

# East Dell Range / US 30 Corridor Study

**Cheyenne MPO**




**May 2008**

— Felsburg Holt & Ullevig —

BenchMark Engineers

Frank Miltenberger Landscape Architect



# **EAST DELL RANGE / US 30 CORRIDOR STUDY**

## **CHEYENNE, WYOMING**

*Prepared for:*

**Cheyenne Metropolitan Planning Organization**

*Prepared by:*

**Felsburg Holt & Ullevig**  
6300 South Syracuse Way, Suite 600  
Centennial, CO 80111  
303/721-1440

*In Association with:*

**BenchMark Engineers**  
*and*  
**Frank Miltenberger Landscape Architect**

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## TABLE OF CONTENTS

	<u>Page</u>
<b>EXECUTIVE SUMMARY -----</b>	<b>iv</b>
<b>1.0 INTRODUCTION -----</b>	<b>1</b>
1.1 Project Background -----	1
1.2 Project Purpose -----	1
1.3 Study Corridor -----	2
1.4 Project Process -----	5
1.5 Previous Corridor Study / Design -----	7
<b>2.0 EXISTING CONDITIONS -----</b>	<b>8</b>
2.1 Geometric Conditions -----	8
2.2 Traffic Volumes and Operations -----	10
2.3 Accident Analysis -----	12
<b>3.0 YEAR 2030 TRAFFIC CONDITIONS -----</b>	<b>15</b>
3.1 Future Roadway Network Enhancements -----	15
3.2 Growth Projections -----	15
3.3 Projected Traffic Conditions -----	18
<b>4.0 ALTERNATIVES -----</b>	<b>23</b>
4.1 Dell Range / US 30 / Christensen Alternatives -----	23
4.2 Dell Range Boulevard and US 30 Section Alternatives -----	52
<b>5.0 DESIGN OF RECOMMENDED ALTERNATIVES -----</b>	<b>60</b>
5.1 Dell Range / US 30 / Christensen Intersection Complex -----	60
5.2 Christensen Road Extension -----	60
<b>6.0 IMPLEMENTATION PLAN -----</b>	<b>64</b>
6.1 Project Listing -----	64
6.2 Project Prioritization -----	65
6.3 Cost and Right-of-Way Considerations -----	65
6.4 Implementation Timeline -----	66
 APPENDIX A ACCIDENT DATA	
APPENDIX B PUBLIC OPEN HOUSE SUMMARIES	
APPENDIX C LEVEL ONE SCREENING SUMMARY	
APPENDIX D DELL RANGE BOULEVARD / US 30 / CHRISTENSEN ROAD – ALTERNATIVE COST ESTIMATES	

## LIST OF FIGURES

	<u>Page</u>
Figure 1. Vicinity Map -----	3
Figure 2. Study Area -----	4
Figure 3. Project Process -----	6
Figure 4. Corridor Roadway Design Features -----	9
Figure 5. Existing Traffic Conditions -----	11
Figure 6. PlanCheyenne Committed and Fiscally Constrained Future Roadway Network Enhancements -----	16
Figure 7. Areas of Highest Growth – Forecast Scenario A -----	17
Figure 8. Future Traffic Growth -----	19
Figure 9. Year 2030 Forecast Scenario A Traffic Conditions -----	20
Figure 10. Year 2030 Forecast Scenario B Traffic Conditions -----	21
Figure 11. Intersection Complex Alternatives 1 and 2 -----	24
Figure 12. Intersection Complex Alternatives 2A and 3 -----	25
Figure 13. Intersection Complex Alternatives 4 and 5 -----	26
Figure 14. Intersection Complex Alternatives 6 and 7 -----	27
Figure 15. Intersection Complex Alternatives 8 and 9 -----	28
Figure 16. Intersection Complex Alternatives 10 and 11 -----	29
Figure 17. Intersection Complex Alternatives 11A and 12 -----	30
Figure 18. Intersection Complex Alternatives 13 and 14 -----	31
Figure 19. Intersection Complex Alternative 14A -----	32
Figure 20. Alternative Screening Process -----	34
Figure 21. Year 2030 Traffic Volumes – No Action and Build Alternatives 2, 7, 11A, 14A -----	40
Figure 22. Year 2030 Traffic Volume Changes – Alternative 11: US 30 / Dell Range Shift to Whitney Road -----	41
Figure 23. Future Traffic Operations – Alternatives 2, 7, 11A, 14A -----	42
Figure 24. Year 2030 Traffic Conditions – Alternative 11: US 30 / Dell Range Shift to Whitney Road -----	43
Figure 25. Alternative 2 – West Relocated Dell Range Boulevard -----	47
Figure 26. Alternative 7 – Roundabout -----	48
Figure 27. Alternative 11 – US 30 / Dell Range Shift to Whitney Road -----	49

## LIST OF FIGURES (Continued)

	<u>Page</u>
Figure 28. Alternative 11A – Dell Range Slip Ramp-----	50
Figure 29. Alternative 14A – Dell Range Flyover-----	51
Figure 30. Dell Range Widening West of James Drive: Alternative 1 – Paved Center Turn Lane -----	53
Figure 31. Dell Range Widening West of James Drive: Alternative 2 – Raised Center Median -----	54
Figure 32. Dell Range Widening East of James Drive: Cheyenne Principal Arterial Section -----	55
Figure 33. US 30 Widening Alternative 1: Urban Arterial Section-----	57
Figure 34. US 30 Widening Alternative 2: Paved Five Lane Section-----	58
Figure 35. US 30 Widening Alternative 3: Grassed Median Divided Roadway -----	59
Figure 36. Conceptual Design of Recommended Alternative – Dell Range / US 30 / Christensen Intersection Complex -----	61
Figure 37. Conceptual Design – Christensen Road between Commerce Circle and Pershing Boulevard-----	62
Figure 38. Conceptual Design – Christensen Road between Pershing Boulevard and US 30-----	63
Figure 39. Phased Implementation of Recommended Projects -----	67

## LIST OF TABLES

Table 1. Intersection Crash Rates -----	12
Table 2. Intersection Complex Alternatives -----	23
Table 3. Alternative Evaluation Criteria and Key Questions -----	35
Table 4. Alternatives Advanced to Level 2 Screening -----	36
Table 5. Level 2 Alternative Screening Criteria and Evaluation Measures-----	37
Table 6. Summary of Level 2 Screening Alternative Performance -----	38
Table 7. Summary of Voting Results-----	45
Table 8. Recommended Alternative Projects -----	64
Table 9. Project Priority Ranking-----	65
Table 10. Estimated Construction Costs and Right of Way-----	66



## EXECUTIVE SUMMARY

### *Introduction*

#### **Project Background**

Much of the recent steady growth in eastern Cheyenne has been occurring near US 30 and Dell Range Boulevard, simply because these two travel corridors are among the few major corridors which exist in this area. Although lightly developed at this time, current development plans are bringing demands for street and driveway accesses along these routes. Not only do these routes serve the development occurring along them, they are also carrying increasing traffic traveling to and from the growing eastern rural areas and the activity centers of Cheyenne. The growing demand for accesses along these roadways conflicts directly with the increasing traffic volumes on the roads, negatively impacting both the quality of flow and the safety of these roads. The growth surrounding these corridors shows no signs of slowing.

In 2000, an effort was undertaken to begin to plan for the future of these two corridors. That planning effort, conducted by BenchMark Engineering (BME), resulted in conceptual plans for both corridors, for the intersections along the corridors, and especially for the juncture of US 30 and Dell Range Boulevard. These conceptual plans provided an excellent starting point for preserving these corridors, but the plans were never officially adopted and, therefore, have not been implemented.

The Cheyenne Metropolitan Planning Organization (MPO) has chosen to revisit and to update the planning efforts for these corridors. This study provides a plan for the City of Cheyenne and Wyoming Department of Transportation (WYDOT) to preserve the right-of-way and implement needed corridor improvements. Corridor improvements will be identified to address roadway design deficiencies, traffic safety problems, traffic volume growth, environmental constraints, and economic development impacts.

#### **Project Purpose**

The goal of this project is to develop a comprehensive plan to guide future transportation improvements in the East Dell Range / US 30 Corridor. The plan will help provide a viable vehicle, pedestrian, transit and bicycle network to accommodate safe and efficient travel in the context of a developing portion of the City of Cheyenne and Laramie County. The plan will build on the Corridor Plan developed in the Year 2000 and PlanCheyenne, the new comprehensive plan for the Cheyenne area. The objectives within this goal are to:

- ▶ Reduce congestion and improve safety on the roads in the area
- ▶ Develop roadway improvement recommendations to serve short term and long term future needs
- ▶ Reflecting smart growth goals, plan for roadways that reflect the scale and character of current and future land uses along the corridor
- ▶ Consider the transportation needs of pedestrians, bicyclists, and transit users
- ▶ Maximize cost-effectiveness of implementing future improvements
- ▶ Give early consideration to environmental factors related to future transportation improvements

## East Dell Range / US 30 Corridor Study Cheyenne MPO

- ▶ Address the appropriate application of access management techniques and roadway connectivity throughout the corridor
- ▶ Provide a framework for addressing drainage issues that affect the study corridor

### Study Corridor

The project study corridor includes Dell Range Boulevard and US 30 and is bounded by College Drive on the west and the Archer / I-80 interchange on the east. A vicinity map is shown on **Figure S-1**. The study corridor is located within the City of Cheyenne and Laramie County.

**Figure S-1. Study Corridor**



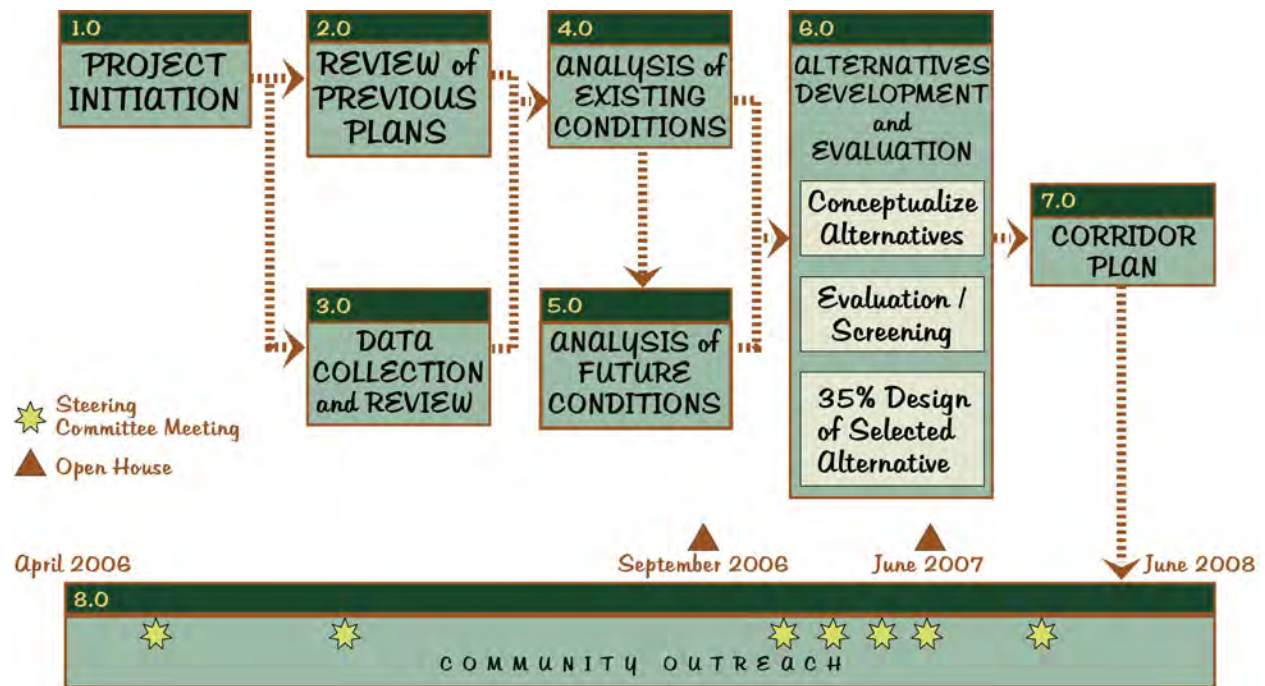
### Project Process

The project process is depicted graphically on **Figure S-2**. The study began in April of 2006 with project initiation and data assembly. In the initial 2 months of the study process, existing traffic operations, safety, and geometric conditions were assessed based on information contained in previous studies of the corridor and on updated data gathered from the Cheyenne MPO. Future traffic volume projections were developed to assess Year 2030 traffic operations.

Based on these evaluations, a set of alternatives was conceived to address needs throughout the corridor. A list of alternatives was developed for the central intersection complex, building on the alternatives developed in the Conceptual Plans-Dell Range Boulevard and U.S. 30 Documentation (BenchMark, September 2000). In addition, a shorter list of alternatives was developed for future improvements to US 30 and Dell Range Boulevard.

The alternatives were refined and screened based on Steering Committee and Public input. The shortened list of alternatives was then evaluated comparatively to identify a preferred set of alternatives for the corridor, which was discussed within the Steering Committee and presented to the public in June of 2007. This Final Report documents that selection process and provides an Implementation Plan for constructing the preferred set of alternatives.

Figure S-2. Project Process



## Project Governance

A project Steering Committee consisted of Cheyenne MPO staff and representatives of the City of Cheyenne (including parks and recreation and public works), Wyoming Department of Transportation (WYDOT), and Laramie County. The Steering Committee was responsible for coordinating public input, serving as a resource for the consultant, and reviewing consultant deliverables. This committee met 7 times throughout the planning process.

## Public Involvement

The public involvement plan for the project included two public open house meetings. A kickoff public meeting was held in September of 2006 to gather input on needed corridor and intersection improvements and to make members of the public aware of corridor plan. The second public meeting, held in June of 2007, presented analysis results and alternatives, and identified a preliminary selection of preferred alternatives.

Information presented at the public meetings was also posted on the Cheyenne website, at [www.plancheyenne.org](http://www.plancheyenne.org).



### *Existing Conditions*

Existing conditions within the study corridor were evaluated to identify geometric deficiencies, quantify traffic operations, and locate traffic safety problems.

### **Geometric Conditions**

There are a number of roadway design elements that characterize the study corridor, and an understanding of these issues is important to accomplishing the goals of this study. The following bullet points highlight some key geometric constraints and features.

- ▶ Resulting from a skew in the City of Cheyenne roadway network, at its eastern terminus Dell Range Boulevard curves sharply to intersect with US 30. The 120-foot radius of this curve accommodates a design speed of approximately 20 mph or less. This substandard curve presents a traffic safety hazard.
- ▶ The east portion of the corridor generally lies on higher ground than the western portion, necessitating a roadway adjustment. Dell Range Boulevard exhibits a 5 percent grade east of Whitney Road and US 30 traverses the grade difference via a 4.5 percent grade.
- ▶ The Cheyenne Greenway runs along Dry Creek through the western portion of the study area. The multi-use path currently terminates near the US 30 / Polk Avenue intersection.
- ▶ Closely-spaced intersections characterize Dell Range Boulevard between College Drive and Van Buren Avenue, with an average spacing of 300 feet between intersections.
- ▶ US 30 east of Dell Range Boulevard is best characterized as a rural, 2-lane highway with few intersections and large residential lots. West of Dell Range Boulevard, US 30 transitions into a more urban area.

### **Traffic Volumes and Operations**

Based on Year 2005 and 2006 traffic counts, traffic volumes generally increase progressing from east to west, closer to the Cheyenne CBD. Dell Range Boulevard currently carries approximately 3,750 vehicles per day (vpd) immediately west of US 30. This traffic volume grows to approximately 6,000 vpd at the west end of the corridor near College Drive. US 30 carries between approximately 4,350 vpd at the east end of the corridor to 9,500 vpd at the west end.

Immediately west of Christensen Road, US 30 carries approximately 7,450 vpd. At the US 30 / Dell Range Boulevard intersection, approximately 48 percent of this traffic splits to Dell Range Boulevard while the remainder continues through along US 30. Based on existing daily and peak hour traffic counts, the predominant movement through this intersection is east-west through US 30 travel. Movements between east US 30 and Dell Range Boulevard rank slightly below US 30 through travel.

To test the operational performance of the study corridor, capacity analyses of Year 2005/2006 conditions were performed using methodology outlined in the *Highway Capacity Manual* (HCM), Transportation Research Board (TRB), 2000 Edition. Analyses of intersections indicated that all signalized intersections and unsignalized movements currently operate at LOS C or better during peak hours.

### Traffic Safety

Based on a statistical compilation of Year 2000-Year 2005 accident information for each of the 14 intersections in the study corridor, the signalized intersections of College Drive with Dell Range Boulevard and US 30 were identified as significant crash locations. These intersections experienced the highest traffic volumes of the 14 study intersections and the highest crash rates.

- ▶ **College Drive / Dell Range Boulevard** – A total of 67 crashes occurred at this intersection during the 5 year time period. Many of these crashes, 29 in all, involved vehicles completing the eastbound right or northbound left turn movements through the intersection. These movements are particularly intense during the PM peak hour, when approximately 750 vehicles complete either of these movements.
- ▶ **College Drive / US 30** – A total of 59 crashes were recorded at this intersection between 2001 and 2005. Traffic safety at this intersection was specifically addressed in the Conceptual Plans-Dell Range Boulevard and U.S. 30 Documentation (BenchMark, September 2000) due to a high number of collisions between 1996 and 1998. The years between 2001 and 2005 demonstrated a similar crash rate and crash types when compared to the previous study. Angle-type collisions comprised the majority of crashes, followed by left-turn and rear-end collisions.
- ▶ **US 30 / Dell Range Boulevard** – The 5-year crash rate at the US 30 / Dell Range Boulevard was 0.89, 4<sup>th</sup> highest in the study corridor. While not identified as a high crash location, drivers regularly encounter safety hazards at this intersection. Attendees at public meetings who live and work along the corridor indicated that they often decide to avoid the intersection due to the difficulty of entering US 30 from Dell Range Boulevard.
- ▶ **US 30 Rural intersections** – The east portion of the corridor is a more rural environment. Traffic safety considerations are different than the west section but are equally important. High speeds along US 30 contribute to crashes, and WYDOT staff discussed the tendency for drivers entering US 30 to not come to a complete stop at cross street stop signs. US 30 drivers may tend to perceive they are in an isolated, rural environment. However, recent suburban-type growth within the east portion of the corridor has increased traffic accessing US 30. The WYDOT is currently planning to add exclusive turn lanes at many of these intersections, an improvement that will help improve traffic safety.

### Year 2030 Growth

#### Future Roadway Network Enhancements

The Cheyenne MPO completed its regional plan, titled PlanCheyenne, in early 2007. The Fiscally Constrained Roadway Plan component of PlanCheyenne included the extension of Christensen Road south from US 30 to connect to Interstate 80, improvements to the intersection of US 30 with Dell Range Boulevard, additional turn lanes at eight intersections along US 30, and widening of Dell Range to 4 travel lanes between College Drive and US 30 and widening of US 30 to 4 travel lanes between Hayes Avenue and Christensen Road.

## Growth Projections

Year 2030 PlanCheyenne land use forecasts reflect an annual population growth rate of approximately 2 percent per year. A scenario reflecting a population growth rate of approximately 1.25 percent was also included in PlanCheyenne to accommodate a range of future growth expectations and assist in project prioritization. In coordination with the project Steering Committee, it was determined that two sets of future land use forecasts would be used in the Corridor Study. Forecast Scenario A was developed to reflect the higher annual growth rate and Scenario B was developed based on the lower growth.

The regional travel demand model developed for the PlanCheyenne effort (TransCad modeling software) was provided to the project team for use on the East Dell Range / US 30 Corridor Study. The Year 2030 Vision roadway network was paired with the PlanCheyenne land use forecasts to develop forecast Scenario A. The WYDOT provided daily traffic forecasts for Scenario B based on a modified version of the PlanCheyenne travel demand model.

## Land Use

For forecast Scenario A (PlanCheyenne land use forecasts), residential growth is spread throughout the corridor, with employment growth anticipated along Whitney Road south of US 30 and in the I-80 / Campstool interchange area. Forecast Scenario B expected growth in many of the same areas, but to a lesser degree. For example, Scenario A included more than 1,000 new residents in the area northwest of the Whitney Road / Dell Range Boulevard intersection while Scenario B included just shy of 400 new residents in the same area. Within the subarea generally bounded by College Drive, Four Mile Road, the I-80 / Archer Interchange and Pershing Boulevard, Scenario A included approximately 55 percent more new residents and approximately 78 percent more new employees than Scenario B.

## Daily Traffic Volumes

Corridor traffic projections were developed from Year 2030 travel demand modeling prepared for the PlanCheyenne effort. The WYDOT modeled Forecast Scenario B and provided the results to the project team. Daily traffic volumes along US 30 would grow by 1.5 to 2.5 times over existing traffic levels, while Dell Range Boulevard would carry 2.5-3.5 times existing traffic by the Year 2030. The Christensen Road extension south of US 30 is projected to carry between 5,700 vpd and 12,600 vpd.

Travel patterns through the US 30 / Dell Range Boulevard intersection are anticipated to change somewhat with growth in the area and completion of the Christensen Road extension. Currently, east-west through movements along US 30 exceed turning movements between US 30 and Dell Range Boulevard. Turning movements between east US 30 and Dell Range Boulevard are expected to increase at a greater rate than east-west through travel along US 30. This trend reflects the growing importance of Dell Range Boulevard as a more direct connection than US 30 to developed portions of Cheyenne north of the Central Business District.

### *Year 2030 Traffic Operations*

#### **Levels of Service**

To test the operational performance of the corridor into the future, Year 2030 LOS calculations were performed for the 14 corridor study intersections. The assumptions and findings are outlined as follows for each scenario:

#### **FORECAST SCENARIO A**

For the purposes of this analysis, it was assumed that both US 30 and Dell Range Boulevard would consist of 4 travel lane sections west of Christensen Road. Further, it was assumed that US 30 would be widened to provide 4 travel lanes east of Christensen Road by the Year 2030, as daily traffic volumes are projected to exceed 10,000 vpd, a typical WYDOT threshold for widening from two to four lanes.

Based on signal warrants outlined in the Manual on Uniform Traffic Control Devices (Federal Highway Administration, 2003) (MUTCD), six intersections would warrant signalization by the Year 2030. With the installation of these signals, each of the study intersections would operate at LOS D or better during peak hours, with the exception of LOS F movements at the intersection of US 30 with Field Station Road and a PM peak hour LOS F signalized College Drive / US 30 intersection. Conditions at the signalized intersection could be improved to LOS D with adjustments to signal timing and phasing.

#### **FORECAST SCENARIO B**

As in Scenario A, it was assumed that both US 30 and Dell Range Boulevard would provide 4 travel lanes west of Christensen Road. However, it was assumed that US 30 would remain 2 lanes wide east of Christensen Road. This is because daily forecasts east of Christensen do not reach the level needed to trigger widening based on the typical WYDOT daily traffic volume threshold of 10,000 vpd (threshold for more rural sections including mostly unsignalized intersections).

With its reduced traffic volume projections, Forecast Scenario B represents an improved operational condition relative to Scenario A and would require fewer signalized intersections.

### *Dell Range / US 30 / Christensen Alternatives*

#### **Development of Alternatives**

The central corridor junction of US 30 with Dell Range Boulevard has seen an increasing amount of traffic in recent years, serving regional traffic traveling to and from the Cheyenne CBD and the Frontier Mall retail cluster west along Dell Range Boulevard. The Christensen Road / US 30 intersection lies approximately 1,000 feet east of Dell Range Boulevard, and the future extension of Christensen Road south will increase traffic through both intersections. Due to their proximity and significance, these intersections are addressed as an intersection complex in this study.



Based on the assessment of existing conditions, primary concerns at this complex include:

- ▶ Skewed angle between Dell Range Boulevard and US 30 forces a tight curve along Dell Range Boulevard to intersect with US 30.
- ▶ Traffic congestion, particularly for left turn from Dell Range onto eastbound US 30.
- ▶ High travel speeds at transition from rural to urban conditions.
- ▶ Relatively close arterial intersection spacing (1,000 feet) between Dell Range Boulevard and Christensen Road.

A collection of intersection / interchange alternatives were developed to address the identified concerns at the intersection complex. The alternatives identified in the Year 2000 BenchMark study were included, with additional options bringing the total number of alternatives to 17, not including the No Action Alternative. As shown in **Table S-1**, the alternatives included both at-grade and grade-separated options.

**Table S-1. Intersection Complex Alternatives**

Alternative	Title
No Action	No Improvements
1	At Grade Intersection
2	West Relocated Dell Range Boulevard
2A	Farthing Road Extension
3	East Relocated Dell Range Boulevard
4	US 30 Tee Intersection
5	Middle Flyover
6	Foxglove Intersection
7	Roundabout
8	Interchange West of Tower
9	Diamond Interchange
10	Partial Cloverleaf
11	US 30 / Dell Range Shift to Whitney Road
11A	Dell Range Slip Ramp
12	Split Diamond
13	Realigned US 30
14	Grade Separation
14A	Dell Range Flyover

## Screening of Alternatives

The process used to reach a recommended alternative consisted of two levels of screening. Level 1 consisted of a Screening for Reasonableness, a qualitative evaluation of alternative performance in 6 criteria categories. Level 2 added quantities and detail within these criteria to sharpen key areas of difference between the remaining alternatives. The Level 2 screening results were presented to and discussed within the Steering Committee before reaching a final recommendation.

### COMMUNITY INPUT

The majority of the alternatives were presented to the public at an open house in September of 2006. The Cheyenne MPO invited residents and businesses located along the corridor and provided public meeting notices. Of the attendees who provided input on the alternatives, several indicated a preference for alternatives that would keep the traffic moving using a grade separation. Of the at-grade alternatives, the alternative that would realign the intersection west of its current location and the alternative that would direct Dell Range Boulevard traffic to Whitney Road to connect with US 30 received the most positive response.

### LEVEL 1 SCREENING FOR REASONABLENESS

The intersection complex alternatives were qualitatively evaluated and compared based on performance in a select group of criteria. This Level 1 screening for reasonableness included a qualitative evaluation of alternatives. The objective of this effort was to identify a shortened list of alternatives from which to ultimately select a preferred alternative.

The alternatives described above were evaluated in 6 categories. The evaluation categories are listed in **Table S-2**, along with the questions considered in evaluating each.

**Table S-2. Alternative Evaluation Criteria and Key Questions**

Criterion	Key Questions
Traffic Safety	<ul style="list-style-type: none"><li>• Will the alternative worsen traffic safety conditions?</li><li>• Will the alternative be too complex for drivers to understand?</li></ul>
Traffic Operations	<ul style="list-style-type: none"><li>• Will the alternative cause excessive delays at critical intersections?</li><li>• Will the alternative increase the difficulty of local access?</li></ul>
Corridor Character	<ul style="list-style-type: none"><li>• Will the alternative provide a roadway network that complements plans for the surrounding environment?</li></ul>
Development	<ul style="list-style-type: none"><li>• Will the alternative require acquisition of residences and businesses?</li><li>• Will the alternative provide opportunities for future development?</li></ul>
Comparative Cost	<ul style="list-style-type: none"><li>• Is the alternative too costly to construct?</li><li>• Could alternative construction be phased to minimize future expense if actual growth rates exceed projections?</li></ul>
US 30 Continuity	<ul style="list-style-type: none"><li>• Will the alternative provide for the continuity of US Highway 30 as a regional travel route?</li></ul>

The performance of each alternative was evaluated according to these criteria and assigned a rating of good, fair, or poor in each category. The results of the evaluation of the alternatives were compiled in the form of evaluation matrices to facilitate comparison between the alternatives. The full matrices are included in tabular form in **Appendix C**. The ratings were developed for the project Steering Committee as a tool for comparing the alternatives with the goal of selecting a smaller grouping to be advanced to the next level of screening.

The evaluation matrices were discussed by the project Steering Committee in March of 2007. Key conclusions of the Steering Committee relating to Level 1 Screening are included in **Appendix C**. Much of the discussion of the alternatives focused on the question of the compatibility of the alternatives to the existing and future level and type of development surrounding the intersection complex. It was generally agreed that the area is currently suited to

higher travel speeds. It was also agreed that the future of this area will bring higher-density development, increased traffic control (i.e. traffic signals) and lower travel speeds.

The general conclusion of this discussion was that a grade separated facility could serve the short-term need for higher travel speeds, but would not be compatible with future land use and travel speeds. Therefore, the at-grade alternatives represent a better long term solution, provided the at-grade intersections would accommodate projected future traffic levels at a satisfactory level of service. Of the surviving alternatives, only one was of the grade separation type, while the others represented at-grade solutions. Six grade-separated options were screened from further consideration, due to relatively high costs and lack of compatibility with the anticipated future urban-type surroundings.

Resulting from the Level 1 Screening process, five build alternatives were advanced to Level 2. Though not explicitly discussed by the Steering Committee, the No Action Alternative was also advanced to Level 2.

### **LEVEL 2 SCREENING**

For the remaining six alternatives, the project team measured alternative performance across the range of Level 2 screening criteria, including Traffic Safety, Traffic Operations, Corridor Character, Cost-Effectiveness, Right-of-Way, and Implementation Considerations.

The criteria were evaluated within a larger study area incorporating Whitney Road between Dell Range Boulevard and US 30. Whitney Road was included because Alternative 11, US 30 / Dell Range Shift to Whitney Road, would re-route traffic currently using the Dell Range Boulevard / US 30 intersection to Whitney Road, thereby impacting Whitney Road to a greater degree than the other alternatives. The inclusion of Whitney Road served to highlight key differences between the alternatives.

### **Recommended Alternative**

#### **SELECTION**

The performance of the alternatives was evaluated in each category and the results of the screening process were discussed by the Steering Committee in May of 2007. A vote was taken to identify a recommended alternative. Alternative 2 was the recommended alternative, with Alternative 11 second and No Action third. The following factors were cited by the Committee in the selection of Alternative 2:

- ▶ Alternative 2 is a simple solution, similar to the current configuration but farther west
- ▶ Placement of the realigned Dell Range Boulevard roughly equidistant from Christensen and Whitney Roads
- ▶ Provides the improved traffic safety of an increased curve radius along Dell Range Boulevard
- ▶ Adaptable to either urban or rural surroundings

It is important to note that the project Steering Committee wished to maintain some flexibility for future implementation of different options if conditions dictate a need. For example, a grade separated alternative might be identified as appropriate for a high-speed, rural-type setting, while the roundabout might be identified for a more urbanized context.

### COMMUNITY REVIEW

Level 1 and Level 2 Screening information and the recommendation of Alternative 2 were subjected to public comment at a Community Open House held in June of 2007. Most of the attendees who commented expressed support for the Committee's selection of Alternative 2. Some reiterated support for a grade separation to keep traffic moving through the intersection complex. A summary of the June 2007 Open House is included in **Appendix B**.

### *Dell Range Boulevard and US 30 Section Alternatives*

As discussed in Section 3, Year 2030 Scenario A demand for travel along both Dell Range Boulevard and US 30 is projected to reach a level requiring widening from 2 travel lanes to 4 travel lanes plus a center left turn lane (and/or median) throughout the corridor. Scenario B would reduce the widening needs to both roadways west of Christensen Road, while US 30 east of Christensen could remain a two lane roadway. Accounting for the unique characteristics of both facilities, a number of roadway section alternatives were developed to guide the future widening projects. City of Cheyenne and WYDOT standards were used to inform the development of these options.

These sections were developed to provide decision makers with a tool to help select appropriate sections when widening is needed. Based on growth forecasts included in this study, it is anticipated that widening will be needed by the Year 2030. However, that need may shift in time if growth does not follow expected patterns.

### *Dell Range Boulevard Widening*

Dell Range Boulevard serves as a Principal Arterial in the City of Cheyenne's roadway network. The City standard Principal Arterial section provides two through lanes in each direction with a raised center median, with shoulders, a tree lawn and sidewalks on both sides. The standard section requires 120 feet of Right-of-Way (ROW) width. Between College Drive and James Drive, the ROW is constrained to 100 feet, with some sections constrained to 80 feet. Alternative sections were developed to provide 4 travel lanes within this ROW width. These sections could be expanded through sections providing 100 feet. Alternative 1 would provide a paved center left turn lane, an attached sidewalk on one side and a detached walk on the opposite side. Alternative 2 would replace the paved center turn lane with a raised median providing left turn lanes at intersections as needed.

Alternative 1 would be less costly than Alternative 2 but would not serve to manage access to Dell Range Boulevard. At the June 2007 Community Open House, attendees expressed approximately equal support for the raised median vs. paved center turn lane.

A widened Dell Range section was developed to replicate the Principal Arterial section in the City of Cheyenne Road, Street and Site Planning Design Standards (City of Cheyenne, 2006). It is recommended that this section be constructed when Dell Range Boulevard is widened between James Drive and US 30, where additional ROW width is available.



### US 30 Widening

Three options were developed to guide the future widening of US 30 to four travel lanes plus a center turn lane and/or median. One distinct difference between Dell Range Boulevard and US 30 is the additional Right-of-Way width available along US 30. A continuous 300 feet is provided for the length of US 30 throughout the corridor. This width could provide for a future extension of the Cheyenne Greenway and allows some flexibility in the use of landscaping and drainage treatments.

Sections were developed to provide 4 travel lanes along US 30 and complement those travel lanes with a variety of median, sidewalk and drainage treatments. The alternatives are described on the figures with advantages and disadvantages.

Due to multiple viewpoints and agency priorities, the project Steering Committee did not reach a consensus on a recommended section for the future widening of US 30. In general, Cheyenne MPO representatives indicated a preference for the higher-cost urban arterial section (Alternative 1). Representatives of WYDOT indicated a preference for a paved five lane section (Alternative 2). A possible compromise among the options would be to widen US 30 to a urban arterial section between Pershing Boulevard and Christensen Road and provide a paved 5 lane section or grassed median section east of Christensen Road.

Improvements to US 30 should be designed and built based on the *WYDOT Access Manual* (Wyoming Department of Transportation, March 2005).

### *Design of Recommended Alternatives*

#### Dell Range / US 30 / Christensen Intersection Complex

As discussed earlier, Alternative 2 was selected as the Recommended Alternative for the Dell Range / US 30 / Christensen Intersection complex. Conceptual intersection design plans were developed to show how Alternative 2 would be constructed without the anticipated future widening of both roadways. **Figure 36** depicts the intersection design in plan view. The conceptual design plans are included under separate cover, in the East Dell Range / US 30 Corridor Study Roadway Design Information package.

#### Christensen Road Extension

Christensen Road currently extends north from US 30 as a Minor Arterial roadway, but it does not currently extend south from US 30. The *PlanCheyenne* Transportation Plan recommended that Christensen Road be extended south from US 30 to Commerce Circle. This project was included in both the Roadway Vision Plan and the Fiscally Constrained Roadway Plan, budgeted at approximately \$13.6 Million. The proposed extension would cross the Union Pacific Railroad tracks north of Commerce Circle and would provide two travel lanes initially with provision for a future expansion to 4 travel lanes.

As an addendum to the East Dell Range / US 30 Corridor Study, the Christensen Road extension project was taken an additional step toward implementation with 35 percent design plans for Christensen Road between Commerce Circle and Pershing Boulevard and 10 percent design plans for Christensen Road between Pershing Boulevard and US 30.

**Figure 37** depicts the proposed design of Christensen Road between Commerce Circle and Pershing Boulevard. **Figure 38** shows the proposed design of Christensen Road between Pershing Boulevard and US 30. These design plans are included in the East Dell Range / US 30 Corridor Study Roadway Design Information package.

### Implementation Plan

An implementation plan was developed to prioritize the recommended projects and identifies upcoming steps toward eventual construction. It includes the following elements:

- ▶ Develop listing of projects within the Recommended Alternative for the corridor
- ▶ Prioritize those projects based on relative needs, benefits and costs
- ▶ Identify upcoming steps in the project implementation process
- ▶ Establish immediate next steps

### Project Listing

A project-by-project listing of the elements included in the Recommended Alternative is shown in **Table S-3**.

**Table S-3. Recommended Alternative Projects**

Project Location	Limits	Improvements	Figure Number
Central Intersection Complex – Alternative 2	Whitney Road to Christensen Road	Intersection realignment, added intersection turn lanes	36
Christensen Road	Commerce Circle to Pershing Boulevard	New Minor Arterial Roadway, Railroad grade separation	37
Christensen Road	Pershing Boulevard to US 30	New Minor Arterial Roadway	38
Dell Range Boulevard	College Drive to US 30	Widening to 4 travel lanes	30-32
US 30	Hayes Avenue to Christensen Road	Widening to 4 travel lanes	33-35
US 30	Christensen Road to Archer Interchange	Widening to 4 travel lanes	33-35

Each of the projects described in **Table S-3** were included in the *PlanCheyenne* Year 2030 Fiscally Constrained Roadway Plan. The East Dell Range / US 30 Corridor Study reinforces the need for these improvements by the Year 2030 and provides recommendations to guide the improvements. Improvements to US 30 should be designed and built based on the *WYDOT Access Manual* (Wyoming Department of Transportation, March 2005).

## Project Prioritization

The projects listed in **Table S-3** are all high priority projects because these projects have been identified, discussed and analyzed in regional and local plans developed over the past 5-10 years. Though all are high priority, the projects may be further ranked based on correction of geometric conditions, regional importance, and traffic needs. Projects that would be needed by the Year 2030 based on both travel demand forecast scenarios (A and B) should be placed above projects only needed based on the higher forecast Scenario A. The recommended projects would be built over time in order of their priority.

**Table S-4** lists the projects in order of priority and provides a rationale for the ranking of each.

**Table S-4. Project Priority Ranking**

Project Location	Priority Ranking	Reasons for Ranking
Central Intersection Complex – Alternative 2	1	<ul style="list-style-type: none"> <li>Existing tight and unsafe Dell Range curvature</li> <li>Current high traffic demand for turning movements to/from east US 30 will increase with both Scenario A and B</li> </ul>
Christensen Road – Commerce Cir. to Pershing and UPRR bridge	2	<ul style="list-style-type: none"> <li>Provides new roadway link to I-80 and RR grade separation for growing area</li> </ul>
Christensen Road – Pershing to US 30	3	<ul style="list-style-type: none"> <li>Minor Arterial connection identified in PlanCheyenne – important to potential future regional route through east and north Cheyenne</li> </ul>
Dell Range Boulevard Widening – College Drive to US 30	4	<ul style="list-style-type: none"> <li>Of the widening projects, shows the highest Year 2030 traffic forecasts for Scenario A</li> <li>Would be needed for either forecast scenario</li> </ul>
US 30 Widening – Hayes to Christensen	5	<ul style="list-style-type: none"> <li>Would be needed for either forecast scenario</li> </ul>
US 30 Widening – Christensen to Archer Interchange	6	<ul style="list-style-type: none"> <li>Would be needed for only forecast scenario A</li> </ul>

## Cost and Right-of-Way Considerations

The estimated construction costs are shown in **Table S-5** along with the estimated right of way required to implement each. Construction costs range between \$4.9 Million for Christensen Road between Pershing Boulevard and US 30 and up to 9.5 Million for the widening of US 30 east of Christensen Road.

# East Dell Range / US 30 Corridor Study Cheyenne MPO

**Table S-5. Estimated Construction Costs and Right of Way**

Project #	Project Location	Improvements	Miles	Const. Costs	Right of Way (Acres)
1	Central Intersection Complex – Alternative 2	Intersection and frontage road realignment	n/a	\$2.4 Million	4.2
2	Christensen Road – Commerce Cir to Pershing	New Minor Arterial Roadway, Railroad grade separation	0.70	\$8.4 Million	14
3	Christensen Road – Pershing to US 30	New Minor Arterial Roadway	0.55	\$1.9 Million	7.25
4	Dell Range Boulevard – College to US 30	Widening to 4 travel lanes	2.32	\$5.8 – \$7.4 Million <sup>1</sup>	0
5	US 30 – Hayes to Christensen	Widening to 4 travel lanes	1.63	\$4.1 – \$5.2 Million <sup>1</sup>	0
6	US 30 – Christensen to Archer	Widening to 4 travel lanes	2.98	\$7.5 – \$9.5 Million <sup>1</sup>	0

<sup>1</sup> Low end of range would build a 5-lane section (\$2.5 Million per mile) with a paved median and high end would build urban arterial section (\$3.2 Million per mile) with raised median



## 1.0 INTRODUCTION

### 1.1 *Project Background*

The Cheyenne community has experienced steady growth in recent years, much of it concentrated on the eastern edge of the City. This growth, in both the City and Laramie County, has included a significant amount of residential development as well as commercial land use activity. Reinforcing the expectation that this growth will continue, the recent PlanCheyenne efforts estimated that the population of Cheyenne will reach approximately 131,000 by the year 2030 (an average annual growth rate of 2 percent).

Much of this growth in eastern Cheyenne has been occurring near US 30 and Dell Range Boulevard, simply because these two travel corridors are among the few major corridors which exist in this area. Although lightly developed at this time, current development plans are bringing demands for street and driveway accesses along these routes. Not only do these routes serve the development occurring along them, they are also carrying increasing traffic traveling to and from the growing eastern rural areas and the activity centers of Cheyenne, such as downtown and the Frontier Mall. The growing demand for accesses along these roadways conflicts directly with the increasing traffic volumes on the roads, negatively impacting both the quality of flow and the safety of these roads.

In 2000, an effort was undertaken to begin to plan for the future of these two corridors. That planning effort, conducted by BenchMark Engineering (BME), resulted in conceptual plans for both corridors, for the intersections along the corridors, and especially for the juncture of US 30 and Dell Range Boulevard. These conceptual plans provided an excellent starting point for preserving these corridors, but the plans were never officially adopted and, therefore, have not been implemented.

The growth surrounding these corridors shows no signs of slowing, and the Cheyenne Metropolitan Planning Organization (MPO) has chosen to revisit and to update the planning efforts for these corridors. In the midst of growth pressures, it is vital to create a strategy that outlines needed roadway improvements and preserves the opportunity to implement those improvements in anticipation of, rather than reaction to, development. Completion of roadway improvements in densely developed environments is always more costly and difficult than early action.

This study provides a plan for the City of Cheyenne and Wyoming Department of Transportation (WYDOT) to preserve the right-of-way and implement needed corridor improvements. Corridor improvements will be identified to address roadway design deficiencies, traffic safety problems, traffic volume growth, environmental constraints, and economic development impacts.

### 1.2 *Project Purpose*

The goal of this project is to develop a comprehensive plan to guide future transportation improvements in the rapidly developing East Dell Range / US 30 Corridor. The plan will help provide a viable vehicle, pedestrian, transit and bicycle network to accommodate safe and efficient travel in the context of a developing portion of the City of Cheyenne and Laramie

County. The plan will build on the Corridor Plan developed in the Year 2000 and PlanCheyenne, the new comprehensive plan for the Cheyenne area. The objectives within this goal are to:

- ▶ Reduce congestion and improve safety on the roads in the area
- ▶ Develop roadway improvement recommendations to serve short term and long term future needs
- ▶ Reflecting smart growth goals, plan for roadways that reflect the scale and character of current and future land uses along the corridor
- ▶ Consider the transportation needs of pedestrians, bicyclists, and transit users
- ▶ Maximize cost-effectiveness of implementing future improvements
- ▶ Give early consideration to environmental factors related to future transportation improvements
- ▶ Address the appropriate application of access management techniques and roadway connectivity throughout the corridor
- ▶ Provide a framework for addressing drainage issues that affect the study corridor

### 1.3 *Study Corridor*

The project study corridor includes Dell Range Boulevard and US 30 and is bounded by College Drive on the west and the Archer / I-80 interchange on the east. A vicinity map is shown on **Figure 1**. The study corridor is located within the City of Cheyenne and Laramie County.

The corridor includes approximately 3.2 miles of US Highway 30 between the Archer interchange and Dell Range Boulevard, then splits to include US 30 and Dell Range Boulevard to College Drive. Dell Range Boulevard begins at US 30 and extends west into the City of Cheyenne's primary retail district, while US 30 continues south and west, skirting the south side of Cheyenne's Central Business District (CBD). The study roadways are oriented east-west and are depicted graphically on **Figure 2**.

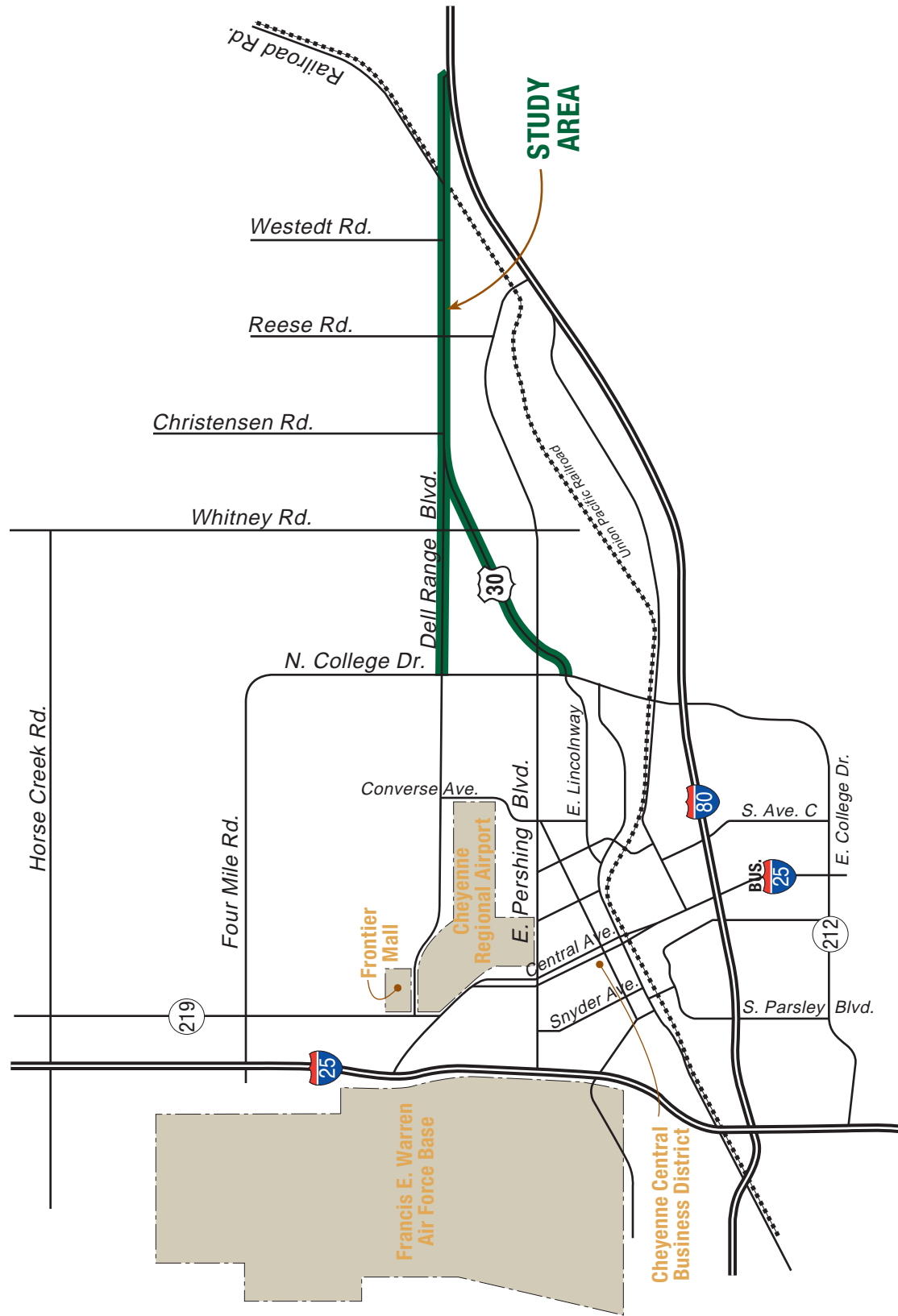
### Land Use

The intersection of Dell Range Boulevard with US 30 divides the corridor into two halves. The western half includes mostly single-family homes, with some institutional and industrial development. Lands east of the intersection along US 30 are more rural and less dense, consisting of larger parcels with lower-density residential development and some farm and ranch land.

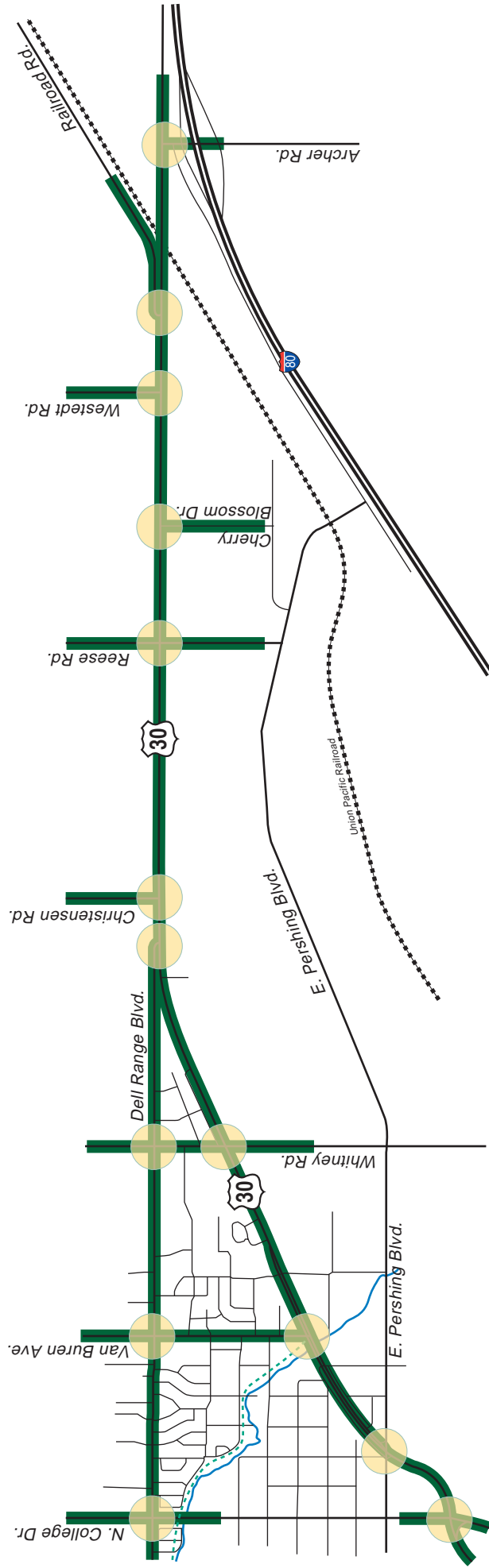
### Roadway Network

The two major roadways comprising the study corridor are described as follows:

- ▶ **US Highway 30 (US 30)** – Also known as Lincolnway, US 30 extends east-west across and beyond the City of Cheyenne. It is posted at 55 Miles Per Hour (mph) through the study area. Between Pershing Boulevard and Hayes Avenue, US 30 provides 4 travel lanes separated by a wide grassed median. Between Hayes Avenue and Dell Range Boulevard, US 30 narrows to three lanes, providing a climbing lane for eastbound traffic. The highway narrows to two lanes east of Dell Range Boulevard.



**Figure 1**  
Vicinity Map



**Figure 2**  
Study Area



**LEGEND**

- Study Area Roadways
- Key Intersections
- Cheyenne Greenway Trail



- ▶ **Dell Range Boulevard** – Dell Range Boulevard is a major east-west arterial posted at 35 mph between College Drive and James Drive and 45 mph between James Drive and US 30. It consists of three lanes: One through lane in each direction, plus a center left turn lane.
- ▶ **Surface Street Intersections** – Fourteen intersections along US 30 and Dell Range Boulevard were selected for operational analyses based on input from the project Steering Committee, including:
  - Dell Range Boulevard/College Drive
  - Dell Range Boulevard/Van Buren Avenue
  - Dell Range Boulevard/Whitney Road
  - Dell Range Boulevard/US 30
  - US 30/College Drive
  - US 30/Pershing Boulevard
  - US 30/Van Buren Avenue
  - US 30/Whitney Road
  - US 30/Christensen Road
  - US 30/Reese Road
  - US 30/Cherry Blossom Drive
  - US 30/Westedt Road
  - US 30/Railroad Road
  - US 30/Field Station Road

### 1.4 *Project Process*

#### Project Schedule

The project process is depicted graphically on **Figure 3**. The study began in April of 2006 with project initiation and data assembly. In the initial 2 months of the study process, existing traffic operations, safety, and geometric conditions were assessed based on information contained in previous studies of the corridor and on updated data gathered from the Cheyenne MPO. Future traffic volume projections were developed to assess Year 2030 traffic operations. Based on these evaluations, a set of alternatives was conceived to address needs throughout the corridor. A list of alternatives was developed for the central intersection complex, building on the alternatives developed in the Conceptual Plans-Dell Range Boulevard and U.S. 30 Documentation (BenchMark, September 2000). In addition, a shorter list of alternatives was developed for future improvements to US 30 and Dell Range Boulevard.

These alternatives were discussed within the Steering Committee and initially presented to the public in September of 2006. Based on the input from these meetings, the alternatives were refined. This shortened list of alternatives was then evaluated comparatively to identify a preferred set of alternatives for the corridor, which was discussed within the Steering Committee and presented to the public in June of 2007. This Final Report documents that selection process and provides an Implementation Plan for constructing the preferred set of alternatives.

#### Project Governance

A project Steering Committee consisted of Cheyenne MPO staff and representatives of the City of Cheyenne (including parks and recreation and public works), Wyoming Department of Transportation (WYDOT), and Laramie County. The Steering Committee was responsible for coordinating public input, serving as a resource for the consultant, and reviewing consultant deliverables. This committee met 7 times throughout the planning process.

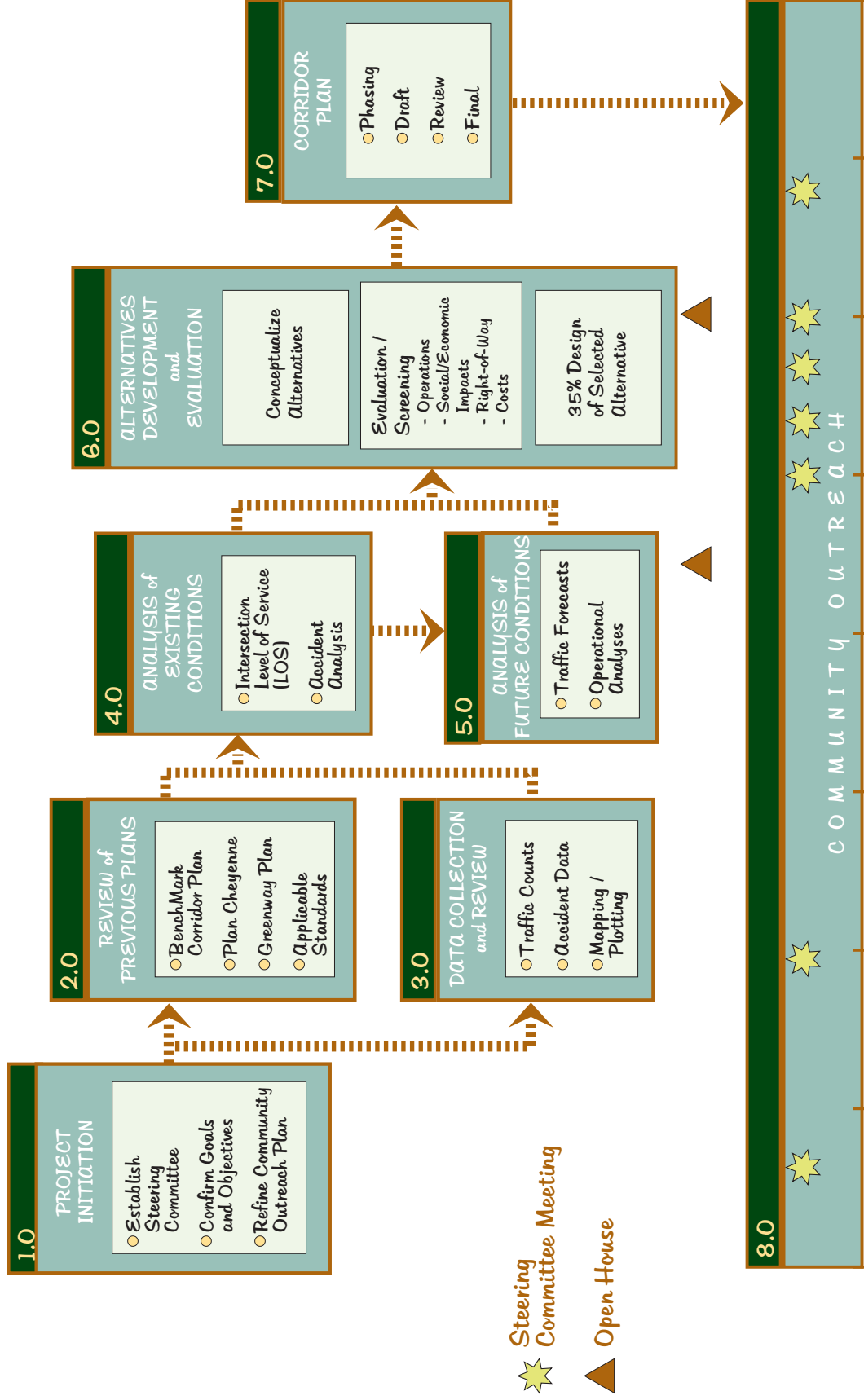


Figure 3

Project Process

### Public Involvement

The public involvement plan for the project included two public open house meetings. A kickoff public meeting was held in September of 2006 to gather input on needed corridor and intersection improvements and to make members of the public aware of corridor plan. The second public meeting, held in June of 2007, presented analysis results and alternatives, and identified a preliminary selection of preferred alternatives.

Information presented at the public meetings was also posted on the Cheyenne website, at [www.plancheyenne.org](http://www.plancheyenne.org).

### 1.5 Previous Corridor Study/Design

Conceptual Plans-Dell Range Boulevard and U.S. 30 Documentation, completed by BenchMark Engineers in September of 2000, encompassed the same study area as the current project and highlighted geometric, operational and safety issues. Conceptual plans were developed for improvements to the corridor, including widening of both Dell Range Boulevard and US Highway 30 to continuous 4 lane roadways through the study area. The effort also developed ten alternatives for the intersection of Dell Range Boulevard with US 30 and identified a preferred alternative: constructing an interchange located west of the existing at-grade Dell Range Boulevard / US 30 intersection. The work effort included plans for this interchange developed to a 35 percent level.

The information included in the Conceptual Plans was used as a basis for much of the information assessed in this Corridor Study.

## 2.0 EXISTING CONDITIONS

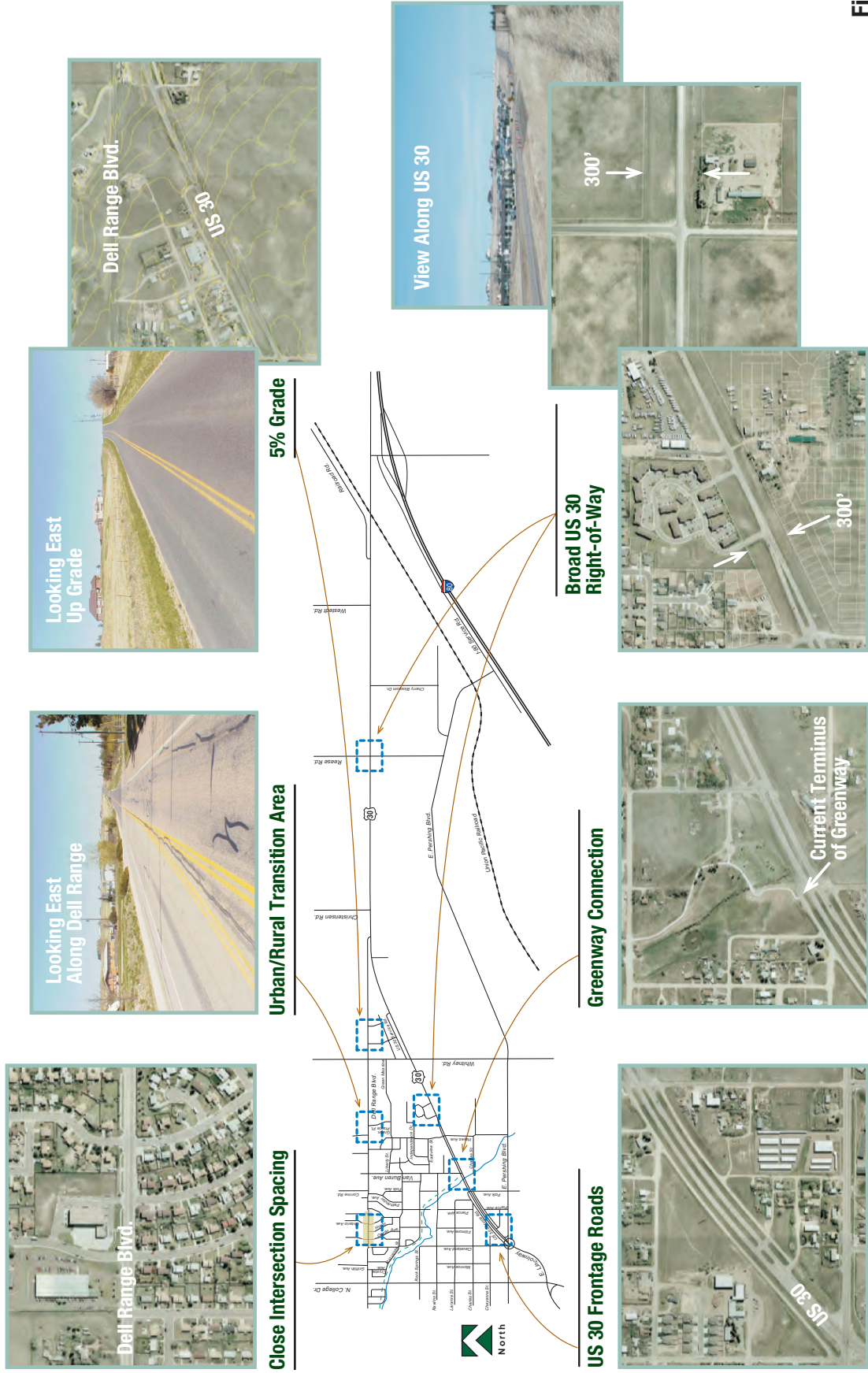
Existing conditions within the study corridor were evaluated to identify geometric deficiencies, quantify traffic operations, and locate traffic safety problems.

### 2.1 *Geometric Conditions*

There are a number of roadway design elements that characterize the study corridor, and an understanding of these issues is important to accomplishing the goals of this study. The following bullet points highlight key geometric constraints and features.

- ▶ Resulting from a skew in the City of Cheyenne roadway network, at its eastern terminus Dell Range Boulevard curves sharply to intersect with US 30. The 120-foot radius of this curve accommodates a design speed of approximately 20 mph or less, well below the Dell Range Boulevard posted speed of 35 mph. This substandard curve presents a traffic safety hazard.
- ▶ The east portion of the corridor generally lies on higher ground than the western portion, necessitating a roadway adjustment. Dell Range Boulevard exhibits a 5 percent grade east of Whitney Road and US 30 traverses the grade difference via a 4.5 percent grade.
- ▶ For approximately 1 mile between Pershing Boulevard and Hayes Avenue, US 30 is separated by a grassed median approximately 35 feet wide. The median serves to manage access between major roadways and provides a center refuge area for turning traffic.
- ▶ US 30 bisects a continuous 300 foot strip of right-of-way for the entire length of the corridor. Frontage roads are provided within portions of this right-of-way.
- ▶ The Cheyenne Greenway runs along Dry Creek through the western portion of the study area. The multi-use path currently terminates near the US 30 / Polk Avenue intersection.
- ▶ Closely-spaced intersections characterize Dell Range Boulevard between College Drive and Van Buren Avenue, with an average spacing of 300 feet between intersections.
- ▶ US 30 east of Dell Range Boulevard is best characterized as a rural, 2-lane highway with few intersections and large residential lots. West of Dell Range Boulevard, US 30 transitions into a more urban area.

**Figure 4** depicts a number of the geometric features of the corridor.



**Figure 4**

**Corridor Roadway Design Features**



## 2.2 Traffic Volumes and Operations

### Traffic Volumes

Traffic volume information was assembled from Year 2005 and 2006 traffic counts conducted by Western Research, The Wyoming Department of Transportation (WYDOT), and the Cheyenne MPO. The Saddle Ridge Subdivision Traffic Impact Study (HNB Engineers, November 2005) also provided traffic count information.

The weekday AM and PM peak hour traffic counts were conducted during different times of year. The WYDOT provided information for the Year 2005 from its traffic count station along US Highway 30 east of Dell Range Boulevard. Based on the WYDOT information, each peak hour intersection count was factored from its particular month to the average month. These factored peak hour traffic volumes are shown on **Figure 5**.

Daily traffic count information is also shown on **Figure 5**. Traffic volumes generally increase progressing from east to west, closer to the Cheyenne CBD. As shown, Dell Range Boulevard currently carries approximately 3,750 vehicles per day (vpd) immediately west of US 30. This traffic volume grows to approximately 6,000 vpd at the west end of the corridor near College Drive. US 30 carries between approximately 4,350 vpd at the east end of the corridor to 9,500 vpd at the west end.

Immediately west of Christensen Road, US 30 carries approximately 7,450 vpd. At the US 30 / Dell Range Boulevard intersection, approximately 48 percent of this traffic splits to Dell Range Boulevard while the remainder continues through along US 30. Based on existing daily and peak hour traffic counts, the predominant movement through this intersection is east-west through US 30 travel. Movements between east US 30 and Dell Range Boulevard rank slightly below US 30 through travel.

### Levels of Service

#### METHODOLOGY

Analysis of traffic operations in the study area utilized methods documented in the *Highway Capacity Manual* (HCM), Transportation Research Board (TRB), 2000 Edition. The result of such an analysis is a level-of-service (LOS) rating, which is a qualitative assessment of the traffic flow for a given roadway facility. Level of service is described by a letter designation ranging from "A" to "F", with LOS A representing essentially uninterrupted flow, and LOS F representing a breakdown of traffic flow with excessive congestion and delay. For analysis of a signalized intersection, a LOS rating is calculated for an intersection as a whole. Level of service analysis of an unsignalized intersection yields a LOS rating for each critical vehicle movement. A LOS rating may also be calculated for mainline, merge, diverge, or weaving sections along a major freeway using Highway Capacity Software. The Synchro software analysis package and methodology was utilized to calculate LOS ratings for surface street intersections throughout the study corridor. Synchro default values were used as parameters in the operational analyses.

#### INTERSECTION OPERATIONS

Level of service analyses were performed for each of 14 intersections. Intersection levels of service are shown on **Figure 5**.

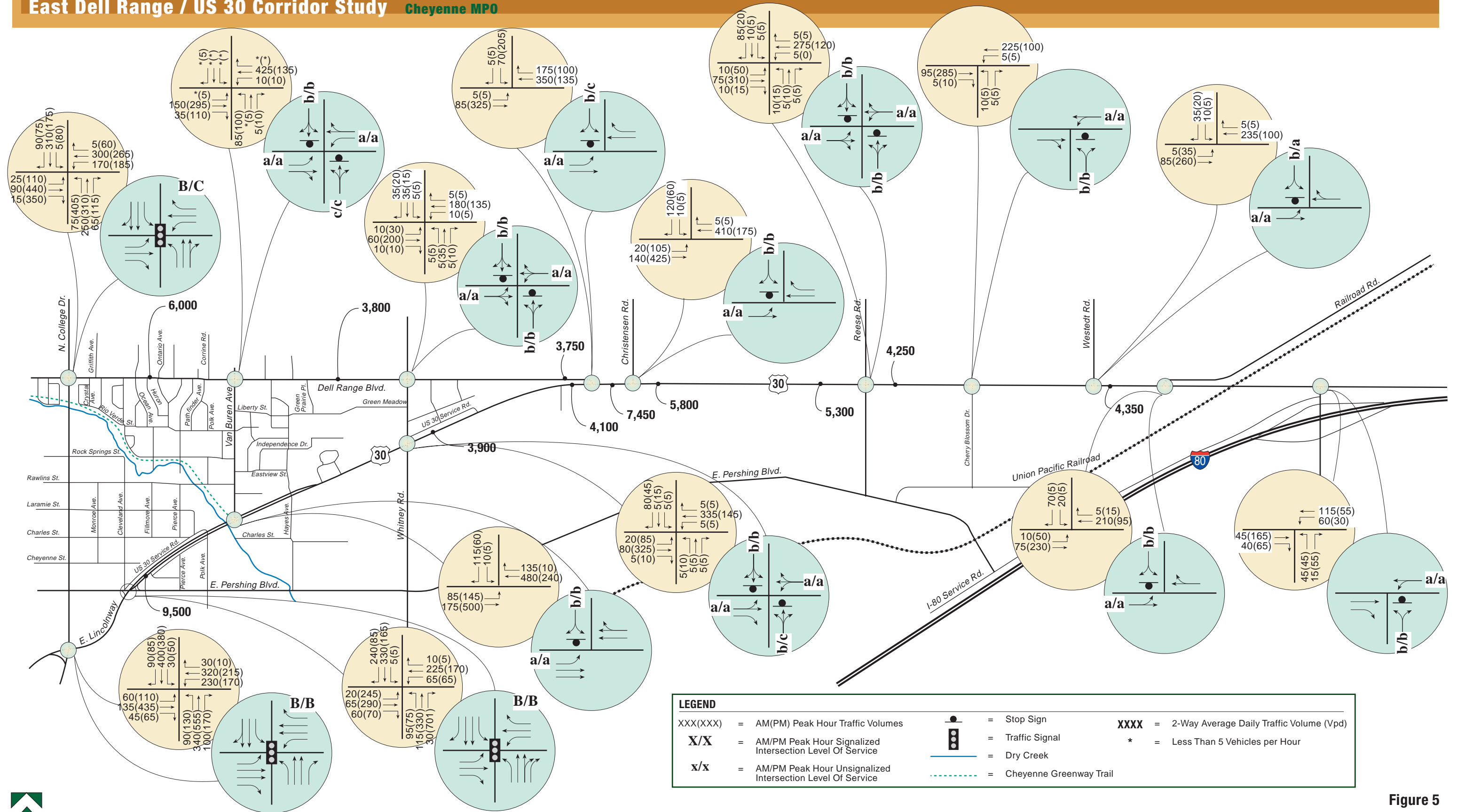


Figure 5  
Existing Traffic Conditions

## 2.3 Accident Analysis

Based on crash statistics for the Years between 2000 and 2005, a crash rate per million vehicles entering (MEV) the intersection was calculated for each intersection. The intersection analyses are described in the following section.

### Intersection Crash Analysis

A methodology was employed to calculate a crash rate per million entering vehicles for each corridor intersection. The Cheyenne MPO and WYDOT made available records of all crashes that occurred between the Year 2000 and 2005 at study intersections. The information provided for each crash included date, time, roadway conditions, resulting injuries or fatalities, type of collision, and travel speeds.

The peak hour intersection traffic counts shown in **Figure 5** were used to calculate the total number of vehicles that entered each study intersection during the 5-year crash history time period. The calculation was completed based on the assumption that the peak hour represented 10.5 percent of the average total vehicles entering the intersection per day. The daily entering total was multiplied by 1,825 days to provide a 5-year total. This 5-year total was translated into Millions of Entering Vehicles, or MEV. By dividing the number of crashes sum by the MEV value, a 5-year crash rate was calculated for each intersection.

The interchange crash totals and rates are summarized in **Table 1**. A full breakdown of accident totals and rates for the intersections is included in **Appendix A**.

**Table 1. Intersection Crash Rates**

Intersection	Peak Hour Entering Vehicles	2001 - 2005 Crashes	
		Total Crashes	per MEV
College Dr / Dell Range Blvd.	2,570	67	1.50
US 30 / Pershing Blvd.	1,575	19	0.69
US 30 / College Dr	2,375	59	1.43
Dell Range Blvd. / Van Buren Ave.	725	0	0.00
US 30 / Van Buren Ave.	960	2	0.12
Dell Range Blvd. / Whitney Rd	475	4	0.48
US 30 / Whitney Rd	660	3	0.26
US 30 / Dell Range Blvd.	775	12	0.89
US 30 / Christensen Rd.	775	4	0.30
US 30 / Reese Rd.	500	8	0.92
US 30 / Railroad Road	400	1	0.14
US 30 / Cherry Blossom Drive	410	1	0.14
US 30 / Westedt Rd.	425	2	0.27

High accident locations were identified based on the crash rate information in **Table 1**. The methodology identified in the *Manual of Transportation Engineering Studies*, published by the Institute of Transportation Engineers in 1994, was used to identify the high accident locations. That methodology states that a high accident location is defined as those locations that have a crash rate greater than the mean rate for all locations, plus a constant times the standard deviation for all locations. At the 90% confidence level, that constant is 1.282.

The mean crash rate for all locations (based on data from the study intersections) was calculated to be 0.55 crashes per million entering vehicles (MEV), and the standard deviation for all locations was calculated to be 0.5. Applying the methodology  $(0.55 + 1.282 \times 0.5)$ , intersections with a crash rate above 1.19 were identified as significant crash locations. The signalized intersections of College Drive with Dell Range Boulevard and US 30 were identified as significant crash locations. These intersections experienced the highest traffic volumes of the 14 study intersections and the highest crash rates. Specific crash patterns at each intersection are described as follows:

- ▶ **College Drive / Dell Range Boulevard** – A total of 67 crashes occurred at this intersection during the 5 year time period. Many of these crashes, 29 in all, involved vehicles completing the eastbound right or northbound left turn movements through the intersection. These movements are particularly intense during the PM peak hour, when approximately 750 vehicles complete either of these movements.

### **Rear-End Crashes**

Eighteen rear-end crashes involved vehicles turning right from eastbound Dell Range Boulevard onto southbound College Drive. This right turn movement is currently provided with a westbound right turn bypass lane protected by a triangular raised concrete island. Right-turning traffic enters southbound College Drive via a yield condition. Based on crash reports, many of these collisions resulted from two consecutive drivers looking north simultaneously to identify an appropriate gap in traffic to complete their turn movement. The following vehicle may have judged the gap sufficient while the leading vehicle continued to wait, resulting in a rear-end collision.

To help reduce the frequency of right turn rear-end collisions at this location;

1. A sign could be erected disallowing right turns on red.
2. A sign could be erected to alert drivers to observe the vehicle ahead of them before seeking to merge with southbound College Drive traffic.
3. WYDOT has provided a continuous right turn acceleration lane south along College Drive.

### **Left-Turn Crashes**

Twelve crashes involved northbound left turning vehicles colliding with southbound through vehicles. More than 400 vehicles per hour (vph) make the northbound left turn during a typical PM peak hour. These left turning vehicles are accommodated with protected / permitted left turn phasing. Therefore, a significant number of vehicles attempt to turn without the benefit of an exclusive left turn signal phase. Some vehicles may attempt to cross unreasonably short gaps in oncoming traffic, making them vulnerable to angle collisions.

The provision of additional protected northbound left turn capacity would help to address the occurrence of northbound left turn crashes at this intersection. Limiting northbound left turns to protected only signal phasing would also enhance intersection safety. It is important to note that a flashing yellow turn arrow was added during permissive left turn signal phases in October of 2006 and the left turn phasing was changed to lagging in



March of 2007. Additional study is needed to address safety and capacity issues related to this left turn movement.

- ▶ **College Drive / US 30** – A total of 59 crashes were recorded at this intersection between 2001 and 2005. Traffic safety at this intersection was specifically addressed in the Conceptual Plans-Dell Range Boulevard and U.S. 30 Documentation (BenchMark, September 2000) due to a high number of collisions between 1996 and 1998. The years between 2001 and 2005 demonstrated a similar crash rate and crash types when compared to the previous study. Angle-type collisions comprised the majority of crashes, followed by left-turn and rear-end collisions.

Twenty-two collisions at the intersection resulted from vehicles running a red light or flashing red light. Of these, a slim majority were traveling east-west along US 30. Five of the collisions occurred when drivers along US 30 did not stop for a flashing red light. The signal no longer operates in flash mode during nighttime hours. Measures to address red-light running should be considered at this intersection. The previous study highlighted several ways to attract attention to the signal, including signal coordination and a review of the speed limit through the area.

Twenty left turn collisions occurred at the intersection between 2001 and 2005. No protected phases were provided for left turning vehicles during that time, contributing to the increased crash frequency. At the time of this study, a new mast arm traffic signal was under construction at the US 30 / College Drive intersection. This new installation will provide for protected / permitted left turns with a flashing yellow arrow during permitted left turns. It is likely that this installation will enhance traffic safety. The intersection should be monitored to evaluate the effectiveness of the new signal and phasing in coming months.

- ▶ **US 30 / Dell Range Boulevard** – The 5-year crash rate at the US 30 / Dell Range Boulevard was 0.89, 4<sup>th</sup> highest in the study corridor. While not identified as a high crash location, drivers regularly encounter safety hazards at this intersection. Attendees at public meetings who live and work along the corridor indicated that they often decide to avoid the intersection due to the difficulty of entering US 30 from Dell Range Boulevard.
- ▶ **US 30 Rural intersections** – US 30 intersections east of Dell Range Boulevard demonstrated lower crash rates, though the Reese Road intersection possessed the 3<sup>rd</sup> highest crash rate in the corridor. As discussed earlier, the east portion of the corridor is a more rural environment. Traffic safety considerations are different than the west section but are equally important. High speeds along US 30 contribute to crashes, and WYDOT staff discussed the tendency for drivers entering US 30 to not come to a complete stop at cross street stop signs. US 30 drivers may tend to perceive they are in an isolated, rural environment. However, recent suburban-type growth within the east portion of the corridor has increased traffic accessing US 30. The WYDOT is currently planning to add exclusive turn lanes at many of these intersections, an improvement that will help improve traffic safety.



## 3.0 YEAR 2030 TRAFFIC CONDITIONS

### 3.1 *Future Roadway Network Enhancements*

The Cheyenne MPO completed its regional plan, titled PlanCheyenne, in early 2007. The Fiscally Constrained Roadway Plan component of PlanCheyenne included the following improvements, depicted on **Figure 6**:

- ▶ **Christensen Road Extension** – The plan identifies a future extension of Christensen Road south from US 30 to connect to Interstate 80 (I-80) at the existing Campstool Road interchange. This extension would provide vehicles seeking to reach I-80 from locations east with a more direct route and would accommodate anticipated new development in the I-80 / Campstool Road area.
- ▶ **Intersection Improvements** – The plan includes improvements to US 30 east of Dell Range Boulevard, and identifies the Dell Range Boulevard / US 30 intersection for intersection or interchange improvements. In addition to the improvements identified in PlanCheyenne, committed improvements to US 30 intersections include the turn lanes shown on **Figure 6** at Whitney Road, Dell Range Boulevard, Christensen Road, Allen Road, Reese Road, Cherry Blossom Drive, Westedt Road, Railroad Road, and Field Station Road. The WYDOT began construction of these committed improvements in 2007.
- ▶ **Roadway Widening** – The Fiscally Constrained Roadway Plan also includes widening of Dell Range Boulevard to 4 travel lanes between College Drive and US 30 and widening of US 30 to 4 travel lanes between Hayes Avenue and Christensen Road.

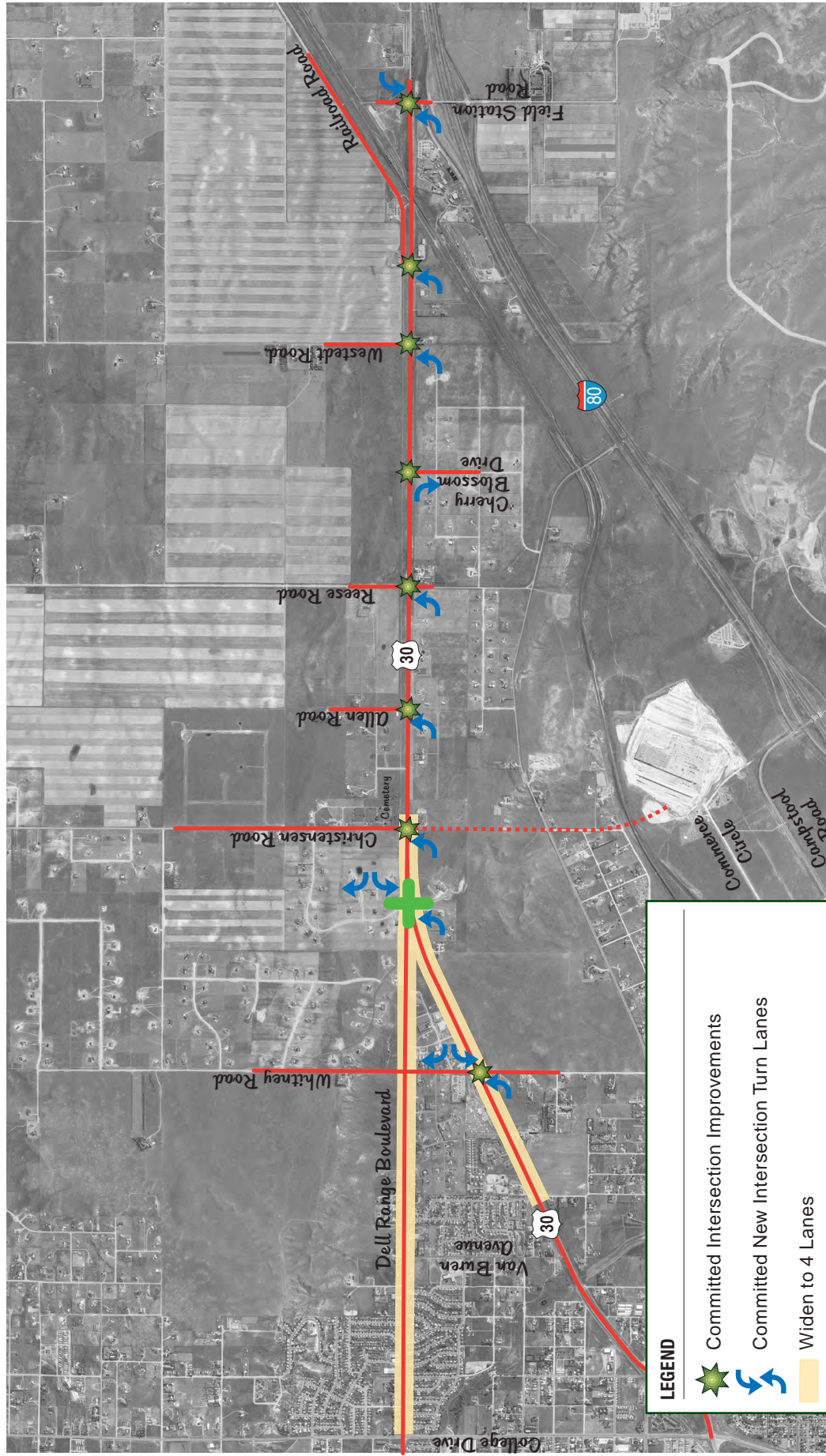
### 3.2 *Growth Projections*

Year 2030 PlanCheyenne land use forecasts reflect an annual population growth rate of approximately 2 percent per year. A scenario reflecting a population growth rate of approximately 1.25 percent was also included in PlanCheyenne to accommodate a range of future growth expectations and assist in project prioritization. In coordination with the project Steering Committee, it was determined that two sets of future land use forecasts would be used in the Corridor Study. Forecast Scenario A was developed to reflect the higher annual growth rate and Scenario B was developed based on the lower growth.

The regional travel demand model developed for the PlanCheyenne effort (TransCad modeling software) was provided to the project team for use on the East Dell Range / US 30 Corridor Study. The Year 2030 Vision roadway network was paired with the PlanCheyenne land use forecasts to develop forecast Scenario A. The WYDOT provided daily traffic forecasts for Scenario B based on a modified version of the PlanCheyenne travel demand model.

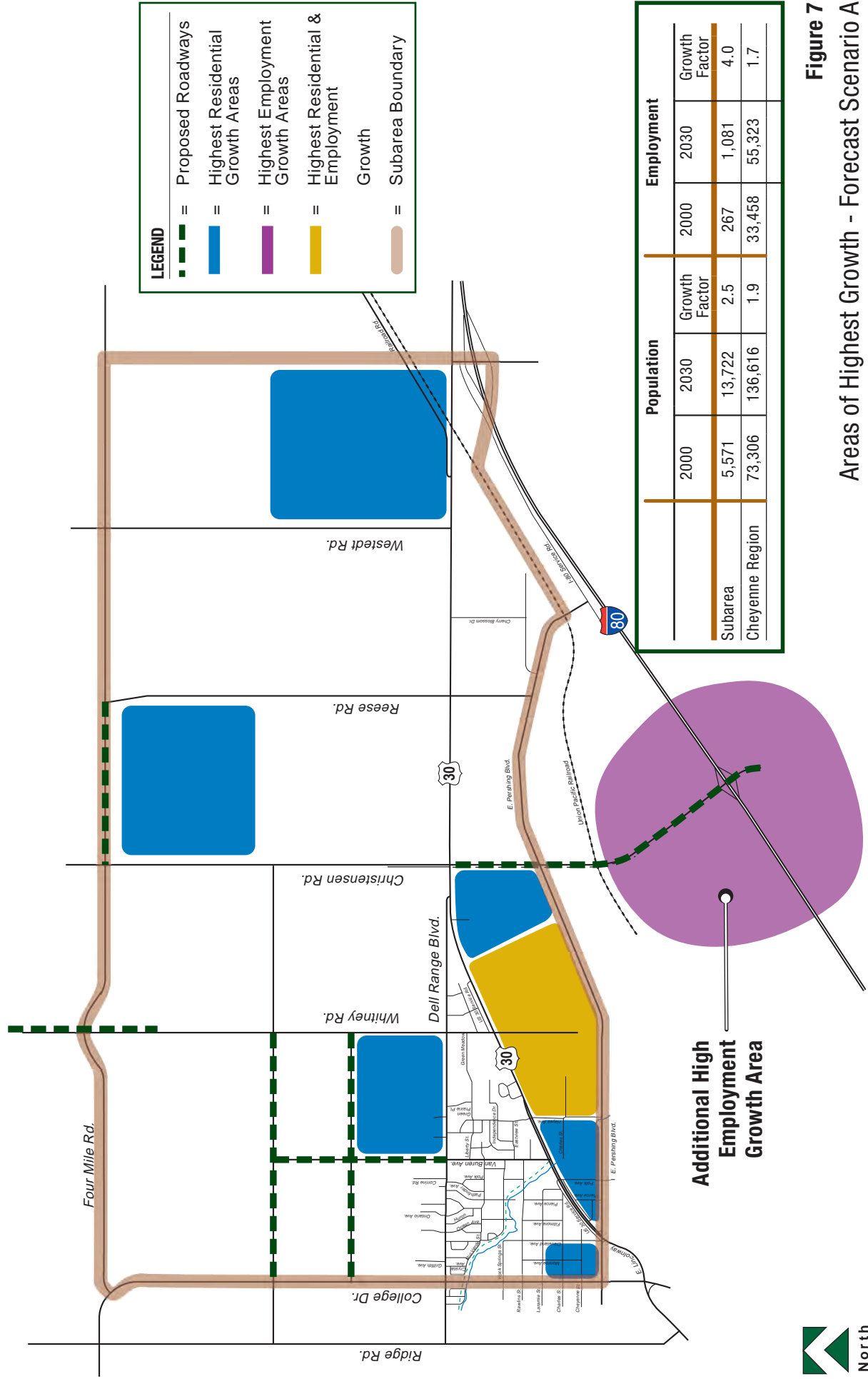
#### Land Use

**Figure 7** depicts the areas of highest future growth associated with Forecast Scenario A. As shown, residential growth is spread throughout the corridor, with employment growth anticipated along Whitney Road south of US 30 and in the I-80 / Campstool interchange area. Forecast Scenario B expected growth in many of the same areas, but to a lesser degree. For example, Scenario A included more than 1,000 new residents in the area northwest of the Whitney Road /



**Figure 6**  
PlanCheyenne Committed and Fiscally Constrained  
Future Roadway Network Enhancements





**Figure 7**  
Areas of Highest Growth - Forecast Scenario A





Dell Range Boulevard intersection while Scenario B included just shy of 400 new residents in the same area. Within the subarea outlined in brown on **Figure 7**, Scenario A included approximately 55 percent more new residents and approximately 78 percent more new employees than Scenario B.

### Daily Traffic Volumes

As discussed earlier, corridor traffic projections were developed from Year 2030 travel demand modeling prepared for the PlanCheyenne effort. The WYDOT modeled Forecast Scenario B and provided the results to the project team. Daily traffic projections developed for both scenarios are shown alongside existing traffic counts on **Figure 8**. As shown, daily traffic volumes along US 30 would grow by 1.5 to 2.5 times over existing traffic levels, while Dell Range Boulevard would carry 2.5-3.5 times existing traffic by the Year 2030. The Christensen Road extension south of US 30 is projected to carry between 5,700 vpd and 12,600 vpd.

As shown on **Figure 8**, travel patterns through the US 30 / Dell Range Boulevard intersection are anticipated to change somewhat with growth in the area and completion of the Christensen Road extension. Currently, east-west through movements along US 30 exceed turning movements between US 30 and Dell Range Boulevard. Turning movements between east US 30 and Dell Range Boulevard are expected to increase at a greater rate than east-west through travel along US 30. This trend reflects the growing importance of Dell Range Boulevard as a more direct connection than US 30 to developed portions of Cheyenne north of the Central Business District.

## 3.3 *Projected Traffic Conditions*

### Peak Hour Traffic Volumes

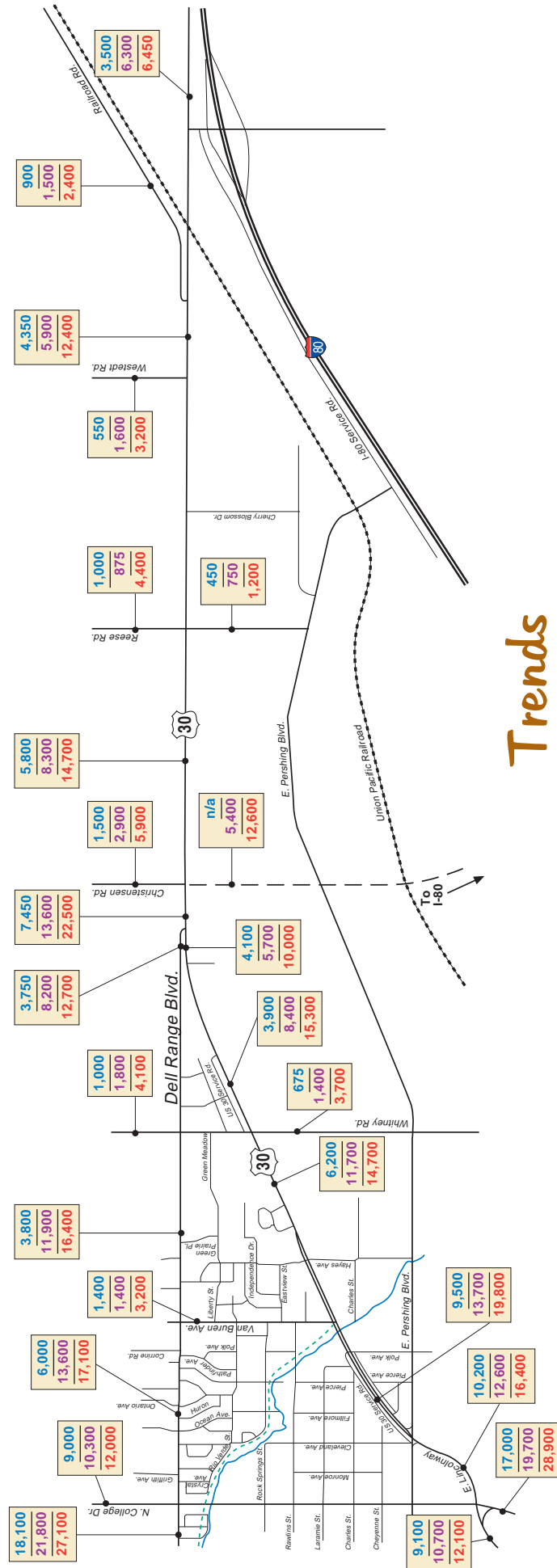
Growth factors were developed for all intersection approaches based on the daily traffic volumes shown on **Figure 8**. These factors were applied to the existing peak hour approach volumes using the process outlined in the National Cooperative Highway Research Program (NCHRP) Report No. 255, yielding Year 2030 peak hour forecasts for each scenario. Peak hour turning movement forecasts for Scenario A and Scenario B are depicted on **Figures 9** and **10**, respectively.

### Levels of Service

To test the operational performance of the corridor into the future, Year 2030 LOS calculations were performed for the 14 corridor study intersections. The assumptions and findings are outlined as follows for each scenario:

#### FORECAST SCENARIO A

**Figure 9** depicts the results of operational analyses for Forecast Scenario A. For the purposes of this analysis, it was assumed that both US 30 and Dell Range Boulevard would consist of 4 travel lane sections west of Christensen Road. Further, it was assumed that US 30 would be widened to provide 4 travel lanes east of Christensen Road by the Year 2030, as daily traffic volumes are projected to exceed 10,000 vpd, a typical WYDOT threshold for widening from two to four lanes.



Forecast Scenario	Annual Growth Rate (percent)		
	Segment		
2001 - 2006 Growth	US 30 East	US 30 South	East Dell Range
	7.0%	3.5%	7.0%
	2.0%	2.1%	3.7%
Scenario A	4.0%	3.5%	5.0%

LEGEND		
XXXX	=	Existing Daily Traffic (2005/2006)
XXXX	=	2030 Scenario B Daily Forecast
XXXX	=	2030 Scenario A Daily Forecast

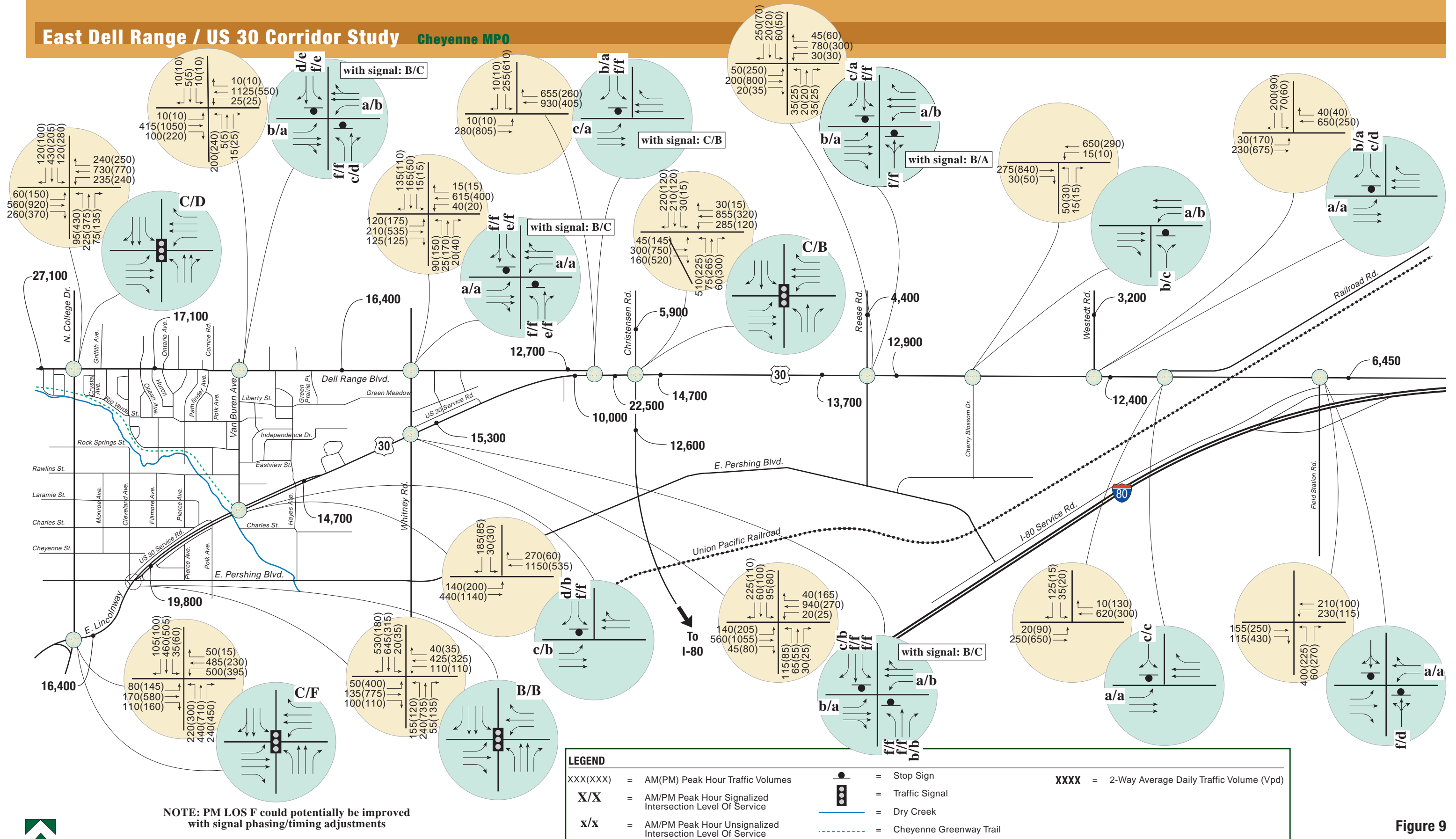


Figure 8

Future Traffic Growth



# East Dell Range / US 30 Corridor Study Cheyenne MPO



**Figure 9**  
Year 2030 Forecast Scenario A Traffic Conditions



# East Dell Range / US 30 Corridor Study Cheyenne MPO

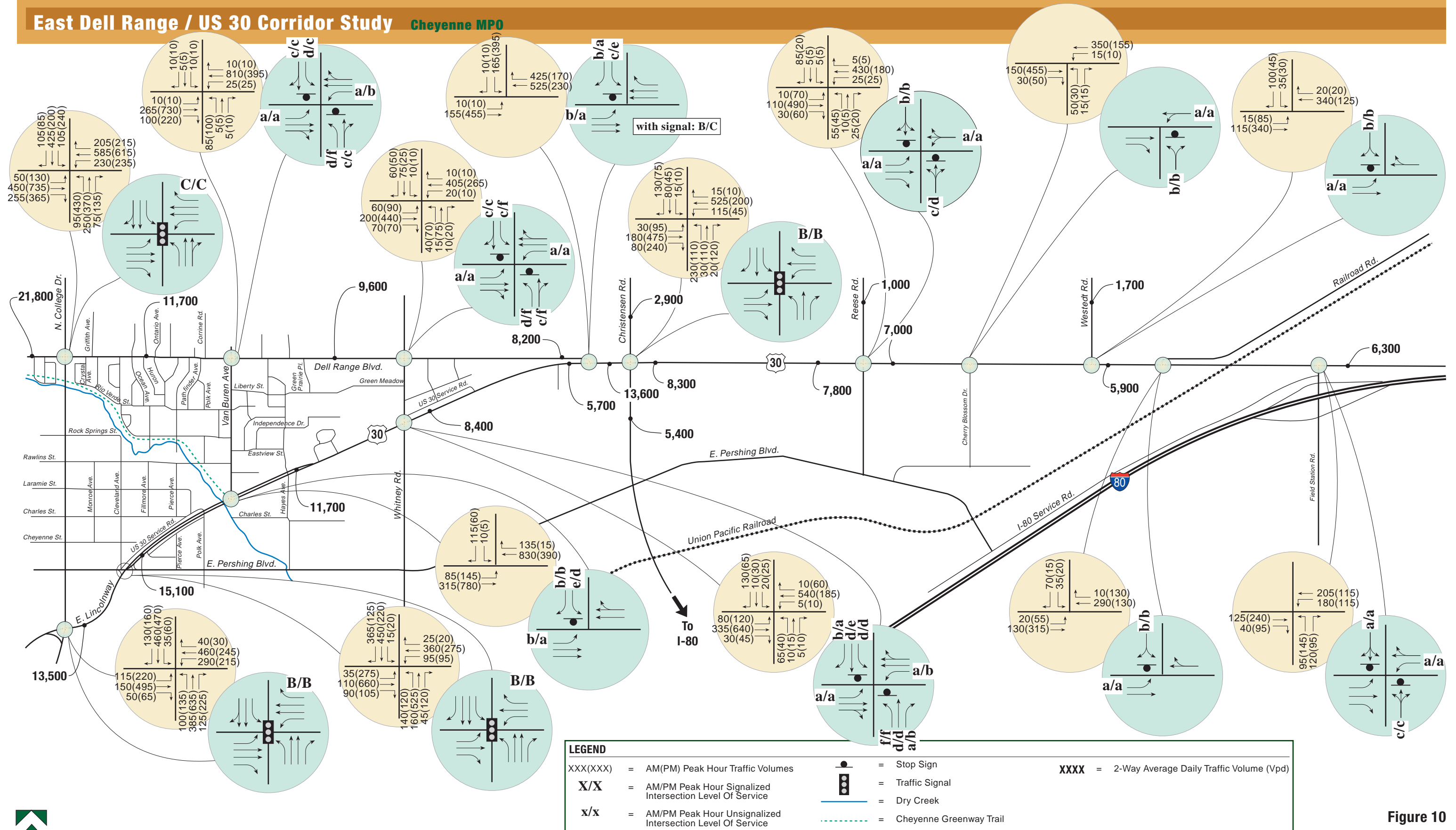


Figure 10

Year 2030 Forecast Scenario B Traffic Conditions



Based on signal warrants outlined in the Manual on Uniform Traffic Control Devices (Federal Highway Administration, 2003) (MUTCD), signalized intersections are shown along Dell Range Boulevard at Van Buren Avenue, Whitney Road, and US 30. New signalized intersections along US 30 would include Whitney Road, Dell Range Boulevard, Christensen Road. A signal would nearly be warranted at Reese Road. With the installation of these signals, each of the study intersections would operate at LOS D or better during peak hours, with the exception of the following intersections and movements:

- ▶ Entering left turns at the intersections of US 30 with Field Station Road and Van Buren Avenue would operate at LOS F during either or both peak hours.
- ▶ The signalized intersection of College Drive and US 30 would operate at LOS F during the PM peak hour. This condition would improve to LOS D with adjustments to the traffic signal timing and signal phasing.

### FORECAST SCENARIO B

**Figure 10** depicts the results of operational analysis of Forecast Scenario B. As in Scenario A, it was assumed that both US 30 and Dell Range Boulevard would provide 4 travel lanes west of Christensen Road. However, it was assumed that US 30 would remain 2 lanes wide east of Christensen Road. This is because daily forecasts east of Christensen do not reach the level needed to trigger widening based on the typical WYDOT daily traffic volume threshold of 10,000 vpd (threshold for more rural sections including mostly unsignalized intersections).

Based on signal warrant analyses of Scenario B traffic levels, the intersections of US 30 with Dell Range Boulevard and Christensen Road would warrant signalization by the Year 2030. Both of these intersections would operate at LOS C or better during peak hours along with the currently signalized intersections of College Drive with Dell Range Boulevard and US 30 and the Pershing Boulevard / US 30 intersection. Movements at unsignalized study intersections would operate at LOS E or better, with the exception of the southbound left turn from Whitney Road onto Dell Range Boulevard.

With its reduced traffic volume projections, Forecast Scenario B represents an improved operational condition relative to Scenario A and would require fewer signalized intersections.

## 4.0 ALTERNATIVES

### 4.1 Dell Range / US 30 / Christensen Alternatives

#### Development of Alternatives

The central corridor junction of US 30 with Dell Range Boulevard has seen an increasing amount of traffic in recent years, serving regional traffic traveling to and from the Cheyenne CBD and the Frontier Mall retail cluster west along Dell Range Boulevard. The Christensen Road / US 30 intersection lies approximately 1,000 feet east of Dell Range Boulevard, and the future extension of Christensen Road south will increase traffic through both intersections. Due to their proximity and significance, these intersections are addressed as an intersection complex in this study.

Based on the assessment of existing conditions, primary concerns at this complex include:

- ▶ Skewed angle between Dell Range Boulevard and US 30 forces a tight curve along Dell Range Boulevard to intersect with US 30.
- ▶ Traffic congestion, particularly for left turn from Dell Range onto eastbound US 30.
- ▶ High travel speeds at transition from rural to urban conditions.
- ▶ Relatively close arterial intersection spacing (1,000 feet) between Dell Range Boulevard and Christensen Road.

A collection of intersection / interchange alternatives were developed to address the identified concerns at the intersection complex. The alternatives identified in the Year 2000 BenchMark study were included, with additional options bringing the total number of alternatives to 17, not including the No Action Alternative. The alternatives are listed in **Table 2** and are depicted graphically on **Figures 11 - 19**.

**Table 2. Intersection Complex Alternatives**

Alternative	Title
No Action	No Improvements
1	At Grade Intersection
2	West Relocated Dell Range Boulevard
2A	Farthing Road Extension
3	East Relocated Dell Range Boulevard
4	US 30 Tee Intersection
5	Middle Flyover
6	Foxglove Intersection
7	Roundabout
8	Interchange West of Tower
9	Diamond Interchange
10	Partial Cloverleaf
11	US 30 / Dell Range Shift to Whitney Road
11A	Dell Range Slip Ramp
12	Split Diamond
13	Realigned US 30
14	Grade Separation
14A	Dell Range Flyover



**ALTERNATIVE 1: At-Grade Intersection**



**ALTERNATIVE 2: West Relocated Dell Range Boulevard**



**Figure 11**  
Intersection Complex Alternatives 1 and 2





**ALTERNATIVE 2A:** Farthing Road Extension



**ALTERNATIVE 3:** East Relocated Dell Range Boulevard



**Figure 12**  
Intersection Complex Alternatives 2A and 3





**ALTERNATIVE 4: US 30 Tee Intersection**



**ALTERNATIVE 5: Middle Flyover**



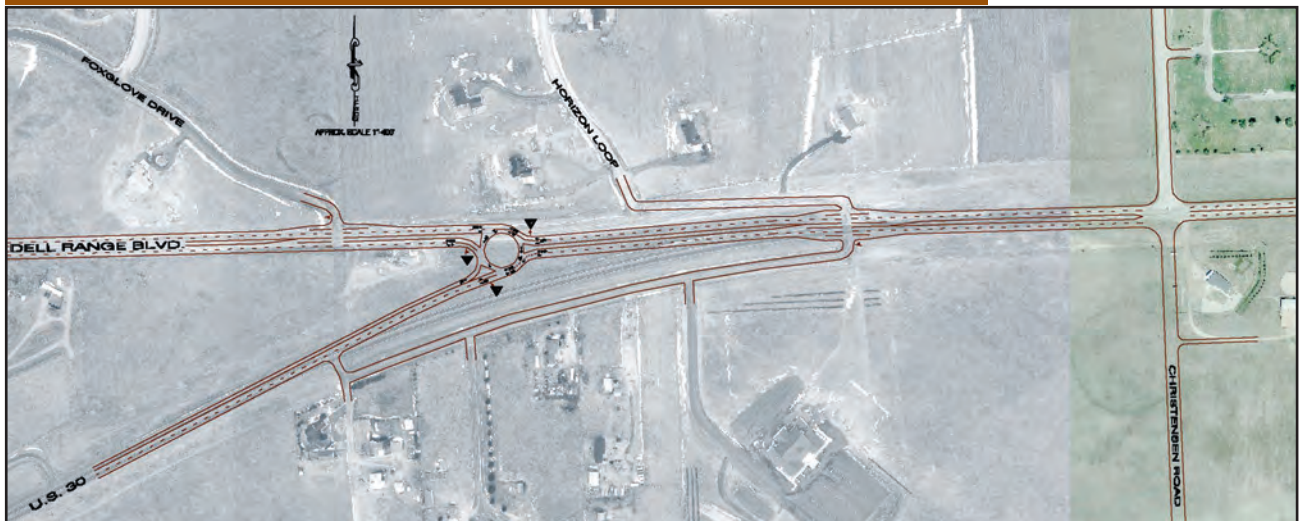
**Figure 13**  
Intersection Complex Alternatives 4 and 5



**ALTERNATIVE 6: Foxglove Intersection**



**ALTERNATIVE 7: Roundabout**



**Figure 14**  
Intersection Complex Alternatives 6 and 7





**ALTERNATIVE 8: Interchange West of Tower**



**ALTERNATIVE 9: Diamond Interchange**



**Figure 15**  
Intersection Complex Alternatives 8 and 9



**ALTERNATIVE 10: Partial Cloverleaf**



**ALTERNATIVE 11: US 30 / Dell Range Boulevard Shift to Whitney Road**



**Figure 16**  
Intersection Complex Alternatives 10 and 11



**ALTERNATIVE 11A: Dell Range Slip Ramp**



**ALTERNATIVE 12: Split Diamond**



**Figure 17**  
Intersection Complex Alternatives 11A and 12

**ALTERNATIVE 13: Realigned US 30**



**ALTERNATIVE 14: Grade Separation**



**Figure 18**  
Intersection Complex Alternatives 13 and 14



**ALTERNATIVE 14A:** Dell Range Flyover



**Figure 19**  
Intersection Complex Alternative 14A

### Screening of Alternatives

The process used to reach a recommended alternative consisted of two levels of screening, as outlined on **Figure 20**. Level 1 consisted of a Screening for Reasonableness, a qualitative evaluation of alternative performance in 6 criteria categories. Level 2 added quantities and detail within these criteria to sharpen key areas of difference between the remaining alternatives. The Level 2 screening results were presented to and discussed within the Steering Committee before reaching a final recommendation.

### Community Input

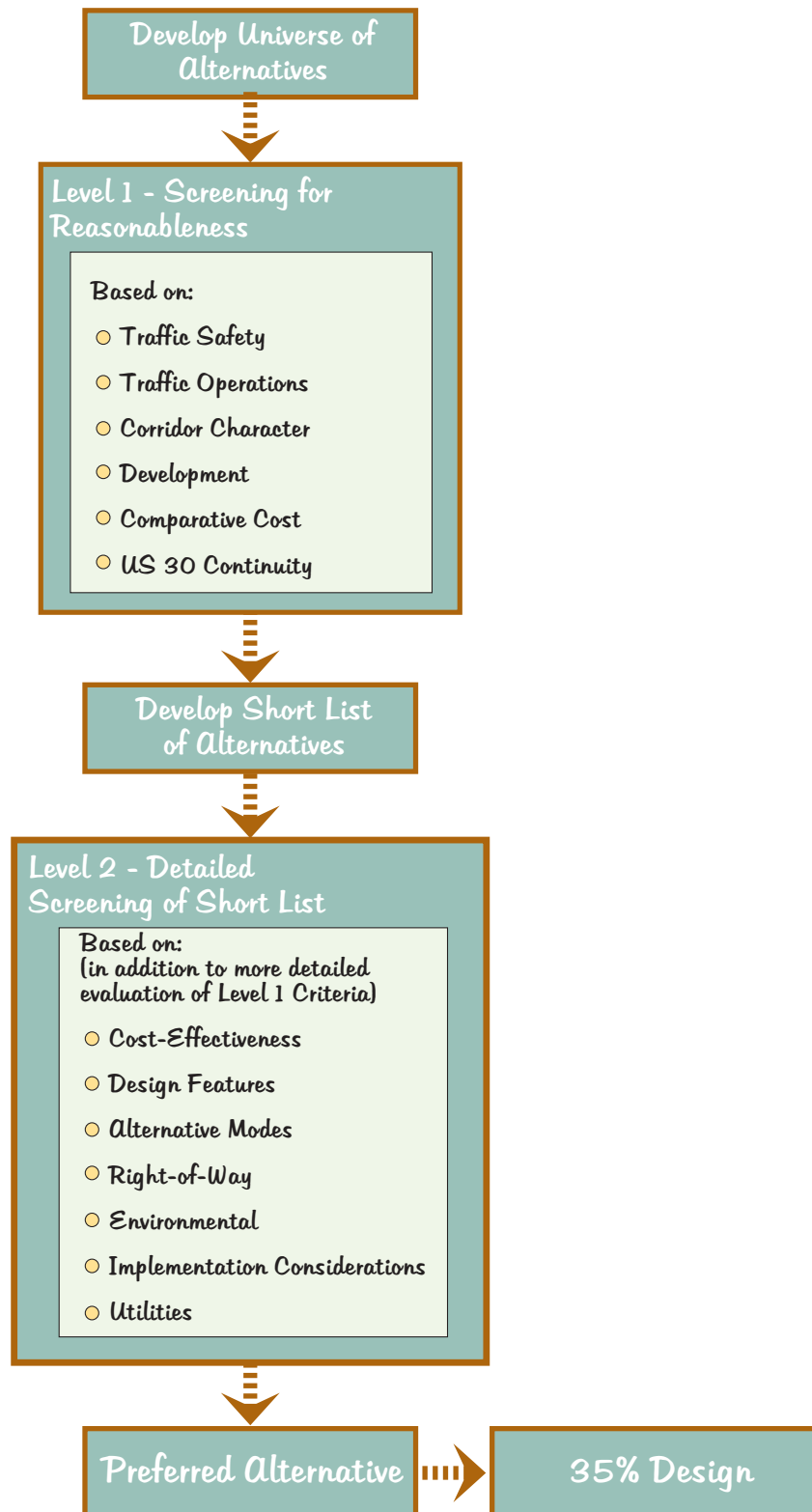
The majority of the alternatives (alternatives 2A, 14A and 11A were developed after the public meeting to supplement the original options) were presented to the public at an open house in September of 2006. The Cheyenne MPO invited residents and businesses located along the corridor and provided meeting notices in the Cheyenne Newspaper and on Variable Message Signs (VMS) placed along the corridor. Visitors to the public open house were able to record their thoughts on comment cards and in personal conversations with members of the project team. Of the attendees who provided input on the alternatives, several indicated a preference for alternatives that would keep the traffic moving using a grade separation. Of the at-grade alternatives, alternatives 2 and 11 received the most positive response.

A summary of the September 2006 Open House is included in **Appendix B**.

### Level 1 Screening for Reasonableness

The intersection complex alternatives were qualitatively evaluated and compared based on performance in a select group of criteria. This Level 1 screening for reasonableness included a qualitative evaluation of alternatives. The objective of this effort was to identify a shortened list of alternatives from which to ultimately select a preferred alternative.

The alternatives described above were evaluated in 6 categories. The evaluation categories are listed in **Table 3**, along with the questions considered in evaluating each.



**Figure 20**

Alternative Screening Process



**Table 3. Alternative Evaluation Criteria and Key Questions**

Criterion	Key Questions
Traffic Safety	<ul style="list-style-type: none"> <li>Will the alternative worsen traffic safety conditions?</li> <li>Will the alternative be too complex for drivers to understand?</li> </ul>
Traffic Operations	<ul style="list-style-type: none"> <li>Will the alternative cause excessive delays at critical intersections?</li> <li>Will the alternative increase the difficulty of local access?</li> </ul>
Corridor Character	<ul style="list-style-type: none"> <li>Will the alternative provide a roadway network that complements plans for the surrounding environment?</li> </ul>
Development	<ul style="list-style-type: none"> <li>Will the alternative require acquisition of residences and businesses?</li> <li>Will the alternative provide opportunities for future development?</li> </ul>
Comparative Cost	<ul style="list-style-type: none"> <li>Is the alternative too costly to construct?</li> <li>Could alternative construction be phased to minimize future expense if actual growth rates exceed projections?</li> </ul>
US 30 Continuity	<ul style="list-style-type: none"> <li>Will the alternative provide for the continuity of US Highway 30 as a regional travel route?</li> </ul>

The performance of each alternative was evaluated according to these criteria and assigned a rating of good, fair, or poor in each category. The results of the evaluation of the alternatives were compiled in the form of evaluation matrices to facilitate comparison between the alternatives. The full matrices are included in tabular form in **Appendix C**. The ratings were developed for the project Steering Committee as a tool for comparing the alternatives with the goal of selecting a smaller grouping to be advanced to the next level of screening.

The evaluation matrices were discussed by the project Steering Committee in March of 2007. Key conclusions of the Steering Committee relating to Level 1 Screening are included in **Appendix C**. Much of the discussion of the alternatives focused on the question of the compatibility of the alternatives to the existing and future level and type of development surrounding the intersection complex. It was generally agreed that the area is currently suited to higher travel speeds. It was also agreed that the future of this area will bring higher-density development, increased traffic control (i.e. traffic signals) and lower travel speeds.

The general conclusion of this discussion was that a grade separated facility could serve the short-term need for higher travel speeds, but would not be compatible with future land use and travel speeds. Therefore, the at-grade alternatives represent a better long term solution, provided the at-grade intersections would accommodate projected future traffic levels at a satisfactory level of service. Of the surviving alternatives, only one was of the grade separation type, while the others represented at-grade solutions. Six grade-separated options were screened from further consideration, due to relatively high costs and lack of compatibility with the anticipated future urban-type surroundings.

Resulting from the Level 1 Screening process, five build alternatives were advanced to Level 2. Though not explicitly discussed by the Steering Committee, the No Action Alternative was also advanced to Level 2. The alternatives and the primary reasons for their advancement are outlined in **Table 4**.

**Table 4. Alternatives Advanced to Level 2 Screening**

Alternative		Primary Reasons for Advancement
NA	No Action	<ul style="list-style-type: none"> <li>No construction or right-of-way costs</li> </ul>
2	West Realigned Dell Range	<ul style="list-style-type: none"> <li>Relatively inexpensive to construct</li> <li>Intersection shift would ease radius of Dell Range curve</li> <li>Supported by a number of attendees at Community Open House</li> </ul>
7	Roundabout	<ul style="list-style-type: none"> <li>Lower speeds would lessen severity of collisions</li> <li>Would complement future urban environment</li> <li>Could accommodate local access with additional approaches</li> </ul>
11	US 30 / Dell Range Shift to Whitney Road	<ul style="list-style-type: none"> <li>Would remove skewed Dell Range / US 30 intersection</li> <li>Relatively inexpensive to construct</li> <li>Supported by a number of attendees at Community Open House</li> </ul>
11A	Dell Range Slip Ramp	<ul style="list-style-type: none"> <li>Would remove skewed left turn movement from Dell Range / US 30 intersection</li> <li>Would provide for free westbound US 30-to-Dell Range movement</li> </ul>
14A	Dell Range Flyover	<ul style="list-style-type: none"> <li>Would provide free movements along Dell Range while accommodating US 30 through travel</li> <li>Of grade separation alternatives, most likely to complement future urban environment</li> <li>Public support for grade separated (free flow) option</li> </ul>

## Level 2 Screening

### SCREENING CRITERIA

For the remaining six alternatives, the project team measured alternative performance across the range of Level 2 screening criteria. These criteria are listed in **Table 5**.

**Table 5. Level 2 Alternative Screening Criteria and Evaluation Measures**

Criteria	Evaluation Measures
Traffic Safety	<ul style="list-style-type: none"> <li>Improvement of existing hazardous conditions</li> </ul>
Traffic Operations	<ul style="list-style-type: none"> <li>Intersection Level of Service</li> <li>Need for signalization</li> <li>Impacts on local access</li> </ul>
Corridor Character	<ul style="list-style-type: none"> <li>Consistency with corridor vision (urban, rural)</li> </ul>
Development	<ul style="list-style-type: none"> <li>Impacts to businesses / residences</li> <li>Opportunities for further development</li> </ul>
Cost-Effectiveness	<ul style="list-style-type: none"> <li>Benefits achieved for anticipated expenditures</li> </ul>
Design Features	<ul style="list-style-type: none"> <li>Improvement of existing geometric deficiencies</li> </ul>
Alternative Modes	<ul style="list-style-type: none"> <li>Greenway enhancements</li> <li>Pedestrian safety</li> <li>'Complete Streets' compatibility</li> </ul>
Right-of-Way	<ul style="list-style-type: none"> <li>Estimate of acquisitions necessary</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>Avoid major environmental impacts</li> </ul>
Implementation Considerations	<ul style="list-style-type: none"> <li>Costs</li> <li>Flexibility (construction phasing options)</li> <li>Constructability</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>Impacts to existing utilities (water, gas, electrical)</li> </ul>

Before Level 2 Screening, it was determined that a number of criteria would not indicate a difference between the alternatives. Including these criteria in the process would not differentiate the alternatives or assist in selecting a recommended alternative. It was judged that the build alternatives would perform or could be adjusted to perform relatively similarly in the Development, Design Features, Alternative Modes, Environmental, and Utilities criterion. Alternative performance was not evaluated in these categories.

The criteria were evaluated within a larger study area incorporating Whitney Road between Dell Range Boulevard and US 30. Whitney Road was included because Alternative 11, US 30 / Dell Range Shift to Whitney Road, would re-route traffic currently using the Dell Range Boulevard / US 30 intersection to Whitney Road, thereby impacting Whitney Road to a greater degree than the other alternatives. The inclusion of Whitney Road serves to highlight key differences between the alternatives.

**Table 6** provides an overview of alternative performance within each category. Relatively poor performance of an alternative in a category is highlighted in red while good performance is outlined in green. Performance of the alternatives within the criteria is detailed following **Table 6**.

## East Dell Range / US 30 Corridor Study Cheyenne MPO

**Table 6. Summary of Level 2 Screening Alternative Performance**

Criteria	Intersection Complex Alternative					
	No Action	2 – Realigned Dell Range	7 – Roundabout	11 – US 30 / Dell Range Shift to Whitney Road	11A – Dell Range Slip Ramp	14A – Dell Range Flyover
Traffic Safety	Tight curve at Dell Range / US 30 a safety hazard. Whitney Road not paved b/t Dell Range and US 30	Moderate safety improvement with longer curve radius along Dell Range Blvd. at US 30	Reduces speeds and severity of accidents, but would present a learning curve for drivers	Skew at US 30 / Whitney intersection potential safety issue	Improves curve radius along Dell Range Blvd. at US 30. Would require some out-of-direction travel and ramp along tangent section.	Reduces intersection-related accidents by replacing at-grade movements with ramps
Traffic Operations <sup>1</sup>	With strain of future growth, current unsignalized movements would reach LOS F conditions without widening / signalization	Intersection operations at LOS C or better, 23 seconds per vehicle average peak hour intersection delay	Intersection operations at LOS C or better, 23 seconds per vehicle average peak hour intersection delay	Intersection operations at LOS C or better, 19-42 seconds per vehicle average intersection delay. Requires 1/3 mile added travel distance to reach Dell Range via Whitney Rd.	Intersection operations at LOS C or better, 24 seconds per vehicle average peak hour intersection delay	Intersection operations at LOS C or better, 22 seconds per vehicle average peak hour intersection delay. Accommodates free flow movements.
Adaptability to Existing and Future Corridor Character	At-grade intersection suits urban environment and adaptable to rural condition	At-grade intersection suits urban environment and adaptable to rural condition	Roundabout suits urban environment, may work with long term future character, but not suited to higher speed rural US 30 corridor	Emphasis on city grid suits urban environment and fits with residential development along Dell Range Blvd. Provides for rural higher speed US 30 environment	Modified at-grade intersection suits urban environment and adaptable to rural condition	Grade separations maintain high speeds, but not compatible with the likely future adjacent signalized intersections
Right-of-Way	No Right-of-way impacts	4.16 Acres	3.74 Acres	1.88 Acres	2.34 Acres	4.43 Acres
Estimated Construction Cost <sup>3</sup>	\$0	\$6.5 Million	\$5.8 Million	\$5.5 Million	\$6.2 Million	\$7.3 Million
Cost plus ROW Effectiveness <sup>2</sup>	n/a	92 Sec / \$Mil+ROW Acres (63)	103 Sec / \$Mil+ROW Acres (66)	123 Sec / \$Mil+ROW Acres (65)	114 Sec / \$Mil+ROW Acres (67)	85 Sec / \$ Mil+ROW Acres (64)
Flexibility	n/a	Could be constructed as initial phase of larger project, but requires ROW investment	Difficult to reconstruct or construct as phase 1 of a different alternative	Could serve as initial phase of one of the other alternatives, particularly Alt 2. Requires ROW investment	Could be phased into the flyover option	Difficult to adjust to urban-friendly configuration once built

1 Operational analyses include intersections of US 30 with Christensen Road, Dell Range Boulevard and Whitney Road and the intersection of Whitney Road with Dell Range Boulevard. Average delay is the sum of AM and PM peak hour delay at all of these five intersections divided by five.

2 Cost effectiveness calculation is delay savings relative to No Action divided by the sum of the estimated construction cost and ROW Acres. Parentheses include Whitney Road

3 Design work based on horizontal alignment information only. Vertical component not included with design work.



### ***Traffic Safety***

Relative to the No Action Alternative, the most significant traffic safety benefit would be achieved with Alternative 14A, the Dell Range Flyover. This alternative would reduce intersection-related crashes by replacing at-grade movements with grade-separated ramps. The other alternatives would provide incremental safety benefits over the No Action Alternative. Alternative 11A would provide the least traffic safety enhancement of the build alternatives, as the Dell Range slip ramp could lead to high exit speeds and confusion for westbound drivers.

### **TRAFFIC OPERATIONS**

#### ***Traffic Forecasts***

**Figure 21** depicts Year 2030 daily and peak hour traffic forecasts for the No Action and build alternatives 2, 7, 11A and 14A. As shown, forecasts for Scenario B are approximately 60 percent greater than Scenario A. Depending on the forecast scenario, Dell Range Boulevard is projected to carry up to 16,400 vpd while US 30 would carry up to 22,500 vpd.

As shown on **Figure 22**, traffic patterns throughout the study area would shift due to the reconfiguration of Dell Range Boulevard proposed with Alternative 11. Traffic that currently utilizes the Dell Range Boulevard / US 30 intersection would be rerouted farther west to Whitney Road. Daily traffic forecasts along US 30 and Whitney Road would increase by 8,300 to 10,000 vpd with Scenario A and by 3,600 to 4,900 with Scenario B. Alternative 11 would redistribute traffic volumes throughout the corridor, increasing north-south traffic as far west at College Drive and east-west traffic along Pershing Boulevard. Dell Range Boulevard would decrease.

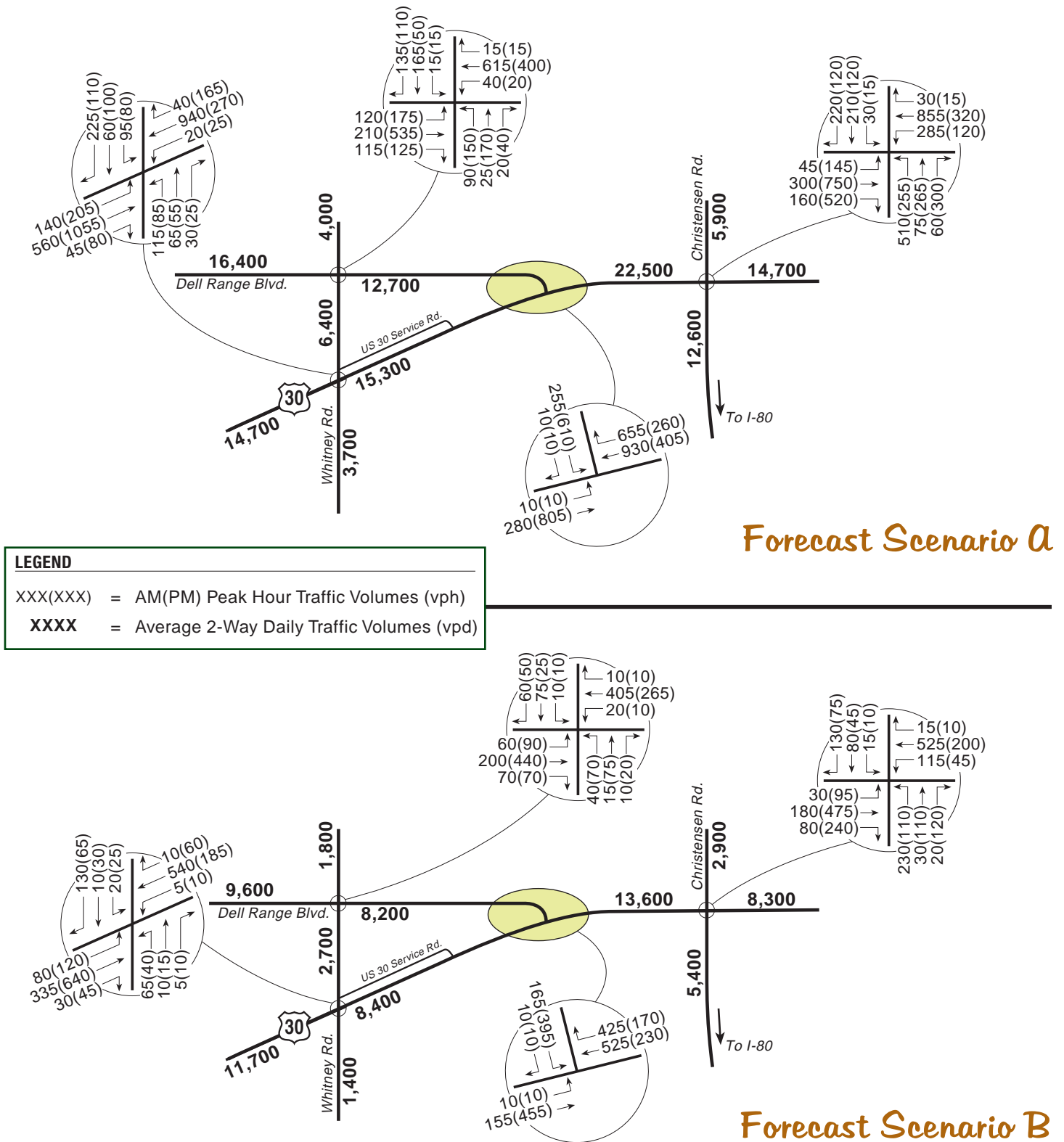
#### ***Level of Service***

Peak hour intersection LOS analyses were completed for the alternatives based on both Forecast Scenario A and Forecast Scenario B. **Figure 23** depicts the results for alternatives that would maintain an at-grade intersection of Dell Range Boulevard with US 30. As shown, this intersection and the neighboring three intersections would operate at LOS C or better for each of the alternatives for both forecast scenarios.

A number of intersection improvements would be needed to provide LOS C operations with the higher forecast Scenario A. The roundabout alternative would require the addition of a second circulating lane. The intersection of Christensen Road with US 30 would require a dual northbound left turn lane. As discussed earlier, traffic signals would be needed at the Whitney Road intersections with Dell Range Boulevard and US 30 for Scenario A.

**Figure 24** depicts peak hour traffic volumes and LOS results for Alternative 11. Each of the study intersections would operate at LOS C or better during peak hours, with the exception of eastbound and westbound movements through the Whitney Road / Dell Range Boulevard intersection. As shown on **Figure 24**, if this intersection is constructed as a roundabout, it would improve to LOS B.

# East Dell Range / US 30 Corridor Study Cheyenne MPO



**Figure 21**  
Year 2030 Traffic Volumes - No Action and Build Alternatives 2, 7, 11A, 14A

# Cheyenne MPO



**-X.X** = Forecast Reductions Compared to Other Alternatives  
(thousands of vehicles per day)

**+Y.Y** = Forecast Increases Compared to Other Alternatives  
(thousands of vehicles per day)



Year 2030 Traffic Volume Changes -  
Alternative 11: US 30/Dell Range Shift to Whitney Road



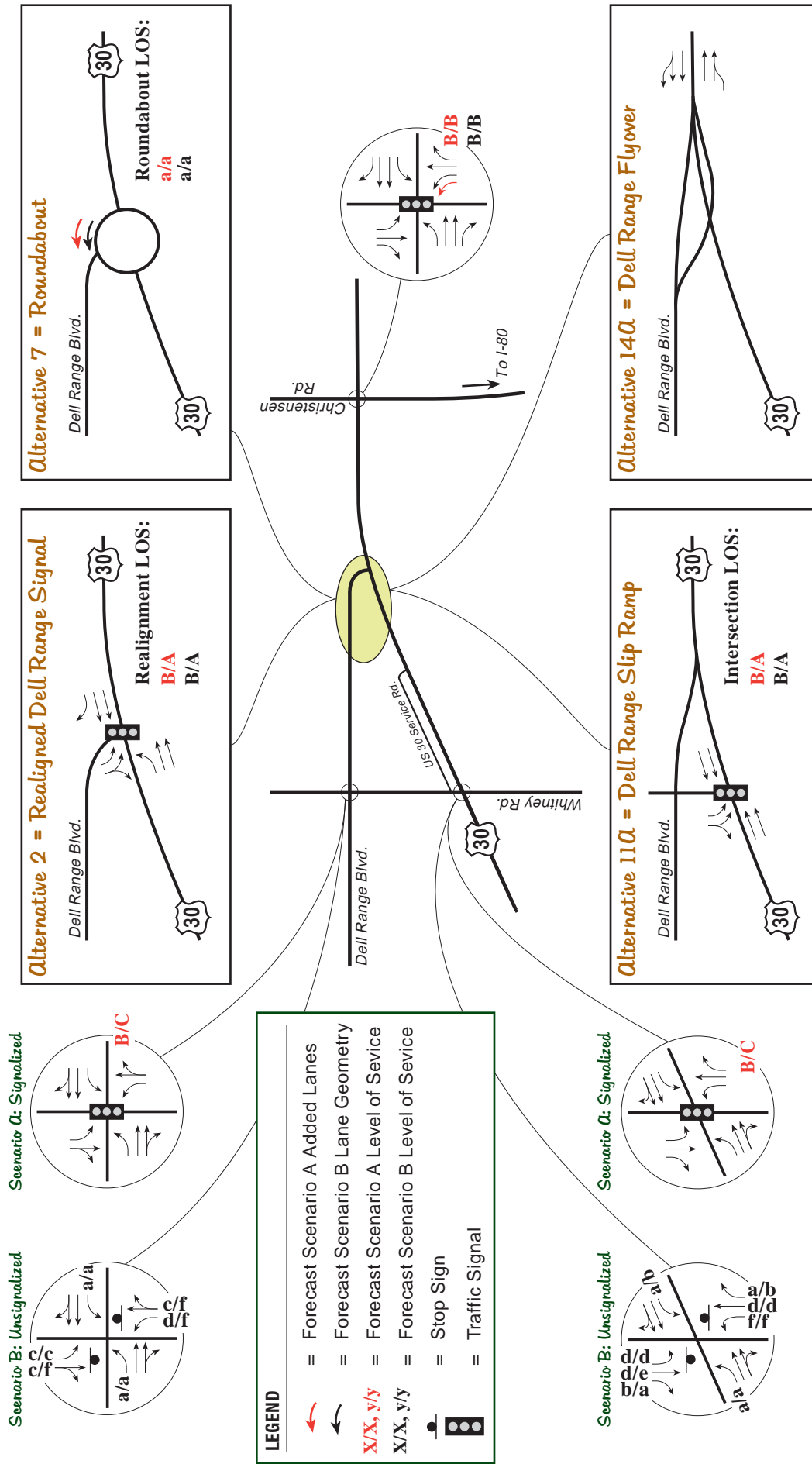


Figure 23

Future Traffic Operations - Alternatives 2, 7, 11A, 14A



# East Dell Range / US 30 Corridor Study Cheyenne MP0

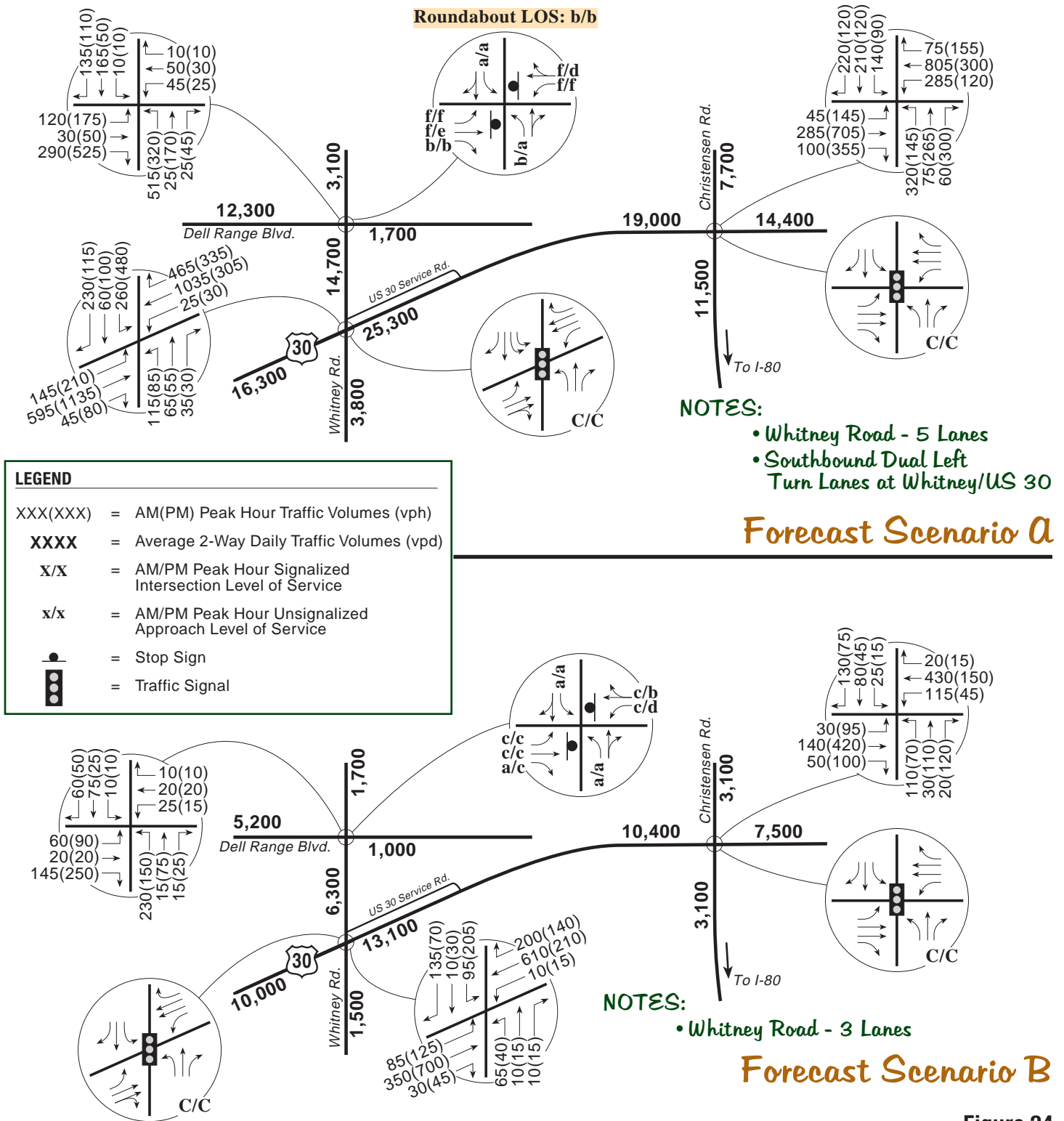


Figure 24

Year 2030 Traffic Conditions -  
Alternative 11: US 30/Dell Range Shift to Whitney Road



Similar to the other alternatives, there are some improvements that would be triggered by the higher growth Scenario A. Whitney Road would have to be widened to 5 lanes (two in each direction plus a center left turn lane) and southbound dual left turn lanes would be needed at the intersection of Whitney Road with US 30.

### ***Operational Comparison***

It is notable that the alternatives would provide similar operational levels, given certain roadway and intersection improvements. **Table 6** summarizes the operational comparison. The sum of Scenario A intersection delay at each of the four analyzed intersections was used to compare the alternatives. Scenario A was chosen because its higher traffic volumes more readily identify operational differences. The alternatives would provide clear improvement over the No Action alternative by providing new traffic signals and additional roadway lanes.

The build alternatives would provide fairly similar operational results. Alternative 14A would provide the greatest improvement over the No Action Alternative by grade-separating the US 30 / Dell Range Boulevard intersection. Alternative 14A was identified as the best-operating build alternative. Alternative 11 was ranked lowest on traffic operations, because it would require 1/3 mile added travel distance to reach Dell Range via Whitney Road. In addition, the increased traffic load along Whitney Road (between US 30 and Dell Range Boulevard) caused by this alternative would create undue disruption along a portion of the roadway network not equipped to handle higher traffic levels.

### ***Corridor Character***

The corridor bridges a changing edge of Cheyenne, so the suitability of each alternative to its surroundings was an important performance measure. Development west of the intersection complex is more urban in nature while development east is more rural. It is anticipated that the future will bring the urban edge farther east, enveloping the intersection complex. Alternatives accommodating lower travel speeds, greater vehicular access and multimodal (bus, pedestrian) circulation and safety would best suit a more urban future. Since the timing of this future urbanization is difficult to predict, the recommended alternative should also complement the current more rural setting.

The two alternatives that demonstrate a distinct bias for urban or rural character were graded below the alternatives that could be adapted to either setting. The roundabout (Alternative 7) suits an urban condition but would not fit with the current high speed rural situation. Alternative 14A would provide high travel speeds but would not complement urbanization.

### ***Right-of-Way***

The number of acres of Right-of-Way (ROW) that would need to be purchased to construct each alternative was estimated based on preliminary design drawings. It was found that next to the No Action Alternative, alternatives 11 and 11A would require the least ROW at 1.88 and 2.34 acres, respectively. The remaining alternatives would each require approximately 4 acres of ROW to construct. It is important to note that these ROW estimates were developed for the roadway improvements to the Dell Range Boulevard / US 30 intersection and the US 30 / Christensen Road intersection and the frontage road connections to Christensen Road. Improvements to Whitney Road were not included.

## ***Estimated Construction Cost***

Construction costs were estimated for each alternative based on preliminary design work. Alternative 14A would be the most costly alternative at more than \$7 Million, while Alternatives 7 and 11A would be least costly. Breakdowns of the cost estimates are included in **Appendix D**. It is important to note that these cost estimates were developed for the roadway improvements to the Dell Range Boulevard / US 30 intersection and the US 30 / Christensen Road intersection and the frontage road connections to Christensen Road. Improvements to Whitney Road were not included.

## ***Cost-Effectiveness***

The cost-effectiveness of each alternative was calculated as the delay savings relative to No Action divided by the sum of the estimated construction cost and ROW Acres. Alternative 14A demonstrated the least cost-effectiveness, while Alternatives 11 and 11A were most cost-effective. The cost-effectiveness benefits of these two alternatives, however, are somewhat softened when the ROW and cost of improvements to Whitney Road are included in the calculation (numbers in parentheses in **Table 6**). Alternative 11A, in particular, would require widening of Whitney Road to 5 lanes, significantly increasing cost and ROW impacts.

## ***Flexibility***

The alternatives were also evaluated according to their flexibility: their ability to be changed or serve as an initial phase of a different future configuration. A flexible alternative would help to conserve fiscal resources and provide more future options within the intersection complex.

As addressed in **Table 6**, Alternative 14A would be the least flexible alternative. This alternative would require a significant initial investment of capital to build a grade separated ramp and would require a significant reinvestment to convert back to an at-grade configuration in the future. Alternative 11A could serve as an initial phase of Alternative 14A, demonstrating more flexibility than the other alternatives.

## **Selection of Recommended Alternative**

The results of the screening process were discussed by the Steering Committee in May of 2007 and a vote was taken to identify a recommended alternative. **Table 7** summarizes the results.

**Table 7. Summary of Voting Results**

Alternative	First Place Votes	Second Place Votes	Third Place Votes	Overall Ranking
No Action	0	1	4	3
2	7	2	0	1
7	0	1	3	4
11	2	4	0	2
11A	0	0	1	6
14A	0	1	0	5

As shown, Alternative 2 was the recommended alternative, with Alternative 11 second and No Action third. The following factors were cited by the Committee in the selection of Alternative 2:

- ▶ Alternative 2 is a simple solution, similar to the current configuration but farther west
- ▶ Placement of the realigned Dell Range Boulevard roughly equidistant from Christensen and Whitney Roads
- ▶ Provides the improved traffic safety of an increased curve radius along Dell Range Boulevard
- ▶ Adaptable to either urban or rural surroundings

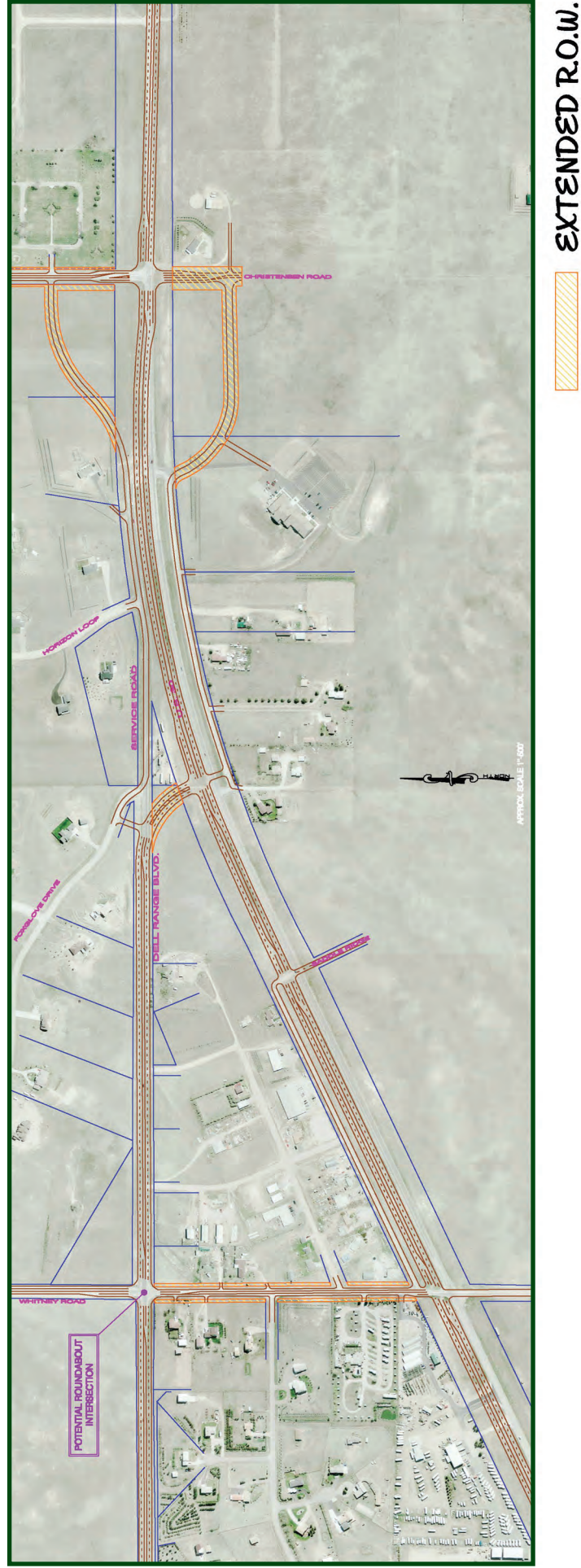
It is important to note that the project Steering Committee wished to maintain some flexibility for future implementation of different options if conditions dictate a need. For example, a grade separated alternative might be identified as appropriate for a high-speed, rural-type setting, while the roundabout might be identified for a more urbanized context.

Refined drawings of the five build alternatives included in Level 2 of the screening process are shown on **Figures 25** through **29**.

### Community Review

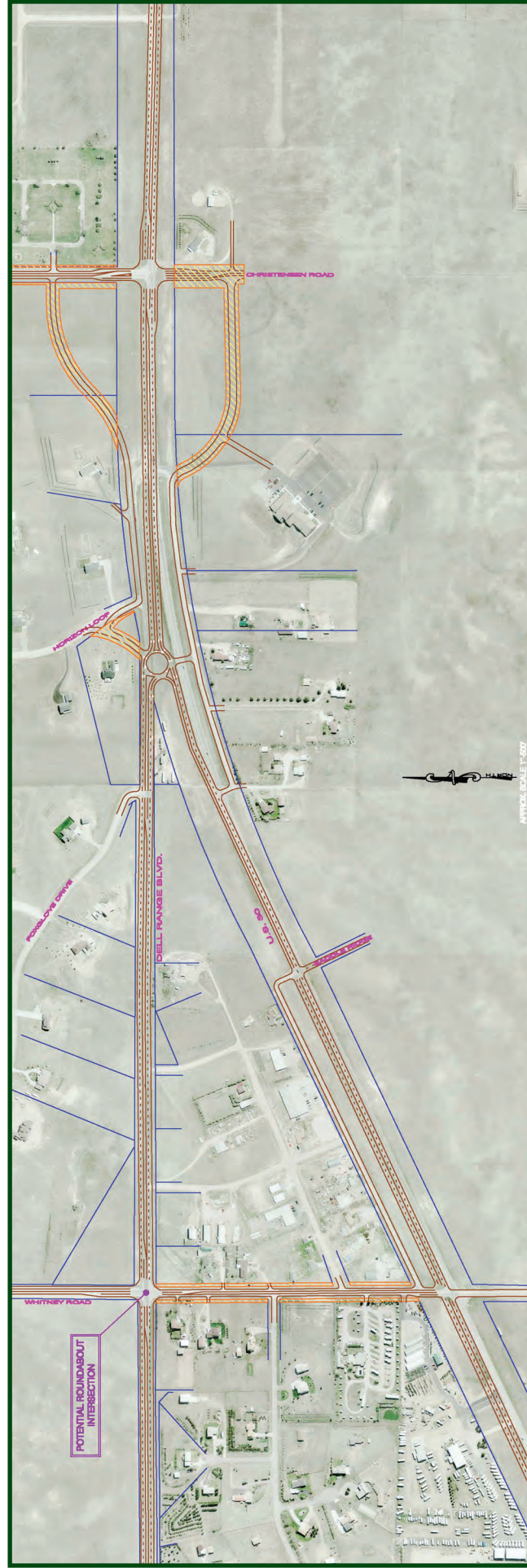
Level 1 and Level 2 Screening information and the recommendation of Alternative 2 were subjected to public comment at a Community Open House held in June of 2007. Most of the attendees who commented expressed support for the Committee's selection of Alternative 2. Some reiterated support for a grade separation to keep traffic moving through the intersection complex. A summary of the June 2007 Open House is included in **Appendix B**.





**Figure 25**  
**ALTERNATIVE 2**  
**West Relocated Dell Range Boulevard**

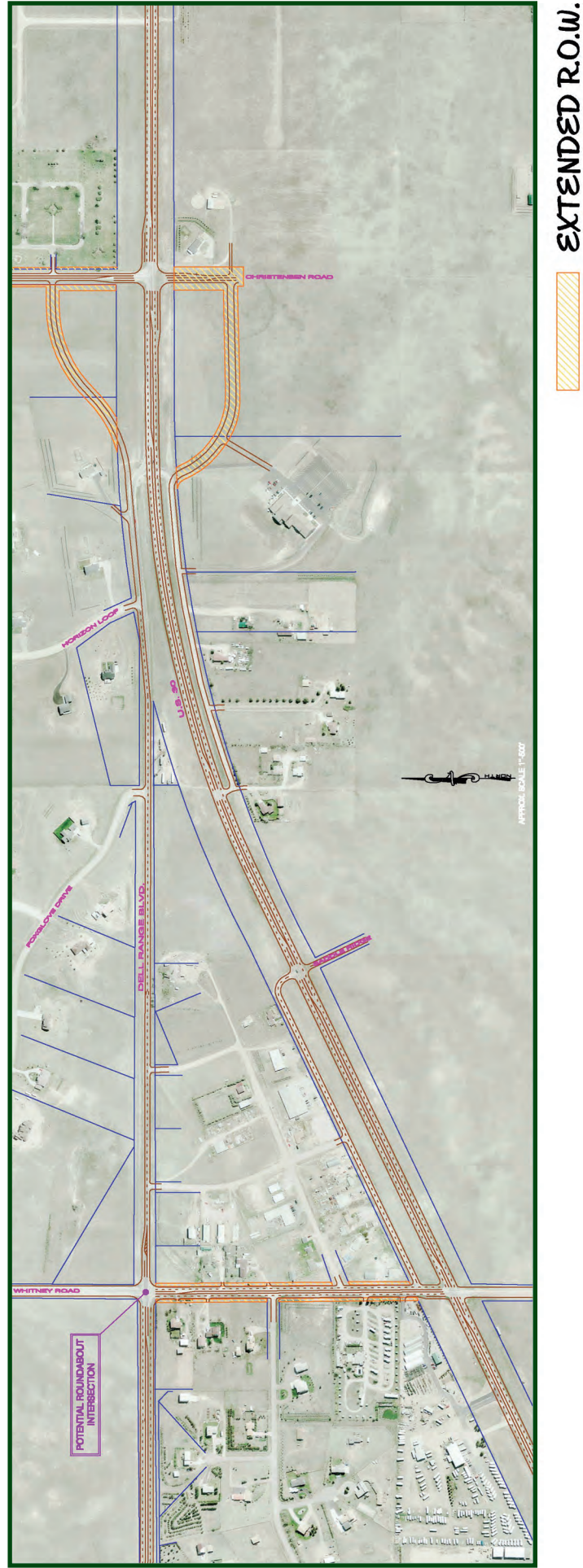




**EXTENDED R.O.W.**

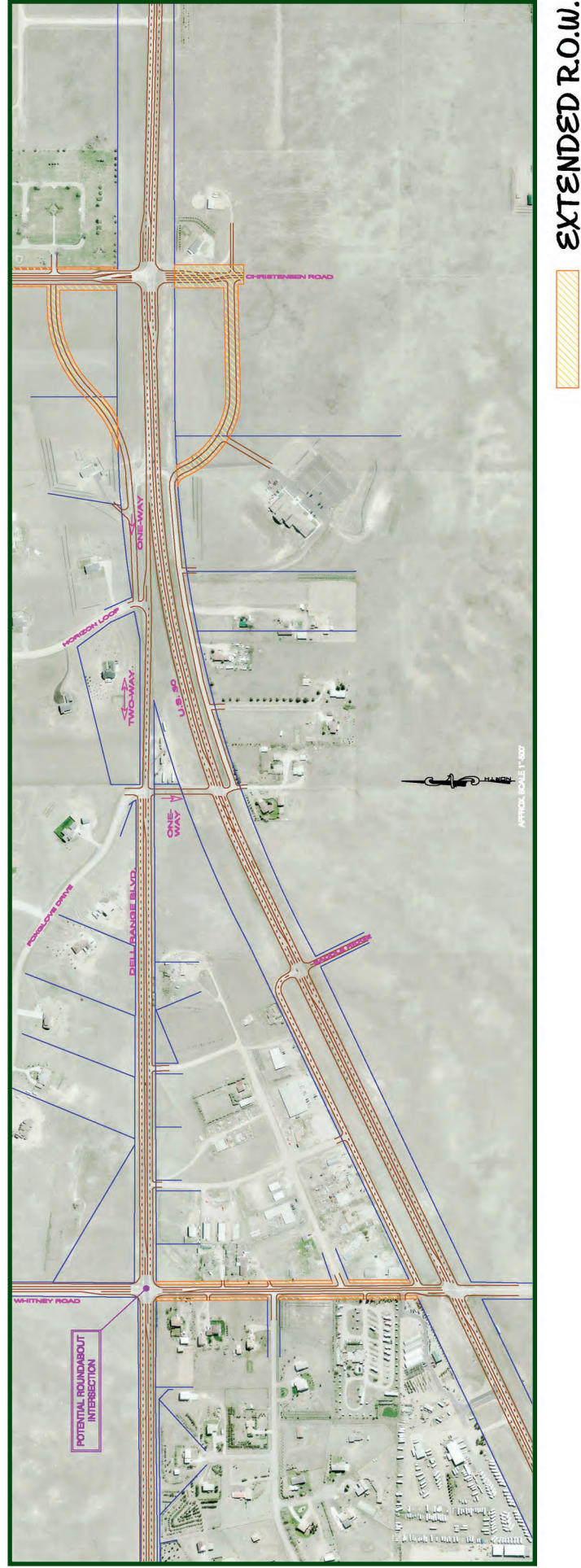
**Figure 26**  
**ALTERNATIVE 7**  
**Roundabout**





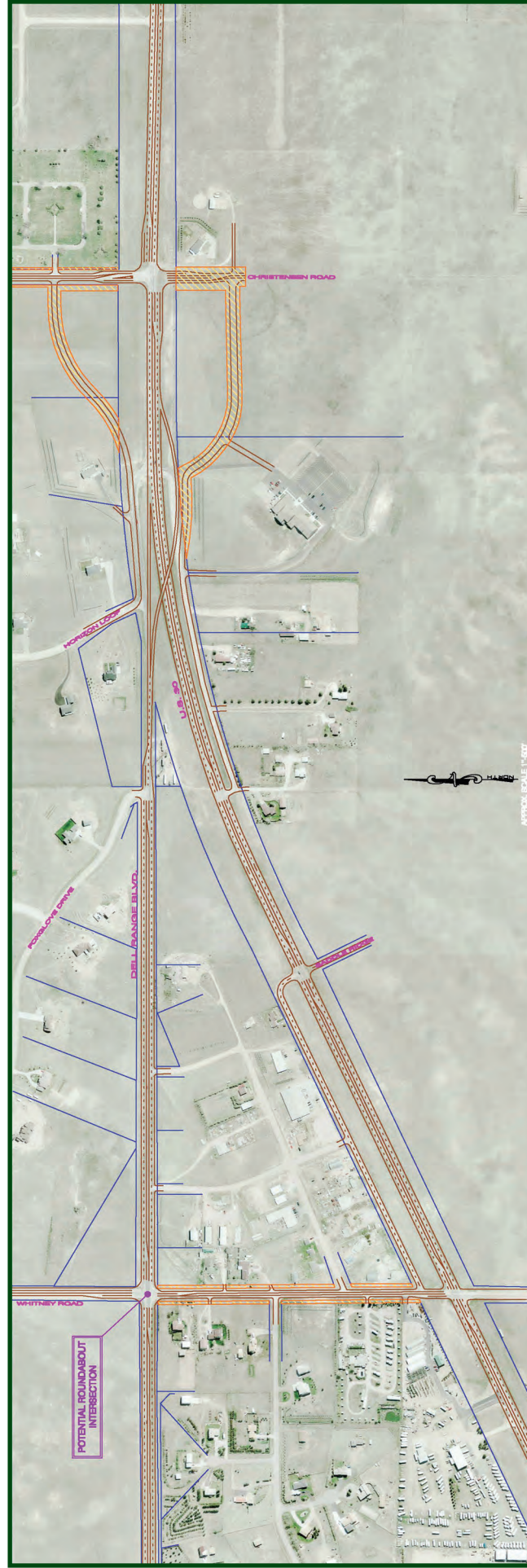
**Figure 27**  
**ALTERNATIVE 11**  
**US 30/Dell Range Shift to Whitney Road**






**Figure 28**  
**ALTERNATIVE 11A**  
**Dell Range Slip Ramp**





 **EXTENDED R.O.W.**

**Figure 29**  
**ALTERNATIVE 14A**  
**Dell Range Flyover**



### *4.2 Dell Range Boulevard and US 30 Section Alternatives*

As discussed in Section 3, Year 2030 Scenario A demand for travel along both Dell Range Boulevard and US 30 is projected to reach a level requiring widening from 2 travel lanes to 4 travel lanes plus a center left turn lane (and/or median) throughout the corridor. Scenario B would reduce the widening needs to both roadways west of Christensen Road, while US 30 east of Christensen could remain a two lane roadway. Accounting for the unique characteristics of both facilities, a number of roadway section alternatives were developed to guide the future widening projects. City of Cheyenne and WYDOT standards were used to inform the development of these options.

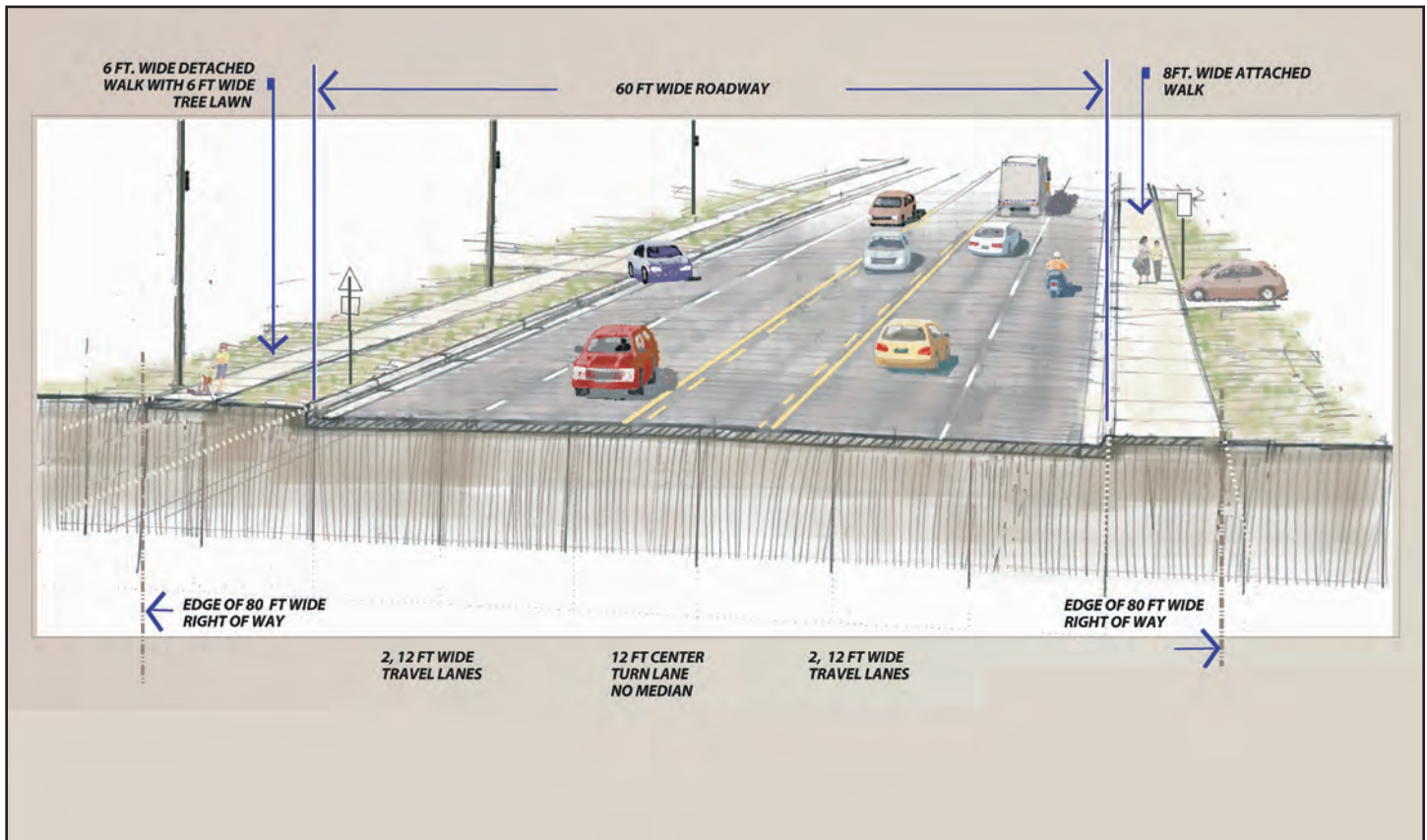
These sections were developed to provide decision makers with a tool to help select appropriate sections when widening is needed. Based on growth forecasts included in this study, it is anticipated that widening will be needed by the Year 2030. However, that need may shift in time if growth does not follow expected patterns.

#### **Dell Range Boulevard Widening**

Dell Range Boulevard serves as a Principal Arterial in the City of Cheyenne's roadway network. The City standard Principal Arterial section provides two through lanes in each direction with a raised center median, with shoulders, a tree lawn and sidewalks on both sides. The standard section requires 120 feet of Right-of-Way (ROW) width. Between College Drive and James Drive, the ROW is constrained to 100 feet, with some sections constrained to 80 feet. **Figures 30 and 31** depict two alternative sections for this segment of Dell Range Boulevard, both occupying 80 feet of ROW width. These sections could be expanded through sections providing 100 feet. Alternative 1 (**Figure 30**) would provide a paved center left turn lane, an attached sidewalk on one side and a detached walk on the opposite site. **Figure 31** would replace the paved center turn lane with a raised median providing left turn lanes at intersections as needed.

The alternatives are shown on the figures with advantages and disadvantages. Alternative 1 would be less costly than Alternative 2 but would not serve to manage access to Dell Range Boulevard. At the June 2007 Community Open House, attendees expressed approximately equal support for the raised median vs. paved center turn lane.

**Figure 32** depicts a widened Dell Range section that replicates the Principal Arterial section in the City of Cheyenne Road, Street and Site Planning Design Standards (City of Cheyenne, 2006). It is recommended that this section be constructed when Dell Range Boulevard is widened between James Drive and US 30, where additional ROW width is available.



### ADVANTAGE

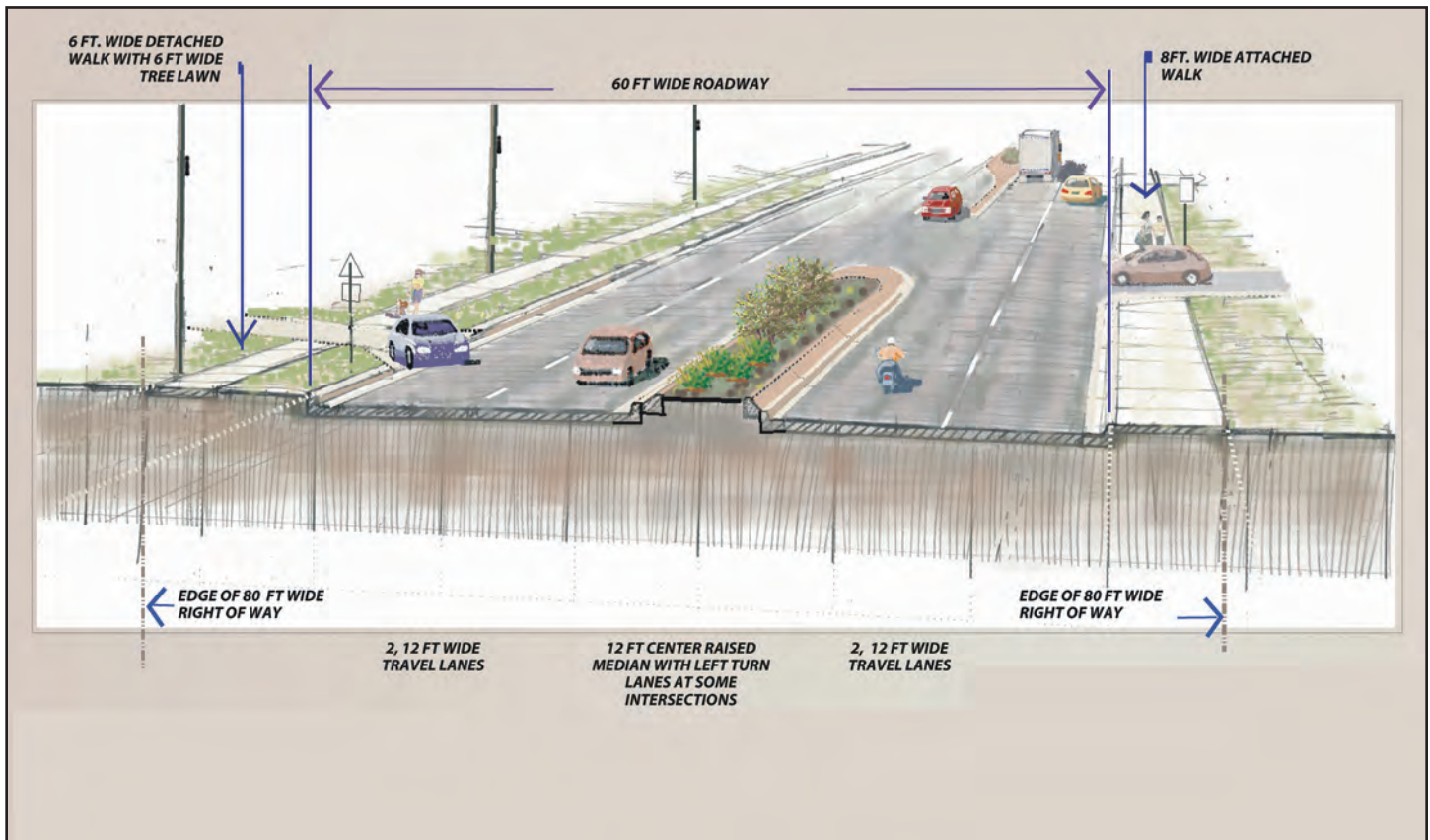
- More direct local access to Dell Range
- At \$2.5 Million per mile, relatively inexpensive to construct
- Relatively less expensive maintenance costs

### DISADVANTAGE

- More difficult to manage access movements, added intersection conflict
- Would be inconsistent with City Standard Urban Arterial Section, which calls for a raised median

**Figure 30**  
Dell Range Widening West of James Drive  
Alternative 1: Paved Center Turn Lane

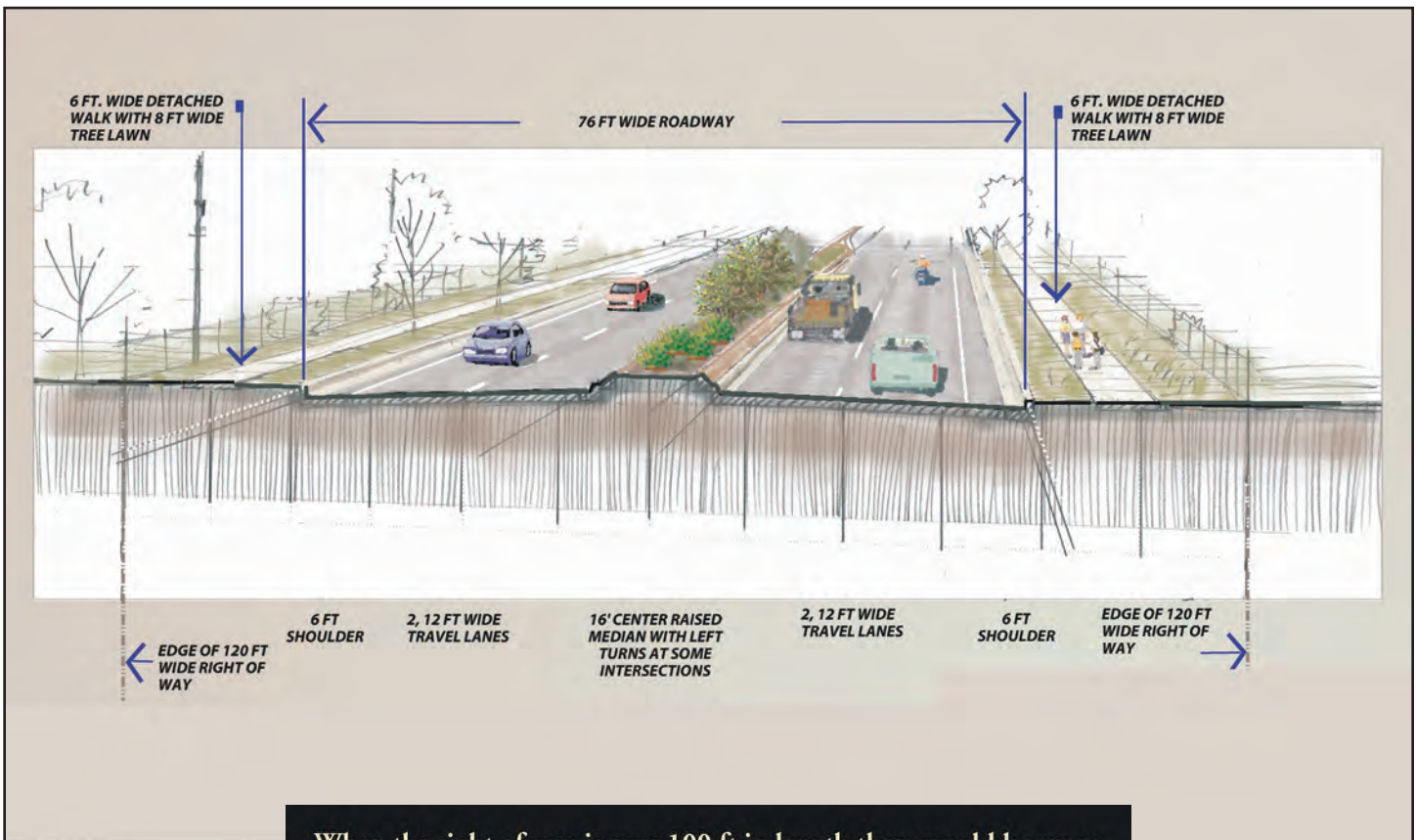




ADVANTAGE	DISADVANTAGE
<ul style="list-style-type: none"> <li>● Fewer conflicts at local accesses to Dell Range</li> <li>● Raised median would reduce access conflicts and enhance access management opportunities</li> </ul>	<ul style="list-style-type: none"> <li>● Would require some out-of-direction travel to reach local properties</li> <li>● At \$3.2 Million per mile, relatively more expensive to construct</li> <li>● Maintenance costs associated with median (if landscaped)</li> </ul>

**Figure 31**  
Dell Range Widening West of James Drive  
Alternative 2: Raised Center Median





When the right of way is over 100 ft in length there would be space for a more full urban section. This condition exists east of James Drive. A raised median is shown here as an option for the center of the roadway. This may be landscaped in places with breaks for left turn lanes at some intersections. A shoulder is provided. Roadsides have room for trees and edge landscape. A detached walkway is recommended where conditions permit.

**Figure 32**  
Dell Range Widening East of James Drive  
Cheyenne Principal Arterial Section

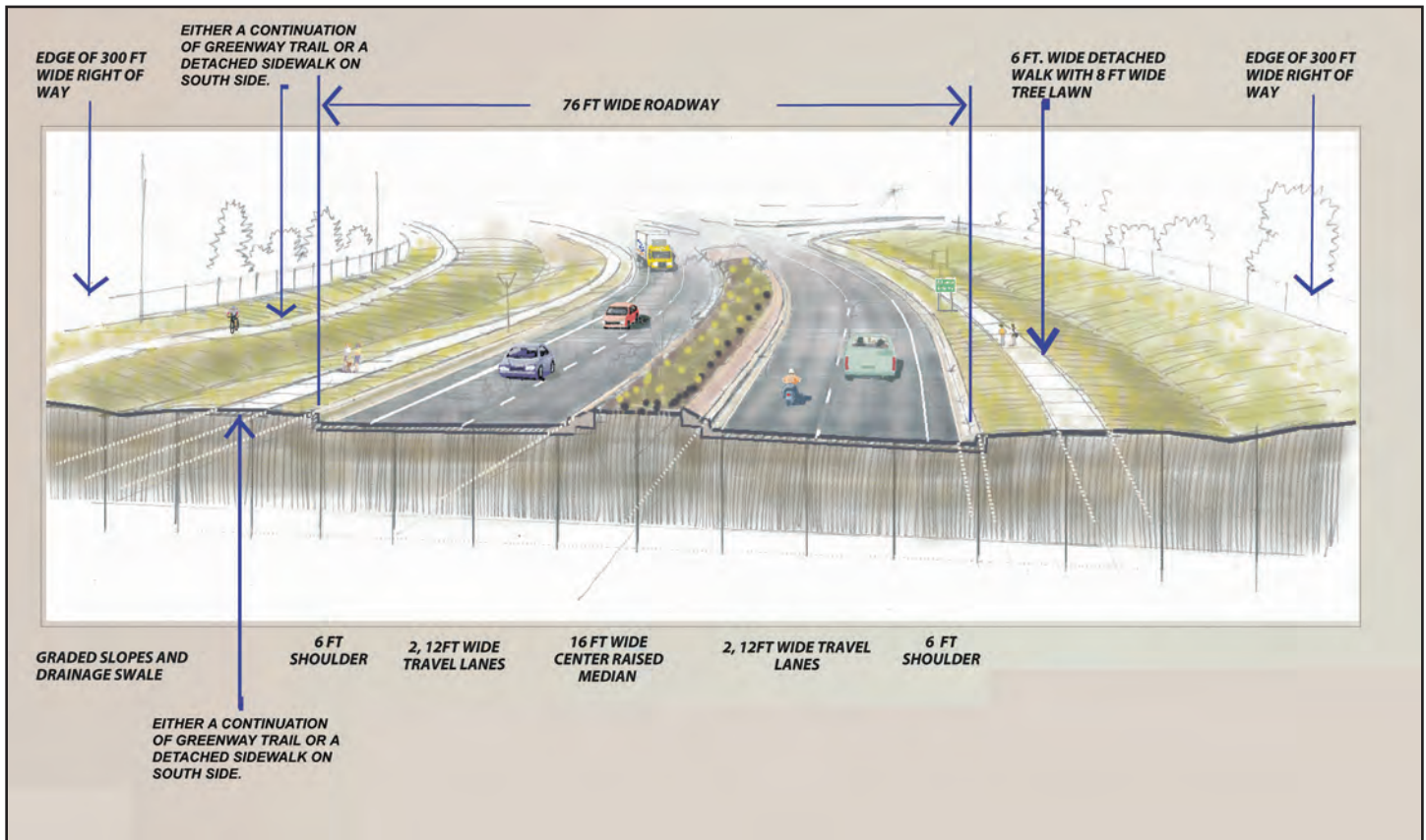
### US 30 Widening

Three options were developed to guide the future widening of US 30 to four travel lanes plus a center turn lane and/or median. One distinct difference between Dell Range Boulevard and US 30 is the additional Right-of-Way width available along US 30. A continuous 300 feet is provided for the length of US 30 throughout the corridor. This width could provide for a future extension of the Cheyenne Greenway and allows some flexibility in the use of landscaping and drainage treatments.

**Figures 33 to 35** depict sections that would provide 4 travel lanes along US 30 and would complement those travel lanes with a variety of median, sidewalk and drainage treatments. The alternatives are described on the figures with advantages and disadvantages.

Due to multiple viewpoints and agency priorities, the project Steering Committee did not reach a consensus on a recommended section for the future widening of US 30. In general, Cheyenne MPO representatives indicated a preference for the higher-cost urban arterial section (Alternative 1). Representatives of WYDOT indicated a preference for Alternative 2, the paved five lane section. A possible compromise among the options would be to widen US 30 to a urban arterial section between Pershing Boulevard and Christensen Road and provide a paved 5 lane section or grassed median section east of Christensen Road.

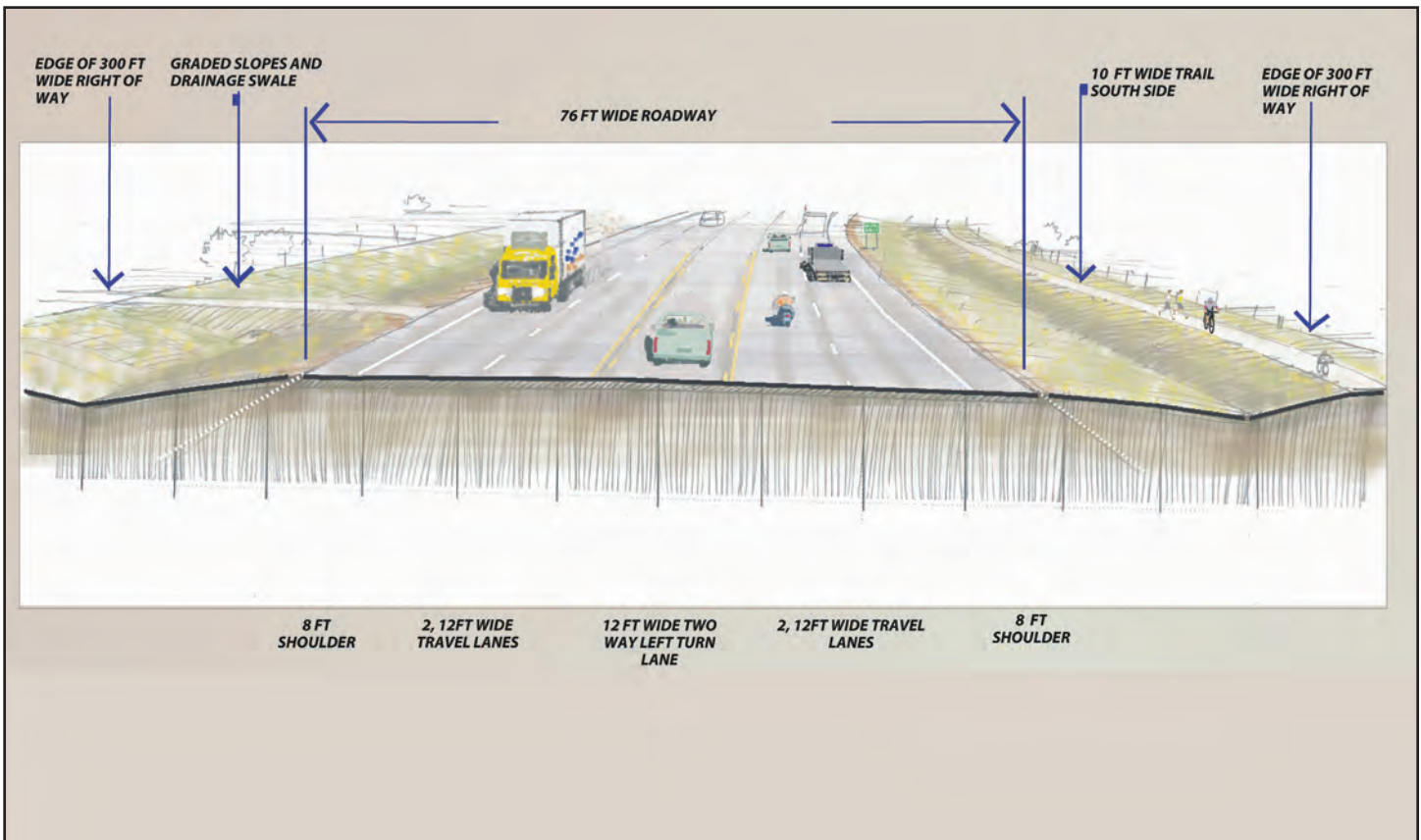
Improvements to US 30 should be designed and built based on the *WYDOT Access Manual* (Wyoming Department of Transportation, March 2005).



ADVANTAGE	DISADVANTAGE
<ul style="list-style-type: none"> <li>● Raised median would reduce access conflicts and enhance access management opportunities</li> <li>● Would be consistent with future <u>plans</u> to provide raised median along other US 30 segments</li> <li>● Accommodates pedestrian traffic adequately</li> </ul>	<ul style="list-style-type: none"> <li>● Requires some out-of-direction travel to reach local properties</li> <li>● At \$3.2 Million per mile, most expensive to construct</li> <li>● Maintenance costs associated with raised, landscaped median</li> </ul>

**Note:** Improvements to US30 should be designed and built based on the *WYDOT Access Manual*.

**Figure 33**  
US 30 Widening  
Alternative 1: Urban Arterial Section

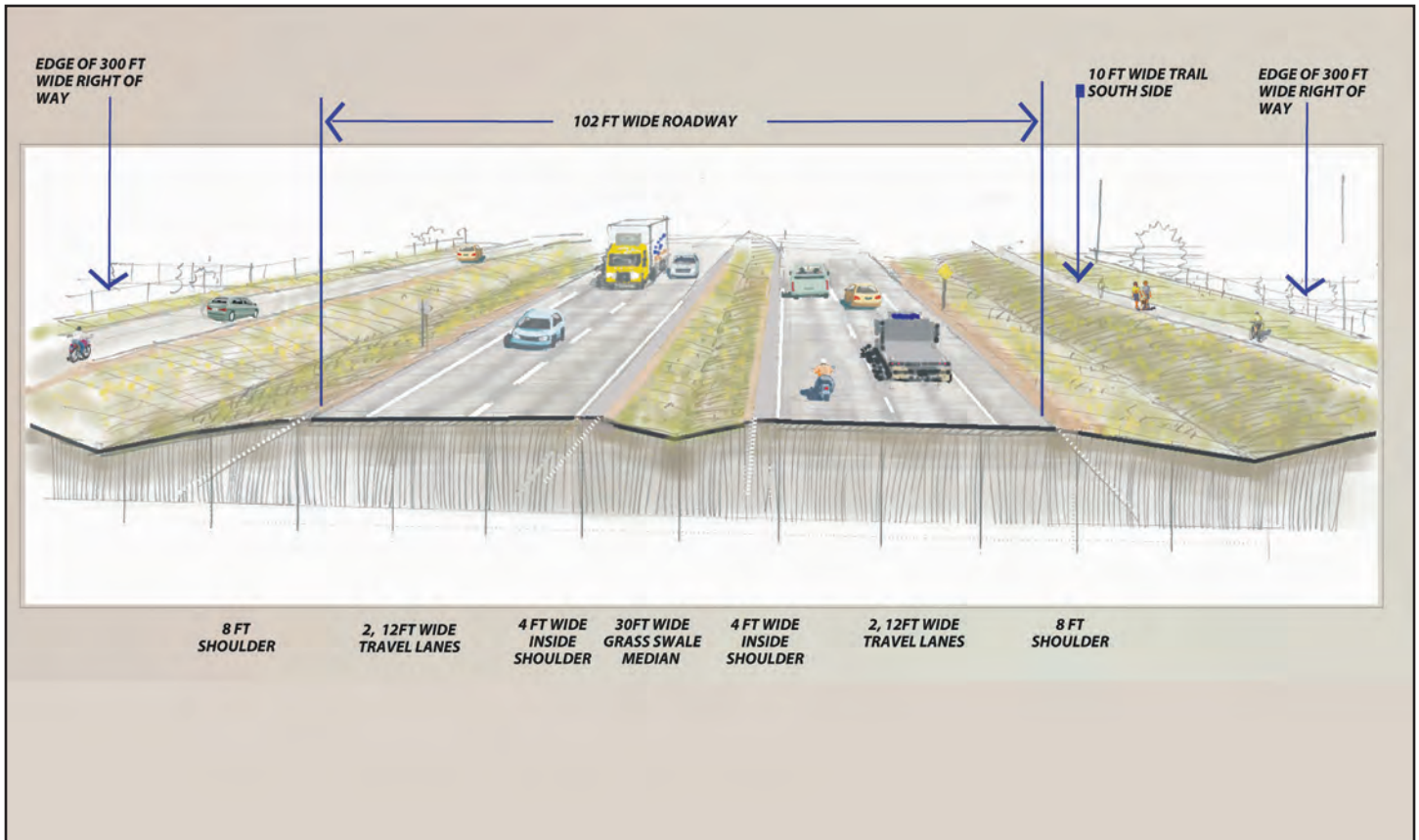


ADVANTAGE	DISADVANTAGE
<ul style="list-style-type: none"> <li>More direct local access to US 30</li> <li>At \$2.5 Million per mile, relatively less expensive to construct</li> <li>Relatively inexpensive maintenance costs</li> </ul>	<ul style="list-style-type: none"> <li>More difficult to manage access movements, added intersection conflict</li> <li>Would be inconsistent with future <u>plans</u> to provide raised median along other US 30 segments</li> <li>Does not accommodate pedestrian traffic as well as urban arterial</li> </ul>

**Note:** Improvements to US30 should be designed and built based on the *WYDOT Access Manual*.

**Figure 34**  
US 30 Widening  
Alternative 2: Paved Five Lane Section





## ADVANTAGE

- Grassed median would reduce access conflicts and enhance access management opportunities
- 30-foot grassed median would be consistent with existing US 30 near Pershing Boulevard
- Reduced maintenance costs for depressed median relative to raised median
- At \$2.5 Million per mile, relatively less expensive to construct

## DISADVANTAGE

- Requires some out-of-direction travel to reach local properties
- Does not accommodate pedestrian traffic as well as urban arterial

**Note:** Improvements to US30 should be designed and built based on the *WYDOT Access Manual*.

**Figure 35**  
US 30 Widening  
Alternative 3: Grassed Median Divided Highway

## 5.0 DESIGN OF RECOMMENDED ALTERNATIVES

### 5.1 Dell Range / US 30 / Christensen Intersection Complex

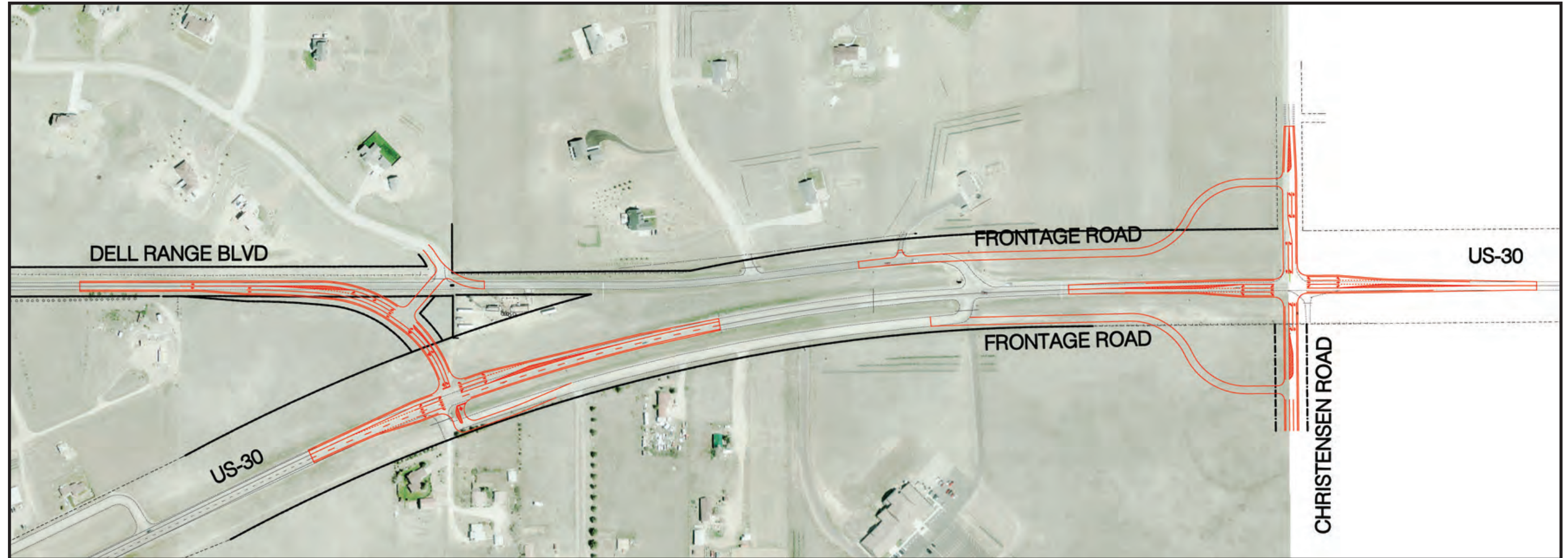
As discussed earlier, Alternative 2 was selected as the Recommended Alternative for the Dell Range / US 30 / Christensen Intersection complex. The drawing of this alternative shown on **Figure 25** depicts Dell Range Boulevard and US 30 as 4-lane roadways. Since this widening is not anticipated to be needed in the near future, conceptual intersection design plans were developed to show how Alternative 2 would be constructed without the anticipated future widening of both roadways. **Figure 36** depicts the intersection design in plan view. The conceptual design plans are included under separate cover, in the East Dell Range / US 30 Corridor Study Roadway Design Information package.

### 5.2 Christensen Road Extension

Christensen Road currently extends north from US 30 as a Minor Arterial roadway, but it does not currently extend south from US 30. The *PlanCheyenne* Transportation Plan recommended that Christensen Road be extended south from US 30 to Commerce Circle. This project was included in both the Roadway Vision Plan and the Fiscally Constrained Roadway Plan, budgeted at approximately \$13.6 Million. The proposed extension would cross the Union Pacific Railroad tracks north of Commerce Circle and would provide two travel lanes initially with provision for a future expansion to 4 travel lanes.

As an addendum to the East Dell Range / US 30 Corridor Study, the Christensen Road extension project was taken an additional step toward implementation with 35 percent design plans for Christensen Road between Commerce Circle and Pershing Boulevard and 10 percent design plans for Christensen Road between Pershing Boulevard and US 30.

**Figure 37** depicts the proposed design of Christensen Road between Commerce Circle and Pershing Boulevard. **Figure 38** shows the proposed design of Christensen Road between Pershing Boulevard and US 30. These design plans are included in the East Dell Range / US 30 Corridor Study Roadway Design Information package.

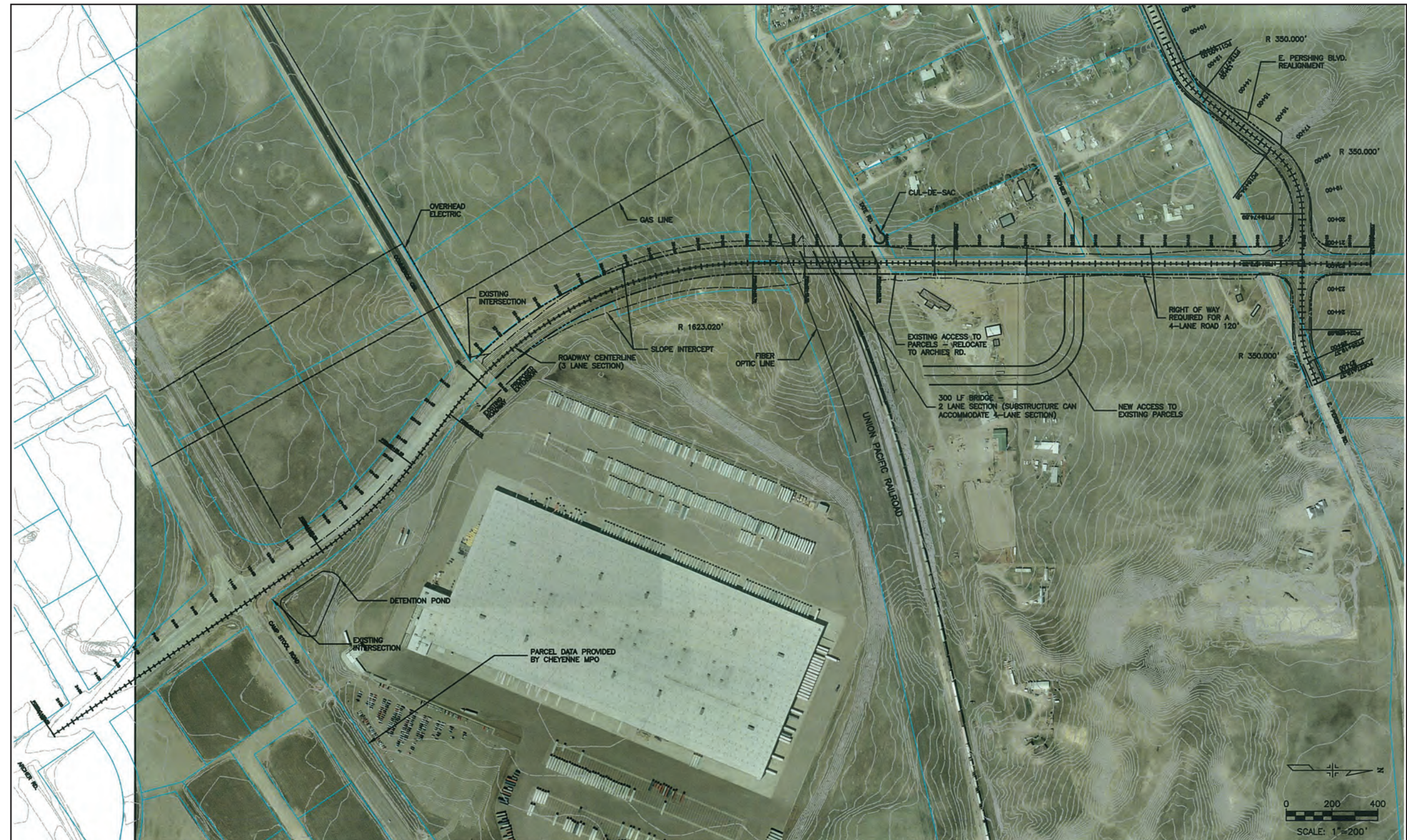


**Figure 36**

Conceptual Design of Recommended Alternative  
Dell Range / US 30 / Christensen Intersection Complex

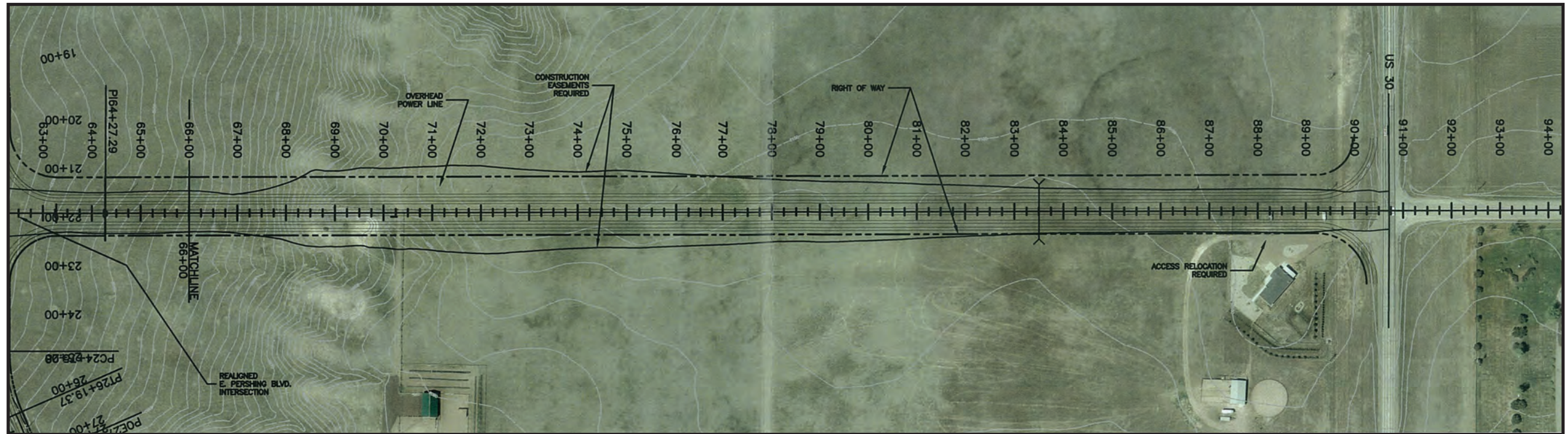






**Figure 37**  
Conceptual Design - Christensen Road Between Commerce Circle and Pershing Boulevard





**Figure 38**

Conceptual Design - Christensen Road Between Pershing Boulevard and US 30



## 6.0 IMPLEMENTATION PLAN

As discussed in the Introduction, two goals of this project are to develop roadway improvement recommendations that serve short term and long term future needs and to maximize the cost-effectiveness of implementing future improvements. Once the recommended alternatives are identified, an Implementation Plan is necessary to assist in the allocation of resources toward completing future improvements to the study corridor.

An implementation plan prioritizes the recommended projects and identifies upcoming steps toward eventual construction. It includes the following elements:

- ▶ Develop listing of projects within the Recommended Alternative for the corridor
- ▶ Prioritize those projects based on relative needs, benefits and costs
- ▶ Identify upcoming steps in the project implementation process
- ▶ Establish immediate next steps

### 6.1 Project Listing

A project-by-project listing of the elements included in the Recommended Alternative is shown in **Table 8**.

**Table 8. Recommended Alternative Projects**

Project Location	Limits	Improvements	Figure Number
Central Intersection Complex – Alternative 2	Whitney Road to Christensen Road	Intersection realignment, added intersection turn lanes	36
Christensen Road	Commerce Circle to Pershing Boulevard	New Minor Arterial Roadway, Railroad grade separation	37
Christensen Road	Pershing Boulevard to US 30	New Minor Arterial Roadway	38
Dell Range Boulevard	College Drive to US 30	Widening to 4 travel lanes	30-32
US 30	Hayes Avenue to Christensen Road	Widening to 4 travel lanes	33-35
US 30	Christensen Road to Archer Interchange	Widening to 4 travel lanes	33-35

Each of the projects described in **Table 8** were included in the *PlanCheyenne* Year 2030 Fiscally Constrained Roadway Plan. The East Dell Range / US 30 Corridor Study reinforces the need for these improvements by the Year 2030 and provides recommendations to guide the improvements. Improvements to US 30 should be designed and built based on the *WYDOT Access Manual* (Wyoming Department of Transportation, March 2005).

## 6.2 Project Prioritization

The projects listed in **Table 8** are all high priority projects because these projects have been identified, discussed and analyzed in regional and local plans developed over the past 5-10 years. Though all are high priority, the projects may be further ranked based on correction of geometric conditions, regional importance, and traffic needs. Projects that would be needed by the Year 2030 based on both travel demand forecast scenarios (A and B) should be placed above projects only needed based on the higher forecast Scenario A.

**Table 9** lists the projects in order of priority and provides a rationale for the ranking of each.

**Table 9. Project Priority Ranking**

Project Location	Priority Ranking	Reasons for Ranking
Central Intersection Complex – Alternative 2	1	<ul style="list-style-type: none"> <li>Existing tight and unsafe Dell Range curvature</li> <li>Current high traffic demand for turning movements to/from east US 30 will increase with both Scenario A and B</li> </ul>
Christensen Road – Commerce Cir. to Pershing and UPRR bridge	2	<ul style="list-style-type: none"> <li>Provides new roadway link to I-80 and RR grade separation for growing area</li> </ul>
Christensen Road – Pershing to US 30	3	<ul style="list-style-type: none"> <li>Minor Arterial connection identified in PlanCheyenne – important to potential future regional route through east and north Cheyenne</li> </ul>
Dell Range Boulevard Widening – College Drive to US 30	4	<ul style="list-style-type: none"> <li>Of the widening projects, shows the highest Year 2030 traffic forecasts for Scenario A</li> <li>Would be needed for either forecast scenario</li> </ul>
US 30 Widening – Hayes to Christensen	5	<ul style="list-style-type: none"> <li>Would be needed for either forecast scenario</li> </ul>
US 30 Widening – Christensen to Archer Interchange	6	<ul style="list-style-type: none"> <li>Would be needed for only forecast scenario A</li> </ul>

## 6.3 Cost and Right-of-Way Considerations

The estimated construction costs are shown in **Table 10** along with the estimated right of way required to implement each. Construction costs range between \$4.9 Million for Christensen Road between Pershing Boulevard and US 30 and up to 9.5 Million for the widening of US 30 east of Christensen Road.



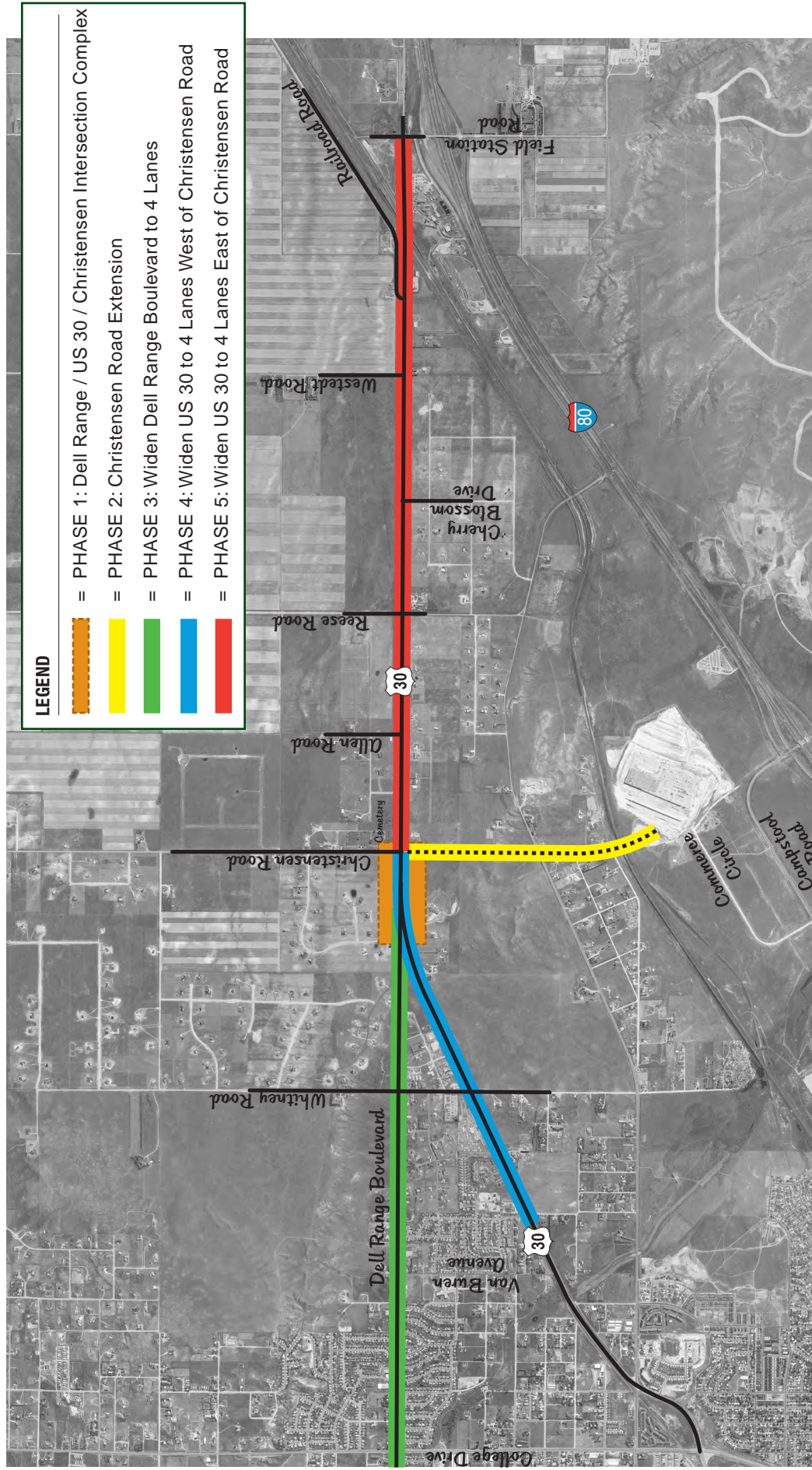
**Table 10. Estimated Construction Costs and Right of Way**

Project #	Project Location	Improvements	Miles	Const. Costs	Right of Way (Acres)
1	Central Intersection Complex – Alternative 2	Intersection and frontage road realignment	n/a	\$2.4 Million	4.2
2	Christensen Road – Commerce Cir to Pershing	New Minor Arterial Roadway, Railroad grade separation	0.70	\$8.4 Million	14
3	Christensen Road – Pershing to US 30	New Minor Arterial Roadway	0.55	\$1.9 Million	7.25
4	Dell Range Boulevard – College to US 30	Widening to 4 travel lanes	2.32	\$5.8 – \$7.4 Million <sup>1</sup>	0
5	US 30 – Hayes to Christensen	Widening to 4 travel lanes	1.63	\$4.1 – \$5.2 Million <sup>1</sup>	0
6	US 30 – Christensen to Archer	Widening to 4 travel lanes	2.98	\$7.5 – \$9.5 Million <sup>1</sup>	0

<sup>1</sup> Low end of range would build a 5-lane section (\$2.5 Million per mile) with a paved median and high end would build urban arterial section (\$3.2 Million per mile) with raised median

## 6.4 Implementation Timeline

**Table 9** depicts the prioritization of the six projects identified in the Corridor Study. The recommended projects would be built over time in order of their priority. **Figure 39** depicts the recommended phasing of corridor improvements over time.



**Figure 39**  
Phased Implementation of Recommended Projects

## **APPENDIX A      ACCIDENT DATA**



2000 - 2005 Crashes																				
Intersection	DHV Entering Vehicles	2000-2005 MEV	Start Year	End Year	Fatal	Injury	PDO	Total Crashes	Bad Weather Crashes	Slippery Road Crashes	Alcohol Related Crashes	Daylight Crashes	Dark Crashes	Crashes per MEV	Speed > Posted Speed	Head On	Fixed Objects	Sideswipe	Broadside/ Angle	Rear End
College Dr / Dell Range	2,570	44.67	2000	2005		13	54	67	4	8	3	53	14	14.28	14	1	2	1	30	33
US 30 / Pershing	1,575	27.38	2000	2005	2	9	8	19	1	2	4	14	5	6.61			2		12	5
US 30 / College Dr	2,375	41.28	2000	2005		20	39	59	12	11	2	39	20	13.61		1		1	47	10
Dell Range / Van Buren	725	12.60	2000	2005				0						0.00						
US 30 / Van Buren	960	16.69	2000	2005		1	1	2				1	1	1.14	1		1			1
Dell Range / Whitney Rd	475	8.26	2000	2005		2	2	4	1	1		3	1	4.61	1				4	
US 30 / Whitney Rd	660	11.47	2000	2005		2	1	3				1	2	2.49					2	1
US 30 / Dell Range	775	13.47	2000	2005		6	6	12	1	2		10	2	8.48	6		1		6	5
US 30 / Christensen Rd.	775	13.47	2000	2005		2	2	4			1	3	1	2.83	2		1		1	2
US 30 / Reese Rd.	500	8.69	2000	2005		5	3	8	1	1		6	2	8.77	1				5	3
US 30 / Railroad Road	400	6.95	2000	2005			1	1				1		1.37				1		
US 30 / Cherry Blossom Drive	410	7.13	2000	2005			1	1				1		1.34						1
US 30 / Westedt Rd	425	7.39	2000	2005		1	1	2	1	1		1	1	2.58	1				1	1

## **APPENDIX B      PUBLIC OPEN HOUSE SUMMARIES**



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### Community Input Open House-Overview

**Date:** September 26, 2006  
**Location:** Cheyenne Hills Church, Cheyenne, WY  
**Attendance:** 62 people, plus consultants and Steering Committee Members  
**Purpose:** Provide overview of project and gather public input on critical issues and alternatives  
**Meeting Graphics:** 16 display boards (posted at [www.plancheyenne.org](http://www.plancheyenne.org)), handout of key boards  
**Feedback modes:** Conversations with attendees, post-it notes, comment sheets with questions (22), personal emails (2)

---

### Comment Summary

#### Comment Sheet Questions:

1. *In evaluating all potential transportation improvements to this corridor, how would you decide which one to build?*

Screening criteria identified by attendees are shown below with number of times mentioned in parentheses:

• Traffic Safety (7)	• Emphasis on US 30 as main route (1)
• Efficient Traffic Flow (6)	• Preservation of open space (1)
• Cost or cost-effectiveness (5)	• Sensitivity to rural context (1)
• Impacts to adjacent residents (i.e. access, property values, right-of-way) (5)	• Engineering expertise to eliminate comments known to be concerns (1)
• Simplicity (2)	• Public comments (1)
• Greenway access / multimodal considerations (2)	• Needs assessment (1)
• Longevity (1)	

2. *What issues must be addressed in this study?*

- Noise abatement
- Ensure longevity of future improvements - no "piecemeal"
- Maintain the primacy of US 30 as a through travel route, minimizing stops
- Pedestrian access and safety
- Address speeding at the city limit while maintaining high travel speeds along US 30
- Minimize pavement
- Sun glare – vision at crest of mid-corridor grade
- Appropriate landscape features along roadway sections
- Provision of adequate turn lanes and shoulders
- Quality of life for present residents
- Environmental impacts
- Provide roadway network connectivity



3. Which intersection(s) provide the greatest challenges for you and how do you recommend we fix the problem?

The Dell Range / US 30 / Christensen complex was mentioned most frequently. Positive and negative comments are summarized below with number of comments in parentheses:

Alt. #	Name	Positive Comments	Negative Comments
1	At-Grade Intersection	(1)	
2	West Relocated Dell Range Boulevard	Safety, cost-effectiveness, through US 30 (4)	
3	Relocated Dell Range Boulevard	Similar to Alternative 2, simple (1)	
4	US 30 "Tee" Intersection	(1)	Multiple comments against making Dell Range primary
5	Middle Interchange	Keeps traffic moving (2)	
6	Foxglove Intersection		
7	Roundabout	(1)	(1)
8	Interchange West of Tower	Keeps traffic moving (4)	
9	Diamond Interchange		
10	Partial Cloverleaf Interchange		
11	US 30 / Dell Range Closure	Cost-effective, minimizes local impacts (3)	May encourage neighborhood cut-through traffic (1)
12	Split Diamond	Eliminates sharp turns (3)	Confusing layout (1)
13	Realigned US 30		
14	Grade Separation	Keeps traffic moving (4)	

**General Comments from Comment Sheets:**

- Dell Range should act as a frontage road / collector in support of US 30 and frontage road south of US 30 should be extended as a similar collector facility
- US 30 should be emphasized as a through roadway to accommodate future growth (residential, commercial, industrial and Archer event center). Use multiple signalized intersections and turn lanes to accommodate US 30 flows.
- Need 4-lane divided US 30 to Archer
- Demand that the county commissioners work with the city to make this happen.
- Need to see detailed plans for Whitney / Dell Range intersection
- Take all traffic to I-80 and keep growth within urban areas
- Like the potential east US 30 improvements sketched by FMLA
- Consider scenic overlook of the City from the Dell Range / US 30 intersection. Could serve as a gateway to the City.

- Any encroachment to property should require noise abatements (8' berm or heavily treed area)
- Concern that Christensen will bottleneck northbound at US 30.
- Consider installing utilities before roads are constructed to avoid tearing up existing roadways.

**Conversational Comments:**

- Drivers rarely stop before entering US 30 east from side streets, creating hazardous conditions for through traffic
- Consider adding a westbound US 30-to-westbound Dell Range ramp to Alternative 11
- Southbound Christensen approach to US 30 is currently congested

**Post-meeting Correspondence:**

- Frontage roads both north and south are a vital tool for providing safe local access to US 30.



### Community Open House-Overview

<b>Date:</b>	June 21, 2007
<b>Location:</b>	Cheyenne Hills Church, Cheyenne, WY
<b>Attendance:</b>	42 people, plus consultants and Steering Committee Members
<b>Purpose:</b>	Provide overview of project and gather public input on critical issues and alternatives
<b>Meeting Graphics:</b>	22 display boards (posted at <a href="http://www.plancheyenne.org">www.plancheyenne.org</a> ), handout of key boards
<b>Feedback modes:</b>	Conversations with attendees, post-it notes, comment sheets with questions (11), personal letters (2)

---

### Comment Summary

#### **Comment Sheet Questions:**

1. *Based on a 2-level screening process, the Steering Committee has recommended US 30/Dell Range/Christensen Alternative 2 as the Preferred Alternative. Do you agree with this recommendation? If not, which alternative is your Preferred?*
  - Most supported the Steering Committee's preferred Alternative 2, but expressed caution about sight distance issues along US 30 vertical curve
  - Some expressed support for a grade separated alternative because it would keep traffic moving
  - General dislike of roundabouts, mostly due to perceived confusion of configuration
  - One person expressed support for the roundabout
  - Several people noted that the local access / frontage road system surrounding the intersection needs attention. It will be important to limit these roadways to local access only and take care to not impact existing properties with the alignments. Some suggested eliminating these connections entirely.
2. *When US 30 and Dell Range are widened to accommodate 4 travel lanes, what features should be included in the roadway cross-sections?*

*Center Treatment (i.e. raised median, depressed & grassed median, paved center allowing left turns)*

- Raised median sections appealing, but need to be properly maintained
- Raised median section too expensive
- Concern about noise from Dell Range traffic, consider some type of noise abatement
- Roughly equal support for raised median vs. paved center allowing left turns

*Sidewalk (i.e. detached, attached) and Shoulder (i.e. narrow, wide)*

- Overall support for detached walk / bike path and wide shoulders
- Detached walk safer for school children
- Wide shoulders may push existing property lines and impact local owners

#### **GENERAL COMMENTS**

- Desire that the greenway be included in the plan
- Consult property owners regarding local access to Christensen Road
- Dislike for Alternative #7 – Roundabout
- Drainage along Dell Range in proposed area is a current problem
- Dell Range proximity to property lines impacts existing wells and drainage issues
- Christensen Road needs to be extended south to I-80
- Please expedite this project!

#### **Conversational Comments:**

- Need to keep a rural feel to the study area
- Drivers already tend to avoid Dell Range and use Whitney Road
- It is not imperative to have local / frontage connections to Christensen Road



## **APPENDIX C      LEVEL ONE SCREENING SUMMARY**

**CHEYENNE METROPOLITAN PLANNING ORGANIZATION  
EAST DELL RANGE / US 30  
CORRIDOR STUDY**

**TECHNICAL MEMORANDUM**

**DELL RANGE / US 30 / CHRISTENSEN  
INTERSECTION ALTERNATIVES  
LEVEL 1 SCREENING**

*Prepared for:*

***Cheyenne MPO***

2101 O' Neil Avenue  
Cheyenne, Wyoming 82001

*Prepared by:*

***Felsburg Holt & Ullevig***

6300 South Syracuse Way, Suite 600  
Centennial, Colorado 80111

***BenchMark Engineers, PC***

1920 Thomes Avenue, Suite 620  
Cheyenne, Wyoming 82001

***March 6, 2007***

FHU Ref. No. 06-109

## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION-----	1
PURPOSE OF THIS DOCUMENT -----	1
NEXT STEPS-----	1
METHODOLOGY FOR LEVEL 1 SCREENING FOR REASONABLENESS -----	1
CONCLUSION-----	3



## **INTRODUCTION**

The Cheyenne, Wyoming Metropolitan Planning Organization (MPO) is developing a comprehensive plan to guide future transportation improvements in the rapidly developing East Dell Range / US 30 Corridor. The study area includes US Highway 30 (US 30) between College Drive and the Archer interchange and East Dell Range Boulevard between College Drive and US 30. The study is an update to the study of and conceptual plans for the same area completed in September, 2000.

The scope of this study includes an evaluation of alternatives for the intersection of Dell Range with US 30 with the goal of selecting a preferred alternative for future implementation at this location. This alternative would also address the US 30 / Christensen Road intersection configuration, proposed to accommodate a future south extension of Christensen Road to connect with Interstate 80. Christensen Road has been identified as a future 'Outer belt route' traversing Cheyenne's east edge.

The convergence of East Dell Range Boulevard, US 30 and Christensen Road is referred to in this document as the 'intersection complex.'

## **PURPOSE OF THIS DOCUMENT**

A total of 16 Intersection complex alternatives have been developed in addition to the No Action Alternative, combining 6 new concepts with the 10 alternatives included in the Year 2000 study. This document is a technical memorandum that summarizes the process wherein these intersection complex alternatives were developed, evaluated, and screened. It offers an initial Level 1 Screening for Reasonableness of the 16 alternatives, applying a comparison of alternatives based on performance in a select group of criteria. This screening includes a qualitative evaluation of alternatives as further described within this document.

## **NEXT STEPS**

It is the intent that surviving alternatives will be evaluated and screened to provide a preferred corridor alternative. Discussion of this will be summarized in future study documentation.

## **METHODOLOGY FOR LEVEL 1 SCREENING FOR REASONABLENESS**

*Level 1- Screening for Reasonableness* is a qualitative screening of intersection complex alternatives. This screening eliminates alternatives which do not perform acceptably in the following criteria:

1. Traffic Safety
2. Traffic Operations
3. Corridor Character
4. Development
5. Comparative Cost
6. US 30 Continuity





**LEVEL 1 SCREENING FOR  
REASONABLENESS**

Prior to this formal screening, intersection complex alternatives were presented to the general public at a public meeting held on September 26, 2006. This meeting was conducted in an open house format, which allowed the public to comment on the alternatives.

Armed with an understanding of community and agency values and goals for the project, the project team developed a formal process for screening of these initial alternatives.

Following is an outline of the screening process:

- A. A list of questions with regard to traffic safety, traffic operations, corridor character, development, comparative cost, and US 30 continuity were developed to test the alternatives for reasonableness.
- B. Based on these questions, a list of advantages and disadvantages were created for each alternative. Advantages and disadvantages were then grouped into the following categories: *Safety/Traffic, Corridor Context and Cost.*
- C. Individual alternatives were evaluated relative to the other alternatives.
- D. Each alternative was given a rating of "Good", "Fair" or "Poor" based on Safety/Traffic, Corridor Context and Cost; as well as an overall rating of "Good", "Fair" or "Poor".

Following are the rating symbols used in the Initial Screening for Reasonableness documentation:



- E. The overall rating of an individual alternative was used to decide if an alternative would advance to the next level of screening. If the alternative did not survive the screening, a summary of the primary reasons was offered.
- F. Screening summaries were created for the intersection complex alternatives. The summaries are attached.

## CONCLUSION

Based on the initial screening for reasonableness, a number (9) of alternatives were eliminated and will not advance to the next step of the process, Level 2 screening. Below is a summary of alternatives that will be advanced to the Level 2 Screening.

### ***Alternatives to be Advanced***

There were fourteen (14) intersection complex alternatives. Five have been advanced to Level 2 Screening, Alternative 2 – West Realigned Dell Range, Alternative 5 – Middle Flyover, Alternative 7 - Roundabout, Alternative 11 – Dell Range Reconfiguration, and Supplemental Alternative 11A – Dell Range slip ramp. The alternatives to be advanced are depicted below:



***Alternative 2-West Realigned Dell Range***



***Alternative 5 – Middle Flyover***





**Alternative 7 – Roundabout**



**Alternative 11 – Dell Range Reconfiguration**



**Supplemental Alternative 11A – Dell Range Slip Ramp**



**LEVEL 1 SCREENING FOR  
REASONABLENESS**

	1	2	2A	3	4	5	6	7	8	9	10	11	11A	12	13	14	14A
<b>Safety / Traffic</b>																	
<b>Corridor Context</b>																	
<b>Cost</b>																	
<b>Overall</b>																	
<b>Alternative Advanced?</b>	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No	No	No

The above table summarizes the results of the Level 1 Alternative Screening process.





# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
<b>Alternative 1</b> At Grade Intersection	Safety/Traffic <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Would eliminate delay and minimize conflict for westbound Dell Range and eastbound US 30 through movements</li> </ul>	<ul style="list-style-type: none"> <li>Central intersection would be confusing and abrupt stop for drivers</li> <li>Left side merge / diverge ramps</li> <li>Different movements required for EB and WB directions-counter to driver expectation</li> </ul>	<input checked="" type="checkbox"/>
	Corridor Context <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Would serve primary regional movement WB through Dell Range</li> </ul>	<ul style="list-style-type: none"> <li>Would limit development and require ROW acquisition(s) in area between Dell Range and US 30.</li> <li>Would not provide continuous WB US 30 through movement</li> </ul>	NO <ul style="list-style-type: none"> <li>Confusing central intersection and discontinuous US 30.</li> </ul>
	Cost <input type="checkbox"/>	<ul style="list-style-type: none"> <li>Relatively inexpensive to construct, no grade separation(s) required</li> </ul>		








# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
<b>Alternative 2</b> West Relocated Dell Range Blvd.	Safety/Traffic <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>No merge / diverge movements-all turns would occur at single point</li> </ul>	<ul style="list-style-type: none"> <li>Both Dell Range and US 30 traffic forced to stop.</li> <li>Sharp Dell Range curve west of US 30 would restrict sight distance and decrease safety</li> </ul>	<input type="checkbox"/> <b>YES</b>
	Corridor Context <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>US 30 would be continuous route</li> </ul>	<ul style="list-style-type: none"> <li>Right-of-way needed to construct realigned Dell Range and shift Dell Range north to accommodate longer radius</li> </ul>	
	Cost <input type="checkbox"/>	<ul style="list-style-type: none"> <li>Relatively inexpensive to construct</li> </ul>		



# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives


Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 3 Relocated Dell Range Blvd.	Safety/Traffic <div></div>	<ul style="list-style-type: none"><li>No merge / diverge movements-all turns would occur at single point</li></ul>	<ul style="list-style-type: none"><li>Both Dell Range and US 30 traffic forced to stop.</li><li>Sharp Dell Range curve west of US 30 would restrict sight distance and decrease safety</li></ul>	<div></div> <p><b>NO</b></p> <ul style="list-style-type: none"><li>Would not sufficiently improve safety of short-radius curve along Dell Range approach</li></ul>
	Corridor Context <div></div>	<ul style="list-style-type: none"><li>US 30 would be continuous route</li></ul>	<ul style="list-style-type: none"><li>Right-of-way needed to relocate Dell Range approach curve</li></ul>	
	Cost <div></div>	<ul style="list-style-type: none"><li>Relatively inexpensive</li></ul>		







# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 4 US 30 “Tee” Intersection	Safety/Traffic <div><div></div></div>	<ul style="list-style-type: none"><li>US 30 curve radius not as short as Dell Range radius in Alternative 3</li></ul>	<ul style="list-style-type: none"><li>Westbound US 30 traffic forced to stop to make left turn</li></ul>	<div><div></div></div> <div>NO</div> <ul style="list-style-type: none"><li>Discontinuous US 30</li></ul>
	Corridor Context <div><div></div></div>		<ul style="list-style-type: none"><li>Discontinuous US 30</li><li>ROW acquisition required to realign US 30</li></ul>	
	Cost <div><div></div></div>	<ul style="list-style-type: none"><li>Relatively inexpensive to construct</li></ul>		
				

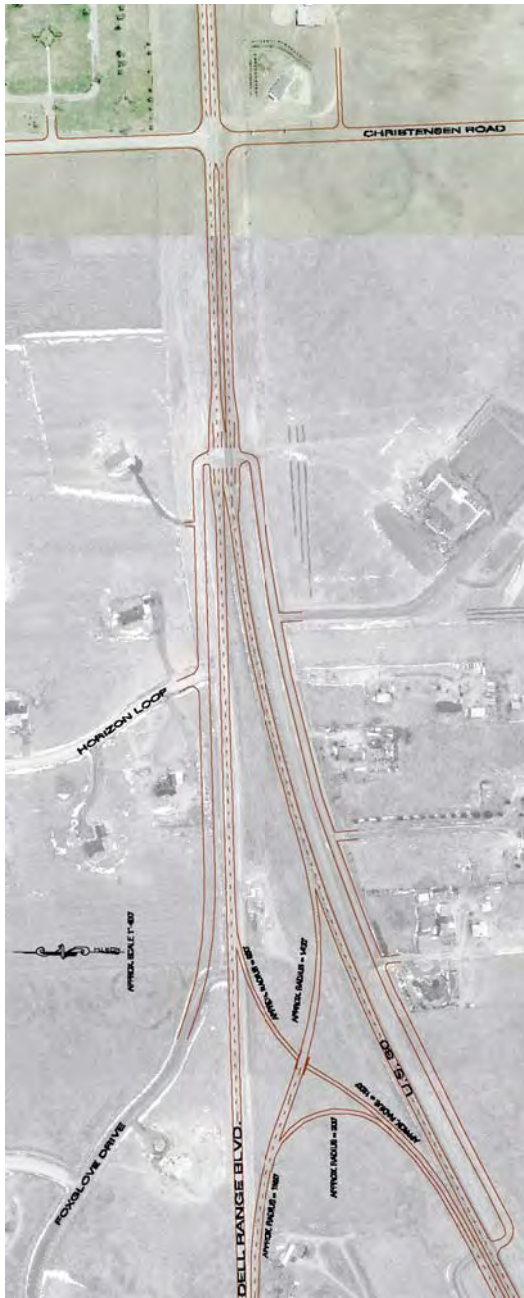




# East Dell Range / US 30 Corridor Study


## Level 1 Screening for Reasonableness

### East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 5 Middle Flyover	Safety/Traffic <div></div>	<ul style="list-style-type: none"><li>Free-flow movements throughout</li></ul>	<ul style="list-style-type: none"><li>Could encourage speeding along Westbound Dell Range toward Mall area.</li><li>Left side merge / diverge ramps</li></ul>	<div></div> <div>NO</div> <ul style="list-style-type: none"><li>Out-of-direction travel for US 30</li></ul>
	Corridor Context <div></div>		<ul style="list-style-type: none"><li>More rural feel would be inconsistent with urban surrounding</li><li>Would require significant ROW acquisition</li></ul>	
	Cost <div></div>	<ul style="list-style-type: none"><li>Could be constructed as phase 2 of an at-grade option such as Alternative 1 or Alternative 2.</li></ul>	<ul style="list-style-type: none"><li>Higher cost due to grade separation, least expensive of grade separated options</li></ul>	
				








# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 6 Foxglove Intersection	Safety/Traffic <div></div>	<ul style="list-style-type: none"><li>Would discourage speeding along westbound Dell Range</li></ul>	<ul style="list-style-type: none"><li>Increased conflict points with too many redundant movements.</li></ul>	<div></div> <b>NO</b> <ul style="list-style-type: none"><li>Redundant movements would increase conflict points</li></ul>
	Corridor Context <div></div>	<ul style="list-style-type: none"><li>Consistent with urban surroundings</li></ul>	<ul style="list-style-type: none"><li>Discontinuous westbound US 30</li><li>Would require ROW acquisitions</li></ul>	
	Cost <div></div>	<ul style="list-style-type: none"><li>Relatively inexpensive to construct</li></ul>		
				



# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives





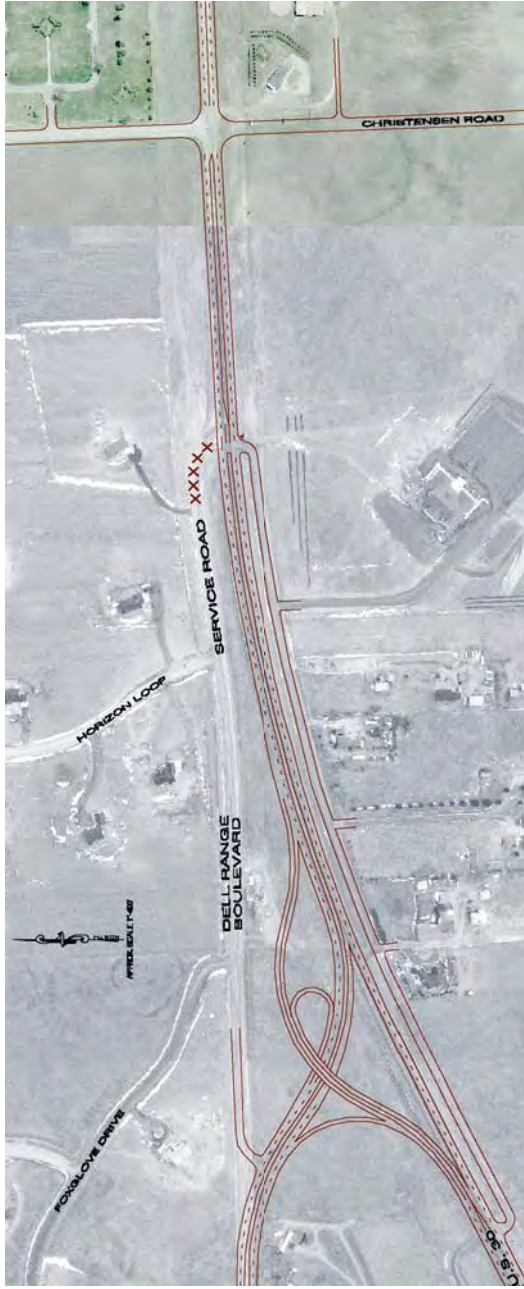
Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 7 Roundabout	Safety/Traffic 	<ul style="list-style-type: none"><li>Lower roundabout speeds would lessen severity of accidents compared with traditional intersection</li></ul>	<ul style="list-style-type: none"><li>Would delay all traffic through the roundabout intersection</li></ul>	 YES
	Corridor Context 	<ul style="list-style-type: none"><li>Would provide roughly equal emphasis to Dell Range and US 30 through movements</li><li>Would be more consistent with urban environment</li><li>Could accommodate local access by adding approaches</li></ul>	<ul style="list-style-type: none"><li>Drivers would be unfamiliar with configuration</li><li>Lesser degree of continuity along US 30</li></ul>	
	Cost 	<ul style="list-style-type: none"><li>Relatively inexpensive to construct</li></ul>	<ul style="list-style-type: none"><li>Not flexible to serve as an initial phase of additional future improvement(s)</li></ul>	











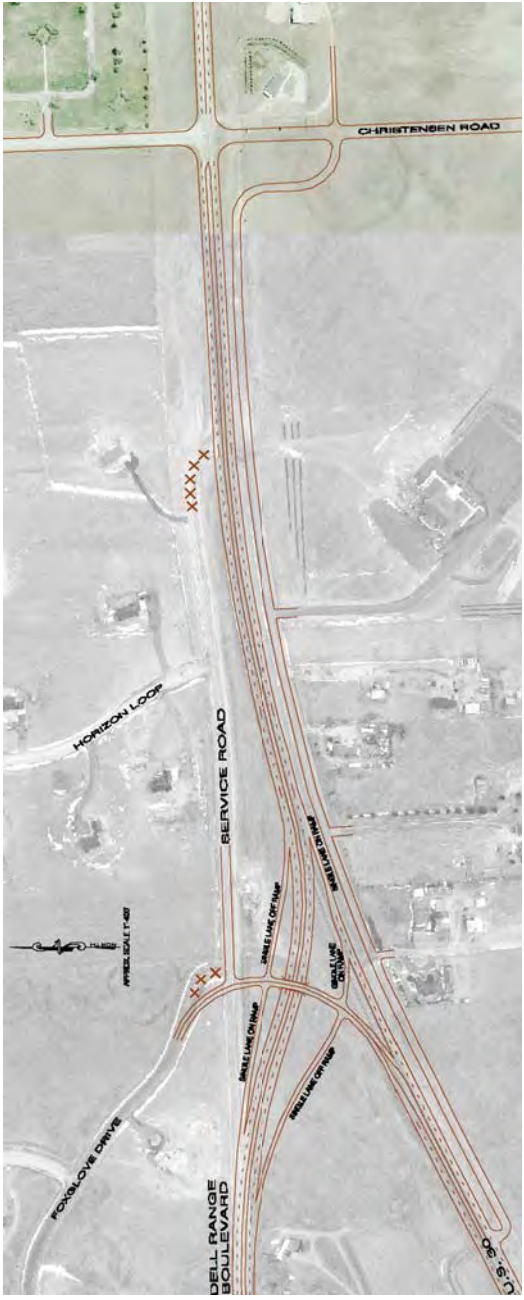
# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 8 Interchange West of Tower	Safety/Traffic 	<ul style="list-style-type: none"><li>Free flow movements for both Dell Range and US 30 through movements</li></ul>	<ul style="list-style-type: none"><li>Left side eastbound merge from Dell Range onto US 30</li></ul>	<div></div> <div>NO</div> <ul style="list-style-type: none"><li>Relatively expensive to construct, inconsistent with surroundings</li></ul>
	Corridor Context 		<ul style="list-style-type: none"><li>Would require significant ROW acquisition</li><li>Out of scale for urban area</li></ul>	
	Cost 		<ul style="list-style-type: none"><li>Relatively costly to construct</li><li>Not flexible to serve phased implementation</li></ul>	
				



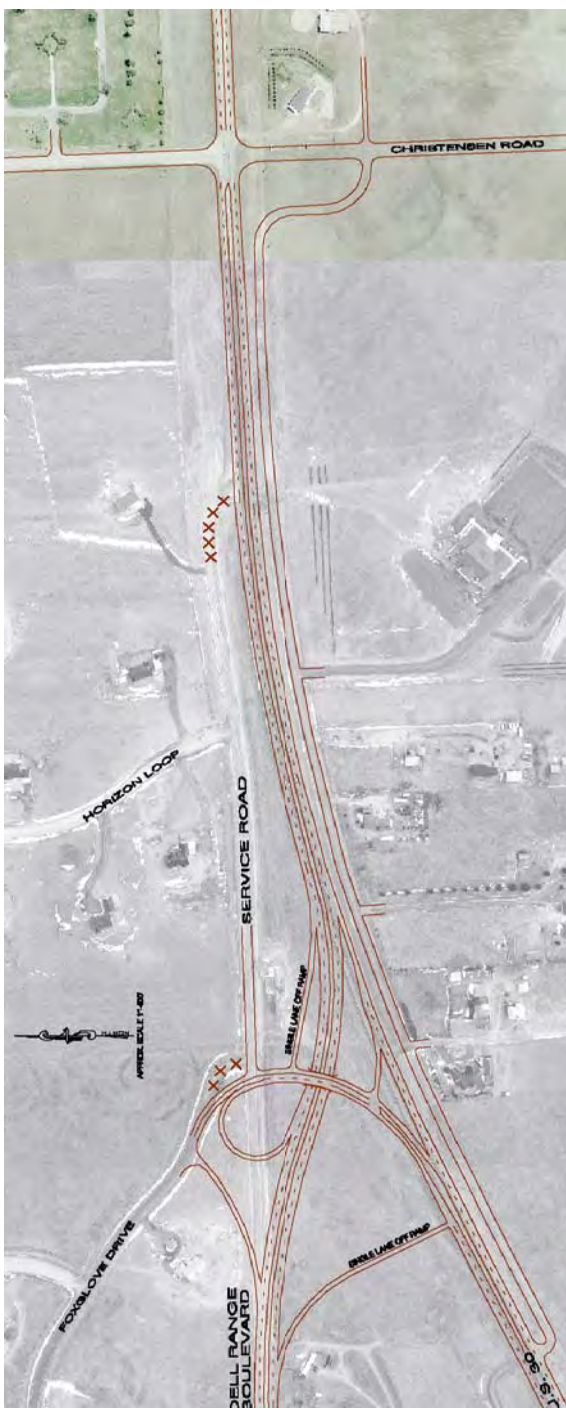


# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
<b>Alternative 9</b> Diamond Interchange	Safety/Traffic 	<ul style="list-style-type: none"> <li>Free-flow Dell Range through movements</li> </ul>	<ul style="list-style-type: none"> <li>Redundant movements</li> <li>Major US 30 movements forced to travel through at-grade intersections</li> <li>Left side diverge / merge along EB US 30</li> </ul>	<div></div> <p><b>NO</b></p> <ul style="list-style-type: none"> <li>Relatively costly to build, discontinuous US 30</li> </ul>
	Corridor Context 		<ul style="list-style-type: none"> <li>Discontinuous US 30</li> <li>Significant ROW acquisitions would be required</li> </ul>	
	Cost 		<ul style="list-style-type: none"> <li>Relatively costly to construct, not flexible for future changes</li> <li>Foxglove bridge not cost-effective, overkill for local access roadway</li> </ul>	
				




# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 10 Partial Cloverleaf Interchange	Safety/Traffic <div><div></div></div>	<ul style="list-style-type: none"><li>Free-flow travel for Dell Range through movements</li></ul>	<ul style="list-style-type: none"><li>Redundant movements</li><li>Left-side ramp diverge / merge movement along EB US 30</li></ul>	<div><div></div></div> <b>NO</b> <ul style="list-style-type: none"><li>Relatively costly to construct, inconsistent with surroundings</li></ul>
	Corridor Context <div><div></div></div>		<ul style="list-style-type: none"><li>Difficult local access, would require out-of-direction travel</li><li>Significant ROW acquisitions would be required</li></ul>	
	Cost <div><div></div></div>		<ul style="list-style-type: none"><li>Foxglove bridge not cost-effective, overkill for local access roadway</li><li>Relatively expensive to construct</li></ul>	
				








# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 11 US 30 / Dell Range Reconfiguration	Safety/Traffic <div><div></div></div>	<ul style="list-style-type: none"><li>Would remove awkward intersection of US 30 with Dell Range</li></ul>	<ul style="list-style-type: none"><li>Skewed, congested intersection at Whitney and US 30 would require signalization and southbound dual left turn lanes</li></ul>	<div><div></div><div>YES</div></div>
	Corridor Context <div><div></div></div>	<ul style="list-style-type: none"><li>Few adjustments to local access</li><li>Opportunities for future development</li><li>Continuous US 30</li></ul>		
	Cost <div><div></div></div>	<ul style="list-style-type: none"><li>Relatively inexpensive to construct</li></ul>	<ul style="list-style-type: none"><li>Would be difficult to phase into future improvements if enhancements to Whitney/US 30 intersection are made</li></ul>	
				










# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 12 Split Diamond	Safety/Traffic 	<ul style="list-style-type: none"><li>Would provide grade separation at Christensen and enhance operations for Cheyenne 'Outer belt route'</li></ul>	<ul style="list-style-type: none"><li>Eastbound Dell Range traffic would be forced to traverse two at-grade ramp terminal intersections to reach US 30 east</li></ul>	<div></div> <div>NO</div> <ul style="list-style-type: none"><li>Costly structures</li></ul>
	Corridor Context 	<ul style="list-style-type: none"><li>Continuous US 30</li><li>Ease of local access</li></ul>		
	Cost 		<ul style="list-style-type: none"><li>Relatively costly to construct due to two bridges</li></ul>	
				










# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 13 Realigned US 30	Safety/Traffic 	<ul style="list-style-type: none"><li>US 30 curve radius not as short as Dell Range radius in Alternative 3</li></ul>	<ul style="list-style-type: none"><li>Westbound US 30 traffic forced to stop to make left turn</li><li>May encourage westbound Dell Range speeding</li></ul>	<div></div> <p><b>NO</b></p> <ul style="list-style-type: none"><li>Discontinuous US 30</li></ul>
	Corridor Context 		<ul style="list-style-type: none"><li>Discontinuous US 30</li><li>Some ROW acquisition required</li></ul>	
	Cost 	<ul style="list-style-type: none"><li>Relatively inexpensive to construct</li></ul>		
				




# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 14 Grade Separation	Safety/Traffic 	<ul style="list-style-type: none"><li>Free-flow movements</li></ul>	<ul style="list-style-type: none"><li>Could encourage speeding along westbound Dell Range</li><li>Left side merge along EB US 30</li></ul>	<div></div> <p><b>NO</b></p> <ul style="list-style-type: none"><li>Costly to construct</li></ul>
	Corridor Context 	<ul style="list-style-type: none"><li>Continuous US 30</li></ul>	<ul style="list-style-type: none"><li>Local access directed to Christensen, some out of direction travel</li><li>ROW acquisition required</li><li>Somewhat out-of-scale for Urban area</li></ul>	
	Cost 		<ul style="list-style-type: none"><li>Relatively costly to construct</li></ul>	
				








# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 11A Dell Range Slip Ramp	Safety/Traffic <div><div></div></div>	<ul style="list-style-type: none"><li>• Would remove awkward intersection of US 30 with Dell Range</li><li>• Would provide for free westbound Dell Range through movement</li></ul>	<ul style="list-style-type: none"><li>• Would accommodate heavy left turns at Foxglove connection.</li></ul>	<div><div></div></div> YES
	Corridor Context <div><div></div></div>	<ul style="list-style-type: none"><li>• Few adjustments to local access</li><li>• Opportunities for future development</li><li>• Continuous US 30</li></ul>		
	Cost <div><div></div></div>	<ul style="list-style-type: none"><li>• Relatively inexpensive to construct</li></ul>	<ul style="list-style-type: none"><li>• Could be constructed as Phase 1 of Alternative 14A.</li></ul>	









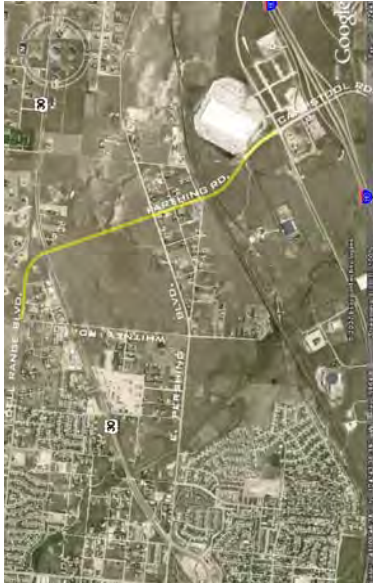
# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 14A Dell Range Flyover	Safety/Traffic <div></div>	<ul style="list-style-type: none"><li>Free-flow movements</li><li>Right side merge / diverge ramps</li></ul>	<ul style="list-style-type: none"><li>Could encourage speeding along westbound Dell Range</li></ul>	<div></div> <div>YES</div>
	Corridor Context <div></div>	Continuous US 30	<ul style="list-style-type: none"><li>Local access directed to Christensen, some out of direction travel ROW acquisition required</li></ul>	
	Cost <div></div>	Phase 1 could be constructed as Alternative 11A.	Relatively costly to construct, would require retaining walls and skewed structure	
				






# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
Alternative 2A Farthing Road Extension	Safety/Traffic 	<ul style="list-style-type: none"><li>Would consolidate movements from I-80 with US 30 movements at 90-degree angle</li></ul>		<div></div> <p><b>NO</b></p> <ul style="list-style-type: none"><li>Inconsistent with area plans</li></ul>
	Corridor Context 	<ul style="list-style-type: none"><li>Continuous US 30</li></ul>	<ul style="list-style-type: none"><li>Would disrupt continuity of proposed Christensen 'Outer Belt' Route</li><li>Would force changes to currently approved development</li><li>Would discourage development of roadway 'grid' throughout east Cheyenne</li><li>Right-of-way acquisition required</li><li>Topography may increase construction cost</li></ul>	
	Cost 	<ul style="list-style-type: none"><li>90-degree crossing of railroad would reduce expense</li></ul>		
				



# East Dell Range / US 30 Corridor Study Level 1 Screening for Reasonableness East Dell Range / US 30 / Christensen Road Complex Alternatives

Alternative	Category	Advantages	Disadvantages	Advance Option? If No, Why?
No Action Alternative	Safety/Traffic <input checked="" type="checkbox"/>		<ul style="list-style-type: none"> <li>Operations worsen without widening improvements</li> <li>Maintains unsafe tight curve at Dell Range/US 30 intersection</li> </ul>	 <p>YES</p>
	Corridor Context <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Would not disrupt existing development surrounding the intersection complex</li> </ul>	<ul style="list-style-type: none"> <li>Existing roadway network not prepared to accommodate urban densities</li> </ul>	
	Cost <input type="checkbox"/>	<ul style="list-style-type: none"> <li>No construction cost</li> </ul>		

**APPENDIX D      DELL RANGE BOULEVARD / US 30 /  
CHRISTENSEN ROAD - ALTERNATIVE  
COST ESTIMATES**

Preliminary Budget Estimate  
US-30 and Dell Range Intersection Reconstruction

Alternative 2- Grade Separation  
12-Jun-2007

Category & Item Number		Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal (Off-Site)	1	Asphalt Surfacing	SY	70,175	4.50	315,787.50
	2	Signage	LS	1	10,000.00	10,000.00
Category Subtotal						325,787.50
Removal	3	Misc Demolition	LS	1	35,000.00	35,000.00
Category Subtotal						35,000.00
Site Improvements	4	Density Control (Subgrade Preparation)	SY	206,130	1.00	206,130.00
	5	3.0" Hot Plant Mix Bit Pavement Type II	SY	206,130	15.50	3,195,015.00
	6	6.0" Crushed Base Grading W	SY	206,130	5.50	1,133,715.00
	7	Delineator posts	LS	1	15,000.00	15,000.00
	8	Signage	LS	1	25,000.00	25,000.00
	9	Traffic Signals	EA	4	200,000.00	800,000.00
	10	Lighting	LS	1	85,000.00	85,000.00
Category Subtotal						5,459,860.00
Utilities	11	Misc Drainage and Storm Sewer	LS	1	50,000.00	50,000.00
Category Subtotal						50,000.00
Landscaping	12	Trees	EA	250	450.00	112,500.00
	13	Landscaping/Seeding	SY	142,006	1.00	142,006.00
	14	Irrigation/Drip System	LS	1	35,000.00	35,000.00
Category Subtotal						289,506.00
Embankment & Compaction	15	Unclassified Excavations	SY	85,000	4.50	382,500.00
Category Subtotal						382,500.00
Right-Of-Way Acquisition	16		Ares	6.08		
Category Subtotal						0.00
Material Subtotal						6,542,653.50
Administration	17	Mobilization	%	6.0%	-	392,559.21
	18	Bonds & Insurance	%	3.5%	-	228,992.87
	19	Traffic Control	%	4.0%	-	261,706.14
	20	Construction Surveying	%	3.5%	-	228,992.87
Category Subtotal						1,112,251.10
	21	Quality Control Testing	%	2.0%	-	130,853.07
	22	Contingency	%	25.0%	-	1,635,663.38
Category Subtotal						1,766,516.45
Construction Total						9,421,421.04

Estimate Does NOT Include Cost for ROW Acquisition



Preliminary Budget Estimate  
US-30 and Dell Range Intersection Reconstruction

Alternative 7- Grade Separation  
12-Jun-2007

Category & Item Number		Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal (Off-Site)	1	Asphalt Surfacing	SY	70,175	4.50	315,787.50
	2	Signage	LS	1	10,000.00	10,000.00
Category Subtotal						325,787.50
Removal	3	Misc Demolition	LS	1	35,000.00	35,000.00
Category Subtotal						35,000.00
Site Improvements	4	Density Control (Subgrade Preparation)	SY	194,258	1.00	194,258.00
	5	3.0" Hot Plant Mix Bit Pavement Type II	SY	194,258	15.50	3,010,999.00
	6	6.0" Crushed Base Grading W	SY	194,258	5.50	1,068,419.00
	7	Delineator posts	LS	1	15,000.00	15,000.00
	8	Signage	LS	1	25,000.00	25,000.00
	9	Traffic Signals	EA	3	200,000.00	600,000.00
	10	Lighting	LS	1	85,000.00	85,000.00
Category Subtotal						4,998,676.00
Utilities	11	Misc Drainage and Storm Sewer	LS	1	50,000.00	50,000.00
Category Subtotal						50,000.00
Landscaping	12	Trees	EA	250	450.00	112,500.00
	13	Landscaping/Seeding	SY	150,387	1.00	150,387.00
	14	Irrigation/Drip System	LS	1	35,000.00	35,000.00
Category Subtotal						297,887.00
Embankment & Compaction	15	Unclassified Excavations	SY	85,000	4.50	382,500.00
Category Subtotal						382,500.00
Right-Of-Way Acquisition	16		Ares	6.00		
Category Subtotal						0.00
Material Subtotal						6,089,850.50
Administration	17	Mobilization	%	6.0%	-	365,391.03
	18	Bonds & Insurance	%	3.5%	-	213,144.77
	19	Traffic Control	%	4.0%	-	243,594.02
	20	Construction Surveying	%	3.5%	-	213,144.77
Category Subtotal						1,035,274.59
	21	Quality Control Testing	%	2.0%	-	121,797.01
	22	Contingency	%	25.0%	-	1,522,462.63
Category Subtotal						1,644,259.64
Construction Total						8,769,384.72

Estimate Does NOT Include Cost for ROW Acquisition

Preliminary Budget Estimate  
US-30 and Dell Range Intersection Reconstruction

Alternative 11 - Grade Separation  
12-Jun-2007

Category & Item Number		Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal (Off-Site)	1	Asphalt Surfacing	SY	70,175	4.50	315,787.50
	2	Signage	LS	1	10,000.00	10,000.00
Category Subtotal						325,787.50
Removal	3	Misc Demolition	LS	1	35,000.00	35,000.00
Category Subtotal						35,000.00
Site Improvements	4	Density Control (Subgrade Preparation)	SY	183,048	1.00	183,048.00
	5	3.0" Hot Plant Mix Bit Pavement Type II	SY	183,048	15.50	2,837,244.00
	6	6.0" Crushed Base Grading W	SY	183,048	5.50	1,006,764.00
	7	Delineator posts	LS	1	15,000.00	15,000.00
	8	Signage	LS	1	25,000.00	25,000.00
	9	Traffic Signals	EA	3	200,000.00	600,000.00
	10	Lighting	LS	1	85,000.00	85,000.00
Category Subtotal						4,752,056.00
Utilities	11	Misc Drainage and Storm Sewer	LS	1	50,000.00	50,000.00
Category Subtotal						50,000.00
Landscaping	12	Trees	EA	250	450.00	112,500.00
	13	Landscaping/Seeding	SY	165,137	1.00	165,137.00
	14	Irrigation/Drip System	LS	1	35,000.00	35,000.00
Category Subtotal						312,637.00
Embankment & Compaction	15	Unclassified Excavations	SY	85,000	4.50	382,500.00
Category Subtotal						382,500.00
Right-Of-Way Acquisition	16		Ares	5.55		
Category Subtotal						0.00
Material Subtotal						5,857,980.50
Administration	17	Mobilization	%	6.0%	-	351,478.83
	18	Bonds & Insurance	%	3.5%	-	205,029.32
	19	Traffic Control	%	4.0%	-	234,319.22
	20	Construction Surveying	%	3.5%	-	205,029.32
Category Subtotal						995,856.69
	21	Quality Control Testing	%	2.0%	-	117,159.61
	22	Contingency	%	25.0%	-	1,464,495.13
Category Subtotal						1,581,654.74
Construction Total						8,435,491.92

Estimate Does NOT Include Cost for ROW Acquisition

Preliminary Budget Estimate  
US-30 and Dell Range Intersection Reconstruction

Alternative 11A - Grade Separation  
12-Jun-2007

Category & Item Number		Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal (Off-Site)	1	Asphalt Surfacing	SY	70,175	4.50	315,787.50
	2	Signage	LS	1	10,000.00	10,000.00
Category Subtotal						325,787.50
Removal	3	Misc Demolition	LS	1	35,000.00	35,000.00
Category Subtotal						35,000.00
Site Improvements	4	Density Control (Subgrade Preparation)	SY	194,654	1.00	194,654.00
	5	3.0" Hot Plant Mix Bit Pavement Type II	SY	194,654	15.50	3,017,137.00
	6	6.0" Crushed Base Grading W	SY	194,654	5.50	1,070,597.00
	7	Delineator posts	LS	1	15,000.00	15,000.00
	8	Signage	LS	1	25,000.00	25,000.00
	9	Traffic Signals	EA	4	200,000.00	800,000.00
	10	Lighting	LS	1	85,000.00	85,000.00
Category Subtotal						5,207,388.00
Utilities	11	Misc Drainage and Storm Sewer	LS	1	50,000.00	50,000.00
Category Subtotal						50,000.00
Landscaping	12	Trees	EA	250	450.00	112,500.00
	13	Landscaping/Seeding	SY	156,613	1.00	156,613.00
	14	Irrigation/Drip System	LS	1	35,000.00	35,000.00
Category Subtotal						304,113.00
Embankment & Compaction	15	Unclassified Excavations	SY	85,000	4.50	382,500.00
Category Subtotal						382,500.00
Right-Of-Way Acquisition	16		Ares	5.54		
Category Subtotal						0.00
Material Subtotal						6,304,788.50
Administration	17	Mobilization	%	6.0%	-	378,287.31
	18	Bonds & Insurance	%	3.5%	-	220,667.60
	19	Traffic Control	%	4.0%	-	252,191.54
	20	Construction Surveying	%	3.5%	-	220,667.60
Category Subtotal						1,071,814.05
	21	Quality Control Testing	%	2.0%	-	126,095.77
	22	Contingency	%	25.0%	-	1,576,197.13
Category Subtotal						1,702,292.90
Construction Total						9,078,895.44

Estimate Does NOT Include Cost for ROW Acquisition

Preliminary Budget Estimate  
US-30 and Dell Range Intersection Reconstruction

Alternative 14A - Grade Separation  
12-Jun-2007

Category & Item Number		Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal (Off-Site)	1	Asphalt Surfacing	SY	70,175	4.50	315,787.50
	2	Signage	LS	1	10,000.00	10,000.00
Category Subtotal						325,787.50
Removal	3	Misc Demolition	LS	1	35,000.00	35,000.00
Category Subtotal						35,000.00
Site Improvements	4	Density Control (Subgrade Preparation)	SY	203,487	1.00	203,487.00
	5	3.0" Hot Plant Mix Bit Pavement Type II	SY	203,487	15.50	3,154,048.50
	6	6.0" Crushed Base Grading W	SY	203,487	5.50	1,119,178.50
	7	Delineator posts	LS	1	15,000.00	15,000.00
	8	Signage	LS	1	25,000.00	25,000.00
	9	Traffic Signals	EA	3	200,000.00	600,000.00
	10	Lighting	LS	1	85,000.00	85,000.00
Category Subtotal						5,201,714.00
Grade Separation	11	Structure (1-Lane over 5-Lane)	SF	3,600	210.00	756,000.00
Category Subtotal						756,000.00
Utilities	12	Misc Drainage and Storm Sewer	LS	1	50,000.00	50,000.00
Category Subtotal						50,000.00
Landscaping	13	Trees	EA	250	450.00	112,500.00
	14	Landscaping/Seeding	SY	132,766	1.00	132,766.00
	15	Irrigation/Drip System	LS	1	35,000.00	35,000.00
Category Subtotal						280,266.00
Embankment & Compaction	16	Unclassified Excavations	SY	100,000	4.50	450,000.00
Category Subtotal						450,000.00
Right-Of-Way	17		Ares	5.52		
Acquisition						
Category Subtotal						0.00
Material Subtotal						7,098,767.50
Administration	18	Mobilization	%	6.0%	-	425,926.05
	19	Bonds & Insurance	%	3.5%	-	248,456.86
	20	Traffic Control	%	4.0%	-	283,950.70
	21	Construction Surveying	%	3.5%	-	248,456.86
Category Subtotal						1,206,790.48
	22	Quality Control Testing	%	2.0%	-	141,975.35
	23	Contingency	%	25.0%	-	1,774,691.88
Category Subtotal						1,916,667.23
Construction Total						10,222,225.20

Estimate Does NOT Include Cost for ROW Acquisition



**Preliminary Budget Estimate - 1Mile Sections**

12-Jun-2007

**Dell Range - Wider Condition Principal Arterial Street**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	15,253	5.00	76,265.00
<b>Category Subtotal</b>					<b>76,265.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	33,440	15.50	518,320.00
	3 6.0" Crushed Base Grading W	SY	33,440	7.00	234,080.00
	4 24" Curb and Gutter	LF	21,120	14.50	306,240.00
	5 4" Concrete Sidewalk	SF	63,360	4.50	285,120.00
	6 Slope Paving	SF	15,840	4.50	71,280.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,437,540.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	600	450.00	270,000.00
<b>Category Subtotal</b>					<b>270,000.00</b>
Grading	11 Unclassified Excavations	SY	30,000	4.50	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
<b>Material Subtotal</b>					<b>1,923,805.00</b>
Administration	12 *	%	44.0%	-	846,474.20
<b>Category Subtotal</b>					<b>846,474.20</b>
<b>Construction Total</b>					<b>2,770,279.20</b>
<b>Per/FT</b>					<b>524.67</b>

\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency

**Dell Range - Constrained Segments Modified Principal Arterial Street**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	15,253	5.00	76,265.00
<b>Category Subtotal</b>					<b>76,265.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	35,200	15.50	545,600.00
	3 6.0" Crushed Base Grading W	SY	35,200	7.00	246,400.00
	4 24" Curb and Gutter	LF	10,560	14.50	153,120.00
	5 4" Concrete Sidewalk	SF	73,920	4.50	332,640.00
	6 Slope Paving	SF	0	4.50	0.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,300,260.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	400	450.00	180,000.00
<b>Category Subtotal</b>					<b>180,000.00</b>
Grading	11 Unclassified Excavations	SY	30,000	4.50	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
<b>Material Subtotal</b>					<b>1,696,525.00</b>
Administration	12 *	%	44.0%	-	746,471.00
<b>Category Subtotal</b>					<b>746,471.00</b>
<b>Construction Total</b>					<b>2,442,996.00</b>
<b>Per/FT</b>					<b>462.69</b>

\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency

**Dell Range - Constrained Segments Alternative 2 Modified Principal Arterial Street**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	15,253	5.00	76,265.00
<b>Category Subtotal</b>					<b>76,265.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	35,200	15.50	545,600.00
	3 6.0" Crushed Base Grading W	SY	35,200	7.00	246,400.00
	4 24" Curb and Gutter	LF	21,120	14.50	306,240.00
	5 4" Concrete Sidewalk	SF	73,920	4.50	332,640.00
	6 Slope Paving	SF	15,840	4.50	71,280.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,524,660.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	600	450.00	270,000.00
<b>Category Subtotal</b>					<b>270,000.00</b>
Grading	11 Unclassified Excavations	SY	30,000	4.50	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
<b>Material Subtotal</b>					<b>2,010,925.00</b>
Administration	12 *	%	44.0%	-	884,807.00
<b>Category Subtotal</b>					<b>884,807.00</b>
<b>Construction Total</b>					<b>2,895,732.00</b>
<b>Per/FT</b>					<b>548.43</b>

\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency

**Preliminary Budget Estimate - 1Mile Sections**

12-Jun-2007

**US 30 - Urban Arterial Roadway**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	27,000	5.00	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	33,440	15.50	518,320.00
	3 6.0" Crushed Base Grading W	SY	33,440	7.00	234,080.00
	4 24" Curb and Gutter	LF	21,120	14.50	306,240.00
	5 4" Concrete Sidewalk	SF	116,160	4.50	522,720.00
	6 Slope Paving	SF	15,840	4.50	71,280.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,675,140.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	600	450.00	270,000.00
<b>Category Subtotal</b>					<b>270,000.00</b>
Grading	11 Unclassified Excavations	SY	30,000	4.50	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
<b>Material Subtotal</b>					<b>2,220,140.00</b>
Administration	12 *	%	44.0%	-	976,861.60
<b>Category Subtotal</b>					<b>976,861.60</b>
<b>Construction Total</b>					<b>3,197,001.60</b>
<b>Per/FT</b>					<b>605.49</b>

\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency

**US 30 - Paved Median Alternative**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	27,000	5.00	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	44,586	15.50	691,083.00
	3 6.0" Crushed Base Grading W	SY	44,586	7.00	312,102.00
	4 24" Curb and Gutter	LF	0	14.50	0.00
	5 4" Concrete Sidewalk	SF	52,800	4.50	237,600.00
	6 Slope Paving	SF	0	4.50	0.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,263,285.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	400	450.00	180,000.00
<b>Category Subtotal</b>					<b>180,000.00</b>
Grading	11 Unclassified Excavations	SY	30,000	4.50	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
<b>Material Subtotal</b>					<b>1,718,285.00</b>
Administration	12 *	%	44.0%	-	756,045.40
<b>Category Subtotal</b>					<b>756,045.40</b>
<b>Construction Total</b>					<b>2,474,330.40</b>
<b>Per/FT</b>					<b>468.62</b>

\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency

**US 30 - Grassed Median Divided Road Alternative**

Category & Item Number	Item	Unit	Estimated Quantity	Unit Price	Total Cost
Removal	1 Surfacing	SY	27,000	5.00	135,000.00
<b>Category Subtotal</b>					<b>135,000.00</b>
Site Improvements	2 3.0" Hot Plant Mix Bit Pavement Type II	SY	42,240	15.50	654,720.00
	3 6.0" Crushed Base Grading W	SY	42,240	7.00	295,680.00
	4 24" Curb and Gutter	LF	0	14.50	0.00
	5 4" Concrete Sidewalk	SF	52,800	4.50	237,600.00
	6 Slope Paving	SF	0	4.50	0.00
	7 Striping	LS	1	20,000.00	20,000.00
	8 Signage	LS	1	2,500.00	2,500.00
<b>Category Subtotal</b>					<b>1,210,500.00</b>
Utilities	9 Misc Drainage and Storm Sewer	LS	1	5,000.00	5,000.00
<b>Category Subtotal</b>					<b>5,000.00</b>
Landscaping	10 Trees	EA	400	450.00	180,000.00
<b>Category Subtotal</b>					<b>180,000.00</b>
Grading	11 Unclassified Excavations	SY	40,000	4.50	180,000.00
<b>Category Subtotal</b>					<b>180,000.00</b>
<b>Material Subtotal</b>					<b>1,710,500.00</b>
Administration	12 *	%	44.0%	-	752,620.00
<b>Category Subtotal</b>					<b>752,620.00</b>
<b>Construction Total</b>					<b>2,463,120.00</b>
<b>Per/FT</b>					<b>466.50</b>

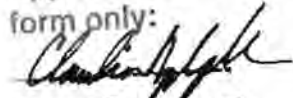
\* Mobilization, Bonds &amp; Insurance, Traffic Control, Construction Surveying, Quality Control Testing, Contingency



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Date: 7-8-08

RESOLUTION NO. 5057

**ENTITLED: "A RESOLUTION ACKNOWLEDGING RECEIPT OF AND SUPPORTING THE RECOMMENDATIONS OF THE EAST DELL RANGE/US 30 CORRIDOR STUDY WHICH INCLUDES THE CHRISTENSEN RAILROAD OVERPASS PLAN".**

**WHEREAS**, the East Dell Range/US 30 Corridor Study dated May, 2008 and prepared by Felsburg Holt & Ullevig included the planning of the US 30 Corridor between College Drive and the Archer Overpass, the Dell Range Boulevard Corridor between College Drive and US 30, and Christensen Road and Railroad Overpass between Commerce Circle and US 30; and

**WHEREAS**, the jurisdictional responsibilities of these highways and roadways include the Wyoming Department of Transportation, Laramie County and the City of Cheyenne; and

**WHEREAS**, the Cheyenne Metropolitan Planning Organization is designated as the lead agency to manage and coordinate the study; and

**WHEREAS**, an interagency Steering Committee was formed to guide the development of the plan; and

**WHEREAS**, two public open houses were held during the planning process to solicit and include public input to help guide the development of the plan; and

**WHEREAS**, final plan presentations were given during the County Planning Commission meeting held June 12<sup>th</sup> and during the City Planning Commission meeting held June 16<sup>th</sup>; and

**WHEREAS**, after hearing public comments, the County and City Planning Commissions each recommended to the County and City Governing Bodies to "acknowledge receipt of the plan and recommended approval".

**NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF CHEYENNE, WYOMING:**

That the City of Cheyenne Governing Body acknowledges receipt of and supports the recommendations of the East Dell Range/US 30 Corridor Study which includes the Christensen Railroad Overpass Plan.

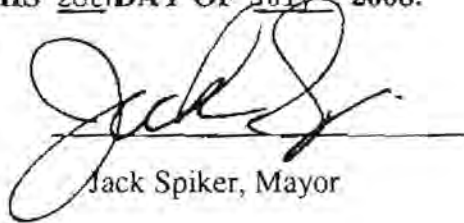
**BE IT FURTHER RESOLVED** that the Governing Body will work with the Wyoming Department of Transportation and Laramie County to implement and fund the recommendations of this plan as traffic and safety issues warrant the necessary improvements.

**BE IT FURTHER RESOLVED** that the Governing Body recommends that the East Dell Range/US 30 Corridor Study be used as the guideline for the development and reconstruction of



the Dell Range and US 30 Corridors, the Dell Range and US 30 Intersection, and the Christensen Railroad Overpass Project.

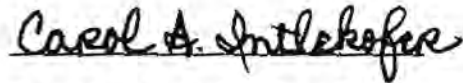
**PRESENTED, READ AND ADOPTED THIS 28th DAY OF July 2008.**



Jack Spiker, Mayor

(Seal)

ATTEST:



Carol A. Intlekofer, City Clerk

RESOLUTION NO. 080701-35

**ENTITLED: "A RESOLUTION ACKNOWLEDGING RECEIPT OF AND SUPPORTING THE RECOMMENDATIONS OF THE EAST DELL RANGE/US 30 CORRIDOR STUDY WHICH INCLUDES THE CHRISTENSEN RAILROAD OVERPASS PLAN".**

**WHEREAS**, the East Dell Range/US 30 Corridor Study dated May, 2008 and prepared by Felsburg Holt & Ullevig included the planning of the US 30 Corridor between College Drive and the Archer Overpass, the Dell Range Boulevard Corridor between College Drive and US 30, and Christensen Road and Railroad Overpass between Commerce Circle and US 30; and

**WHEREAS**, the jurisdictional responsibilities of these highways and roadways include the Wyoming Department of Transportation, Laramie County and the City of Cheyenne; and

**WHEREAS**, the Cheyenne Metropolitan Planning Organization is designated as the lead agency to manage and coordinate the study; and

**WHEREAS**, an interagency Steering Committee was formed to guide the development of the plan; and

**WHEREAS**, two public open houses were held during the planning process to solicit and include public input to help guide the development of the plan; and

**WHEREAS**, final plan presentations were given during the County Planning Commission meeting held June 12<sup>th</sup> and during the City Planning Commission meeting held June 16<sup>th</sup>; and

**WHEREAS**, after hearing public comments, the County and City Planning Commissions each recommended to the County and City Governing Bodies to "acknowledge receipt of the plan and recommended approval".

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS FOR LARAMIE COUNTY, WYOMING:**

That the Board of Commissioners for Laramie County acknowledges receipt of and supports the recommendations of the East Dell Range/US 30 Corridor Study which includes the Christensen Railroad Overpass Plan.

**BE IT FURTHER RESOLVED** that the Board of Commissioners will work with the Wyoming Department of Transportation and the City of Cheyenne to implement and fund the recommendations of this plan as traffic and safety issues warrant the necessary improvements.

**BE IT FURTHER RESOLVED** that the Board of Commissioners recommends that the East Dell Range/US 30 Corridor Study be used as the guideline for the development and

reconstruction of the Dell Range and US 30 Corridors, the Dell Range and US 30 Intersection.  
and the Christensen Railroad Overpass Project.

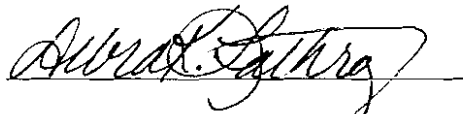
**PRESENTED, READ AND ADOPTED THIS** 1 **DAY OF** July **2008.**

A handwritten signature in cursive script, appearing to read "Jeff Ketcham", written over a horizontal line.

Jeff Ketcham, Chairman  
Laramie County Commissioners

(Seal)

ATTEST:

A handwritten signature in cursive script, appearing to read "Debbye Lathrop", written over a horizontal line.

Debbye Lathrop, County Clerk