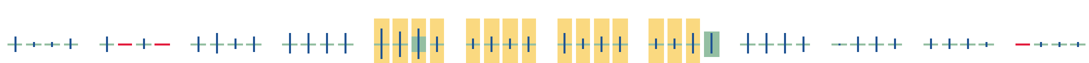
Lark Bunting
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Lesser Yellowlegs
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Mccown's Longspur
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



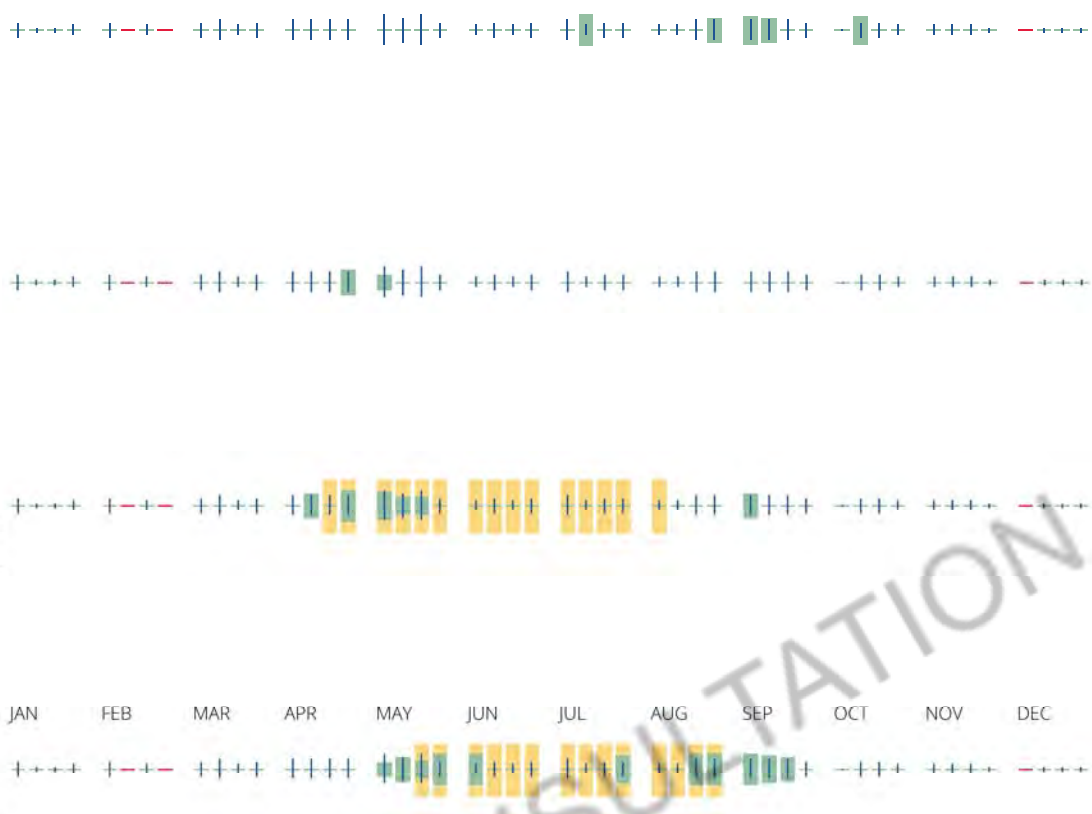
Semipalmated Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

SPECIES

Willow Flycatcher
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1A

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Wyoming Ecological Services Field Office
5353 Yellowstone Road, Suite 308a
Cheyenne, WY 82009-4178
Phone: (307) 772-2374 Fax: (307) 772-2358
http://www.fws.gov/wyominges/

In Reply Refer To: June 05, 2019
Consultation Code: 06E13000-2019-SLI-0332
Event Code: 06E13000-2019-E-00908
Project Name: Whitney Road Corridor

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ES) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please feel free to contact us if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. We also encourage you to visit the Wyoming Ecological Services website at https://www.fws.gov/wyominges/species_endangered.php.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq.*), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also recommend you consider the following information when assessing impacts to federally listed species, as well as migratory birds, and other trust resources:

Colorado River and Platte River Systems: Federal agencies must consult with the Service under section 7 of the ESA for projects in Wyoming that may lead to water depletions or have the potential to impact water quality in the Colorado River system or the Platte River system, because these actions my affect threatened and endangered species inhabiting the downstream reaches of these river systems. In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions minus return flows. Project elements that could be associated with depletions include, but are not limited to: ponds, lakes, and reservoirs (e.g., for detention, recreating, irrigation, storage, stock watering, municipal storage, and power generation); hydrostatic testing of pipelines; wells; dust abatement; diversion structures; and water treatment facilities. For more information on consultation requirements for the Platte River species, please visit https://www.fws.gov/platteriver/.

Migratory Birds: The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. Except for introduced species and some upland game birds, almost all birds occurring in the wild in the United States are protected (50 CFR 10.13). On December 22, 2017, the Department of the Interior Solicitor's Office issued an opinion that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs.

While the opinion (M-37050) states that the MBTA prohibition on the taking or killing of migratory birds applies only to deliberate acts, project activities should avoid, to the extent possible, sensitive periods and habitats to conserve healthy populations of migratory birds. See our website for more information and example conservation measures at https://www.fws.gov/wyominges/species_migratory.php. Guidance for minimizing impacts to migratory birds for projects that include communication towers can be found at https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/communication-towers.php.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; Eagle Act) prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, destruction, or killing. Eagle nests are protected whether they are active or inactive. Removal or destruction of nests, or causing abandonment of a nest could constitute a violation of the Eagle Act. Projects affecting eagles may require development of an eagle conservation plan (https://www.fws.gov/ecological-service/es-library/pdfs/Eagle_Conservation_Guidance-Module%201.pdf). Additionally, wind energy projects should follow the wind energy guidelines (https://www.fws.gov/ecological-service/energy-develpment/wind.html) for minimizing impacts to migratory birds and bats.

In addition to MBTA and the Eagle Act, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Wyoming Ecological Services Field Office
5353 Yellowstone Road, Suite 308a
Cheyenne, WY 82009-4178
(307) 772-2374

Project Summary

Consultation Code: 06E13000-2019-SLI-0332

Event Code: 06E13000-2019-E-00908

Project Name: Whitney Road Corridor

Project Type: TRANSPORTATION

Project Description: Future reconstruction of existing roadway and potential realignment north of Dell Range Blvd.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.16392224438905N104.73370846633676W

Counties: Laramie, WY

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Preble's Meadow Jumping Mouse *Zapus hudsonius preblei* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4090	Threatened

Birds

NAME	STATUS
Least Tern *Sterna antillarum* Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Colorado Butterfly Plant *Gaura neomexicana var. coloradensis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6110	Threatened
Ute Ladies'-tresses *Spiranthes diluvialis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2159	Threatened
Western Prairie Fringed Orchid *Platanthera praeclara* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31
Burrowing Owl *Athene cunicularia* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31

NAME	BREEDING SEASON
Cassin's Sparrow *Aimophila cassinii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9512	Breeds Aug 1 to Oct 10
Chestnut-collared Longspur *Calcarius ornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10
Golden Eagle *Aquila chrysaetos* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lark Bunting *Calamospiza melanocorys* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-billed Curlew *Numenius americanus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds Apr 1 to Jul 31
Mccown's Longspur *Calcarius mccownii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9292	Breeds May 1 to Aug 15
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Whimbrel *Numenius phaeopus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

NAME	BREEDING SEASON
Willow Flycatcher *Empidonax traillii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/3482	Breeds May 20 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

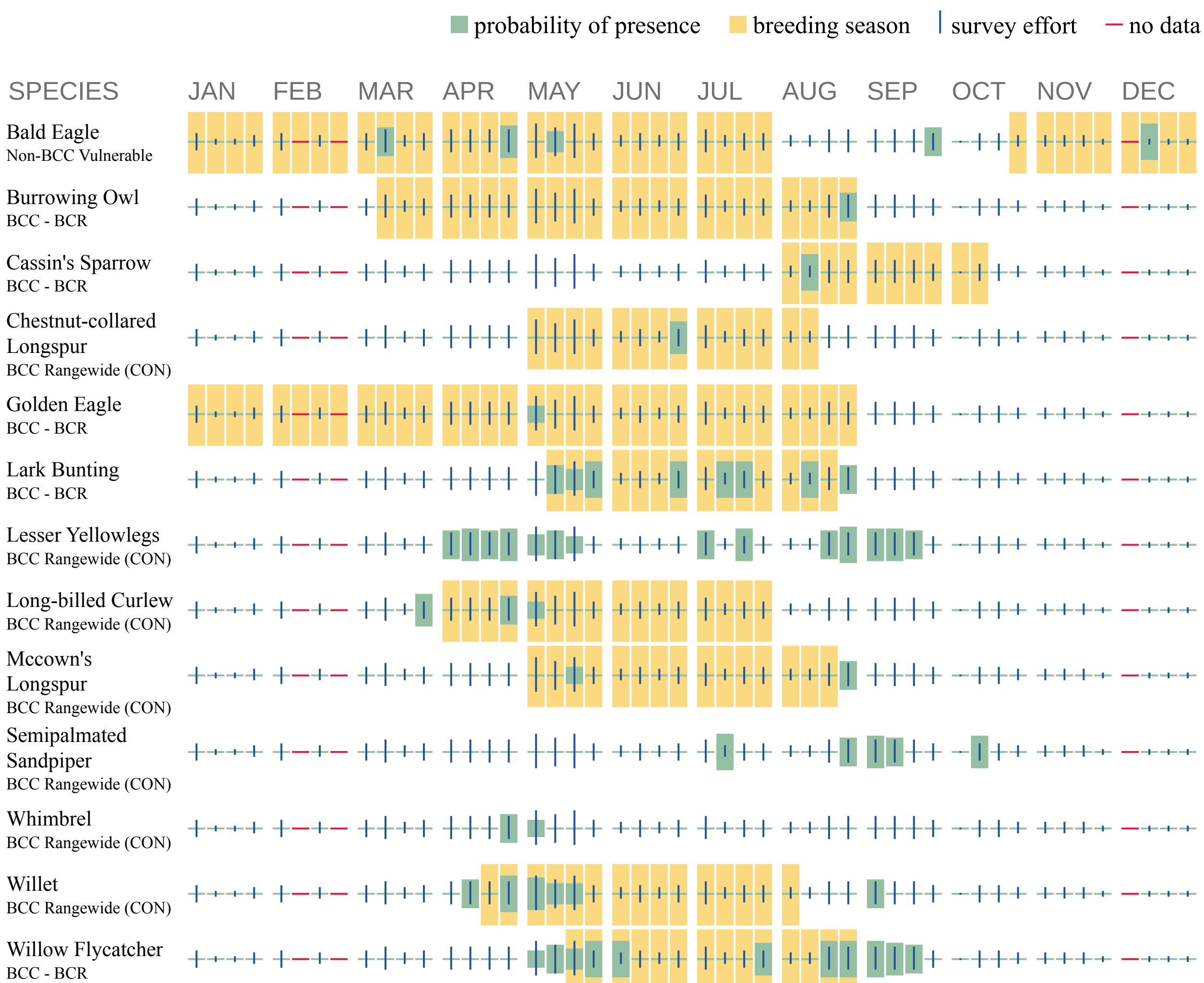
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1A

APPENDIX G

Additional Information

ENGINEERING
PLANNING
SURVEYING
PC

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BOARD APPROVAL
BY THE BOARD OF COMMISSIONERS
FOR LARAMIE COUNTY

Approval Date: October 17, 2006 UNP-C

WHEREAS, the applicant, Rocky Mountain Pipeline System, LLC, has requested approval for a Crude Oil Pipeline on the following described real property within Laramie County: portions of Sections 1, 2, 3,and 4, T.13N.; Sections 2, 11, 14, 23, 26, 35 and 36, T.14N.; Sections 3, 4, 10, 11, 12, 13, 24, 25 and 36, T.15N.; Sections 3, 9, 10, 16, 21, 28, 33, T.16N.; Sections 4, 9, 16, 21, 28, 33 and 34, T.17N.; Sections 3, 10, 15, 22, 27, 33 and 34, T18N.; Sections 2, 11, 14, 22, 23, 27 and 34* all in R.66W., 6th P.M., Laramie County, Wyoming (located beginning at the Frontier Refinery traversing easterly within the UPRR right of way paralleled to the north side of Campstool Rd. to Converse Rd., thence continuing easterly within the Campstool Rd. right of way on the north side of the road, thence north within the westerly portion of the Whitney Rd. right of way to the UPRR right of way. Thence continuing northerly to the westerly portion of Whitney Rd. to Pershing Ave., thence continuing northerly within the western portion of the Whitney Rd. right of way to Iron Mountain Rd., at that point crossing Whitney Rd. at a northeasterly direction leaving the public right of way and continuing north to the Laramie/Platte County line); and

* T.19N.
DH

WHEREAS, the notification requirements in Sections 74.000 Board Approval Process for Uses Requiring Public Hearings and 55.050(b) Highpower Transmission Lines, Water Pipelines over 12"in diameter, and Energy Pipelines. of the Zoning Ordinance and the purpose listed in Section 50.050(c) have been met; and

WHEREAS, all other rules and regulations set forth by "The Cheyenne and Laramie County Zoning Ordinance 1988" and amendments thereto, apply to this Board approval; and particularly Section 55.060 Utility Regulations; and

WHEREAS, The Board of Commissioners for Laramie County has granted this Board Approval, to permit the property to be used for the purpose requested.

NOW, THEREFORE, IT IS ORDERED THAT the above-described property may be used for the purpose requested, it being understood and agreed that this use must be commenced within one (1) year of the date of issuance of this approval, and that an intentional change from the approved plan for said use shall revoke this approval whereupon the general zoning ordinance regulations shall govern this use and development of said property.

Diane Humphrey

Diane Humphrey, Chair
Board of Commissioners

SEAL

ATTEST:

Debra K. Lathrop

Debra K. Lathrop, County Clerk

cc: Owner
Agent
File (UNP-C)

RECORDED 10/31/2006 AT 3:32 PM REC# 460462 BK# 1976 PG# 1815
DEBRA K. LATHROP, CLERK OF LARAMIE COUNTY, WY PAGE 1 OF 1

Received And Approved
As To Form Only
By The County Attorney

1981-0090

1069798

STATE OF WYOMING
LARAMIE COUNTY

I hereby certify that this is a true and complete copy of the document filed in this office and admitted to record on 10-31, 2006, Reception 460462, in Book 1976, Page(s) 1815.

Debra K. Lathrop
Laramie County Clerk

Date 10/19-07

BY Susan Rivers, Deputy

PLEASE RETURN TO:
CONOCO INC.
ROW&C, ML-1178
P. O. BOX 4783
HOUSTON, TX 77210

066026
RECEIVED
LARAMIE COUNTY
CHEYENNE, WY.

'90 JAN 11 PM 2 10

Right of Way Agreement
(Standard Form)

FOR AND IN CONSIDERATION of the sum of TWO HUNDRED ELEVEN DOLLARS AND NO/100 Dollars ($ 211.00), in hand paid, the receipt of which is hereby acknowledged FOSTER LAND CO.

, hereinafter referred to as Grantor, does hereby grant unto Conoco Pipe Line Company, a Delaware corporation having offices in Houston, Texas, hereinafter referred to as Grantee, its successors and assigns, an easement to lay, maintain, inspect, alter, repair, operate, protect, remove and relay a pipeline or pipelines, for the transportation of oil and gas and products and by-products thereof, water and other substances, and such drips, valves, fittings, meters and other equipment and appurtenances as may be necessary or convenient for such operations and, if necessary, to construct, maintain, operate, remove and replace communication and control facilities upon, over, through and under the following described land situated in Laramie County, State of Wyoming, to wit:

Township 14 North Range 66 West Section 25

East five (5) feet of West forty five (45) feet south of US 30

In the event pipeline needs to be lowered due to owner's development of said property, Grantee shall bear the expense of said lowering. Grantee shall have a fifty (50) feet wide construction and maintenance easement that shall revert to a five (5) feet wide nonexclusive permanent easement; however, Grantee shall have additional space as is absolutely needed for road bores. LMF JM
Location of easement granted shall be as shown on plat attached hereto as Exhibit "A" and incorporated herein.

Grantee shall have the rights of ingress and egress to and from said line or lines, or any of them, for the purposes aforesaid. Grantor hereby releases and waives for the purpose of this grant all rights under and by virtue of the dower, homestead and homestead exemption laws, if any, of said state.

Grantor shall have the right to fully use and enjoy the said premises except as the same may be necessary for the purposes herein granted to the said Grantee; and Grantee hereby agrees to pay any damages which may arise to crops, pasturage, fences or buildings of said Grantor from the exercise of the rights herein granted. Grantee shall have the right to change the size of its pipes, the damages, if any, in making such change to be paid by the said Grantee. Grantor agrees not to build, create or construct any obstruction, engineering works, or other structure ~~within fifty feet of said pipeline or lines~~ UPON OR OVER SAID EASEMENT nor permit same to be done by others. LMF JMc

Any pipeline or pipelines constructed by Grantee across lands under cultivation shall, at the time of construction thereof, be buried to such depth as will not interfere with such cultivation, except that at option of Grantee any such line may be placed above any stream, ravine, ditch, or other watercourse

~~Should more than one line be laid under this grant at any time, an additional consideration, calculated on the same basis per lineal rod as the consideration hereinabove recited, shall be paid for each line so laid after the first line.~~ LMF JMc

It is agreed that any payment due hereunder may be made direct to said Grantors or any one of them.

This Right of Way Agreement may be assigned by Grantee, its successors and assigns, in whole or in part, vesting in any other person, firm or corporation the ownership of one or more pipelines or an undivided interest therein and/or communication lines, with full rights of ingress and egress for the maintenance, repair, operation, replacement and removal thereof.

The terms, conditions and provisions hereof shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors and assigns of the parties hereto.

WITNESS the execution hereof the 16 day of AUGUST, 19 89.

In the presence of:

Phillip R. Foster
SECRETARY Phillip R. Foster

John McNerney

FOSTER LAND CO.

BY L. M. Foster
L. M. FOSTER, PRESIDENT
L. M. Foster

5329 HACKER CT.
CHEYENNE, WY 82009
TAX ID#: 83-6002439

FOSTER LAND CO. CORPORATE SEAL WYOMING

Tract No. 41

No. of Rods 211

Check No. 25299

Charge AFE 8632

7-2 S, 3-89

BOOK 1282

780

STATE OF Wyoming } ss.
COUNTY OF Laramie

Before me, the undersigned, a notary public within and for said county and state, on this 16

day of August, 19 89, personally appeared

L. M. Foster

known to me to be the identical persons described in and who executed the within and foregoing instrument, and acknowledged to me that ~~they~~ executed the same as ~~their~~ HIS free and voluntary act and deed, for the uses, purposes and consideration therein set forth.

My commission expires.
MY COMMISSION EXPIRES NOVEMBER 18, 1989

Mary J. Hubbard
Signature Notary Public
Mary J. Hubbard

STATE OF } ss.
COUNTY OF

Before me, the undersigned, a notary public within and for said county and state, on this

day of , 19 , personally appeared

known to me to be the identical persons described in and who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed, for the uses, purposes and consideration therein set forth.

My commission expires:

Signature, Notary Public

STATE OF } ss.
COUNTY OF

Before me, the undersigned, a notary public within and for said county and state, on this

day of , 19 , personally appeared

known to me to be the identical persons described in and who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed, for the uses, purposes and consideration therein set forth.

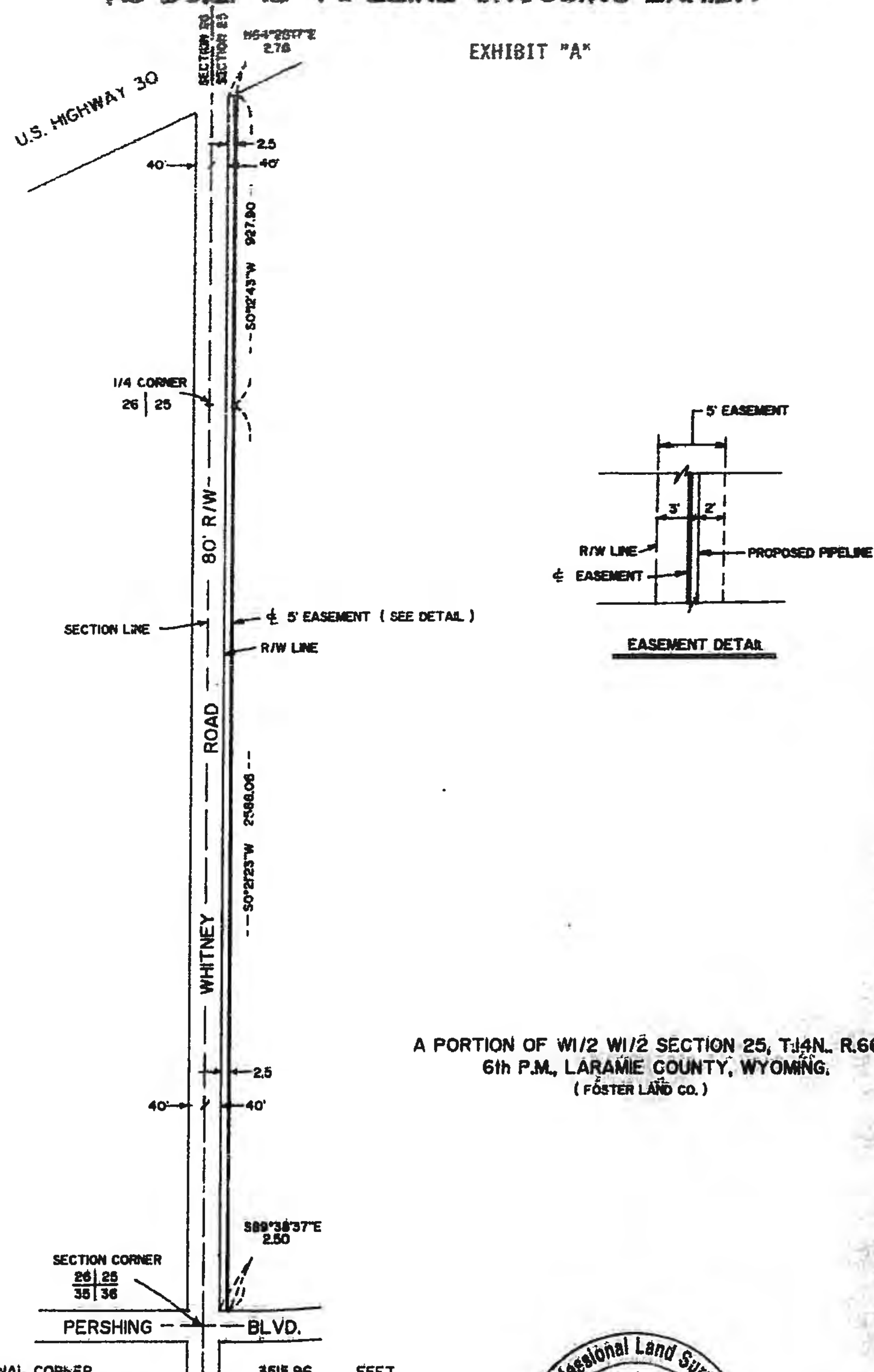
My commission expires:

Signature, Notary Public

7-2 (R), 3-89

AS BUILT 12" PIPELINE CROSSING EXHIBIT

EXHIBIT "A"



A PORTION OF W1/2 W1/2 SECTION 25, T.14N., R.66W.,
6th P.M., LARAMIE COUNTY, WYOMING.
(FOSTER LAND CO.)

◇ ORIGINAL CORNER
○ PROPORTIONED CORNER
△ ACCEPTED LOCAL CONTROL
⊛ SET CORNER

3515.96 FEET
213.09 RODS

CERTIFICATE OF SURVEYOR

I, John A. Steil, Registered Professional Land Surveyor in the State of Wyoming, do hereby certify that this Exhibit correctly represents the results of a survey made by me or under my direct supervision.

Professional Land Surveyor
JOHN A. STEIL
2560
Date 11-29-89
WYOMING

N

				CONOCO PIPE LINE COMPANY	SCALE: 1" = 400'
NO.	REVISION	DATE	BY		DRAWN: M.S. DATE: 11-20-89
					JOB NO.:
SURVEYED BY:	S.P.			STEIL SURVEYING SERVICES	FIELD BK. NO.: 1
DATE SURVEYED:	11-16-89			REGISTERED LAND SURVEYORS	PAGE NO.: 33 & 34
APPROVED BY:				200 EAST 8th AVENUE P.O. BOX 2073 CHEYENNE, WY. 82001 PH(307)634-7273	SHEET 1 OF 1

782

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Submitted By:

ENGINEERING
PLANNING
SURVEYING
PC

www.avipc.com avi@avipc.com

AVI CHEYENNE:

1103 Old Town Lane; Suite 101

Cheyenne, Wyoming 82009

P: 307.637.6017 F: 307.632.9326

AVI FORT COLLINS:

2290 E Prospect Road, Suite 5

Fort Collins, Colorado 80524

P: 970.420.0086 F: 307.632.9326

RESOLUTION NO. 201006-12

ENTITLED: "A RESOLUTION ADOPTING THE *WHITNEY ROAD CORRIDOR PLAN*."

WHEREAS, Whitney Road between U.S. Highway 30 and Dell Range Boulevard is classified as a Minor Arterial and between Dell Range Boulevard and Storey Boulevard is classified as a Collector, all with jurisdictional responsibility currently by Laramie County; and

WHEREAS, Whitney Road between U.S. Highway 30 and Storey Boulevard is a narrow County Road and carries over 3,200 vehicles a day; and

WHEREAS, population growth around the east side of Cheyenne and the surrounding Laramie County urban area is causing traffic volumes to increase beyond the road's capacity and the property adjacent to Whitney Road known as Whitney Ranch, a 579-acre future subdivision is now under development; and

WHEREAS, other roads and highways in the vicinity were also recently adopted and certified in 2019 to determine their future road needs due to the existing and projected population growth and included in the plan entitled *East Dell Range Boulevard/U.S. 30 Corridor Study*; and

WHEREAS, the Cheyenne Metropolitan Planning Organization (MPO) retained AVI, p.c. February 27, 2017 to develop the *Whitney Road Corridor* Plan, and

WHEREAS, the *Whitney Road Corridor Plan* identified and addressed roadway deficiencies, traffic safety problems, traffic volume growth, multimodal needs, environmental constraints, and aligned roadway functionality and character with planned land uses and desired character; and

WHEREAS, the *Whitney Road Corridor Plan* and resulting preliminary design provides the partner agencies (city, county and state) and the developer of Whitney Ranch with a strategy of investments to meet the transportation and utility need along the corridor into the future; and

WHEREAS, the Cheyenne Metropolitan Planning Organization has programmed Federal STP-Urban funds for the reconstruction of Whitney Road from the north U.S. Highway 30 right-of-way, north to and including the Dell Range intersection in 2021; and

WHEREAS, the Wyoming Department of Transportation has funds programmed to reconstruct U.S. Highway 30 including the proposed intersection of Whitney Road and U.S. Highway 30 in 2024; and

WHEREAS, public involvement for the project consisted of two well attended public open houses, (November 8, 2017 and June 28, 2018) and two on-line surveys using SurveyMonkey© to gather feedback on issues and recommendations; and

WHEREAS, the plan was developed with the help of a Jurisdictional Steering Committee, numerous one-on-one meetings with local residences and businesses, and two presentations each to the City and County Planning Commissions during the plan's development; and

WHEREAS, the Cheyenne MPO Technical and Citizens' Advisory Committees reviewed the *Whitney Road Corridor Plan* and recommended adoption by the MPO Policy Committee; and

WHEREAS, the Laramie County Planning Commission held a public hearing on September 24, 2020, accepted public comments, and recommended that the Board of Commissioners approve the *Whitney Road Corridor Plan.*

NOW, THEREFORE, BE IT RESOLVED BY THE LARAMIE COUNTY BOARD OF COMMISSIONERS, LARAMIE COUNTY, WYOMING:

THAT, the Laramie County Board of Commissioners hereby adopts the *"Whitney Road Corridor Plan"* dated August 2020.

THAT, the *"Whitney Road Corridor Plan"* amends the Cheyenne Area Master Transportation Plan.

THAT, this resolution shall become effective after its passage and approval.

FURTHERMORE, BE IT RESOLVED, that the *"Whitney Road Corridor Plan"* will be used as guidance for the future design and reconstruction of Whitney Road between U.S. Highway 30 and Storey Boulevard.

PRESENTED, READ AND ADOPTED THIS 6 DAY OF October, 2020.

BOARD OF LARAMIE COUNTY COMMISSIONERS

Chairman

ATTEST:

Debra K. Lee

Debra Lee, Laramie County Clerk

Received and approved as to form:

Laramie County Attorney's Office

Approved as to form only:
AMF
Date: 9/18/20

RESOLUTION NO. 6095

ENTITLED: "A RESOLUTION CERTIFYING THE *WHITNEY ROAD CORRIDOR PLAN*."

WHEREAS, Whitney Road between U.S. Highway 30 and Dell Range Boulevard is classified as a Minor Arterial and between Dell Range Boulevard and Storey Boulevard is classified as a Collector, all with jurisdictional responsibility currently by Laramie County; and

WHEREAS, Whitney Road between U.S. Highway 30 and Storey Boulevard is a narrow County Road and carries over 3,200 vehicles a day; and

WHEREAS, population growth around the east side of Cheyenne and the surrounding Laramie County urban area is causing traffic volumes to increase beyond the road's capacity and the property adjacent to Whitney Road known as Whitney Ranch, a 579-acre future subdivision is now under development; and

WHEREAS, other roads and highways in the vicinity were also recently adopted and certified in 2019 to determine their future road needs due to the existing and projected population growth and included in the plan entitled *East Dell Range Boulevard/U.S. 30 Corridor Study*; and

WHEREAS, the Cheyenne Metropolitan Planning Organization (MPO) retained AVI, p.c. February 27, 2017 to develop the *Whitney Road Corridor Plan*, and

WHEREAS, the *Whitney Road Corridor Plan* identified and addressed roadway deficiencies, traffic safety problems, traffic volume growth, multimodal needs, environmental constraints, and aligned roadway functionality and character with planned land uses and desired character; and

WHEREAS, the *Whitney Road Corridor Plan* and resulting preliminary design provides the partner agencies (city, county and state) and the developer of Whitney Ranch with a strategy of investments to meet the transportation and utility need along the corridor into the future; and

WHEREAS, the Cheyenne Metropolitan Planning Organization has programmed Federal STP-Urban funds for the reconstruction of Whitney Road from the north U.S. Highway 30 right-of-way, north to and including the Dell Range intersection in 2021; and

WHEREAS, the Wyoming Department of Transportation has funds programmed to reconstruct U.S. Highway 30 including the proposed intersection of Whitney Road and U.S. Highway 30 in 2024; and

WHEREAS, public involvement for the project consisted of two well attended public open houses, (November 8, 2017 and June 28, 2018) and two on-line surveys using SurveyMonkey© to gather feedback on issues and recommendations; and

WHEREAS, the plan was developed with the help of a Jurisdictional Steering Committee, numerous one-on-one meetings with local residences and businesses, and two presentations each to the City and County Planning Commissions during the plan's development; and

WHEREAS, the Cheyenne MPO Technical and Citizens' Advisory Committees reviewed the *Whitney Road Corridor Plan* and recommended adoption by the MPO Policy Committee; and

WHEREAS, the City of Cheyenne Planning Commission held a public hearing on September 21, 2020 and accepted public comments.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF CHEYENNE, WYOMING:

THAT, the City of Cheyenne Governing Body hereby certifies the *"Whitney Road Corridor Plan"* dated August 2020.

THAT, the *"Whitney Road Corridor Plan"* amends the Cheyenne Area Master Transportation Plan.

THAT, this resolution shall become effective after its passage and approval.

FURTHERMORE, BE IT RESOLVED, that the *"Whitney Road Corridor Plan"* will be used as guidance for the future design and reconstruction of Whitney Road between U.S. Highway 30 and Storey Boulevard.

PRESENTED, READ, AND ADOPTED THIS 12th **DAY OF** October **, 2020.**

Marian J. Orr, Mayor

(Seal)

ATTEST:

Kristina F. Jones, City Clerk