

# SOUTHWEST DRIVE CORRIDOR PLAN

BROKEN ARROW ROAD ALTERNATIVE



MARCH 2024

Prepared For





## Acknowledgements

The preparation of this report has been financed, in part, through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views of policy of the U.S. Department of Transportation.

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## Introduction

Southwest Drive is a two-lane major collector roadway extending from Lincolnway to College Drive in southwest Cheyenne. This rural road provides connectivity between Lincolnway to commercial development with the south terminus at College Drive, which serves as the main linkage to I-25 in the southern part of the community. The existing corridor is a mix of uses with industrial north of I-80 and residential on the south end.

The existing road and pavement surfaces are generally in fair to poor condition. Also, the overall roadway corridor is lacking facilities for pedestrians and bicyclists. The railroad crossing near Lincolnway poses safety concerns and operational challenges with significant crossing closures. Also, the intersection of Southwest Drive and College Drive is congested with truck traffic and the proximity to the interchange makes for challenging left hand turn movements.

The Southwest Drive corridor includes several intersections with unpaved side-roads including Broken Arrow Road, Swan Ranch Road, Lindblom Court, and Woodenshoe Drive. The operational relationship between these roads within the Southwest Drive corridor indicates the importance of a north/south collector roadway within the overall transportation network to connect neighbors to higher classified roads.

With anticipated development and growth in southwest Cheyenne, including future development east of Broken Arrow Road and south of College Drive, traffic volumes will increase significantly over the next two decades. This report specifically analyzes and provides suggestions for improvements to the existing corridor while examining Broken Arrow Road as an alternative major collector road.

The Southwest Drive Corridor Plan provides 35% design level plans for the Broken Arrow Road corridor as the preferred alternative, which includes appropriate elements and considerations for an urban complete street. Additionally, the plan includes improvements to Southwest Drive, Woodenshoe Drive, Lindblom Court and Swan Ranch Road.

# Goals and Objectives

## Project Goal

Develop a conceptual (35% design level) plan for the redesign of the Southwest Drive or alternative corridor between Lincolnway and College Drive that meets the anticipated future mobility needs of residents and businesses in the greater Southwest Cheyenne area.

## Project Objectives

- Upgrade Southwest Drive and Broken Arrow Road between Lincolnway and College Drive with improvements to intersections of Swan Ranch Road, Lindblom Court, Woodenshoe Drive, and College Drive.
- Address traffic flow concerns in relation to the railroad at the northern portion of the corridor.
- Analyze commercial truck traffic at the southern end of the corridor at College Drive.
- Evaluate whether the major collector should remain Southwest Drive or if it should be moved to the east and follow another alignment.
- Convert preferred alternative to a Complete Street for multi-modal access.
- Create a corridor plan to guide and serve as a template for future development.
- Involve stakeholders and public in data collection and recommendations.
- Provide recommendations that are supported by data, proper analysis, and standard practices.



Figure 1 - Project Area





# Existing Conditions

## Plats

The Southwest Drive corridor is dedicated and shown as a public roadway via various plats filed with the Laramie County Assessor's office. Figures 2a & 2b show a few plats along the corridor for future reference in this plan. For clarity, developments are listed as identified by Laramie County in Tables 1a & 1b. A boundary survey was not completed for this plan.

Numerous residences are addressed and have access from Southwest Drive. Additionally, there are 17 residential properties located in the Southcrest Heights subdivision that can access the Southwest Drive corridor via internal, unpaved roads. These properties can also access College Drive directly via four access points.

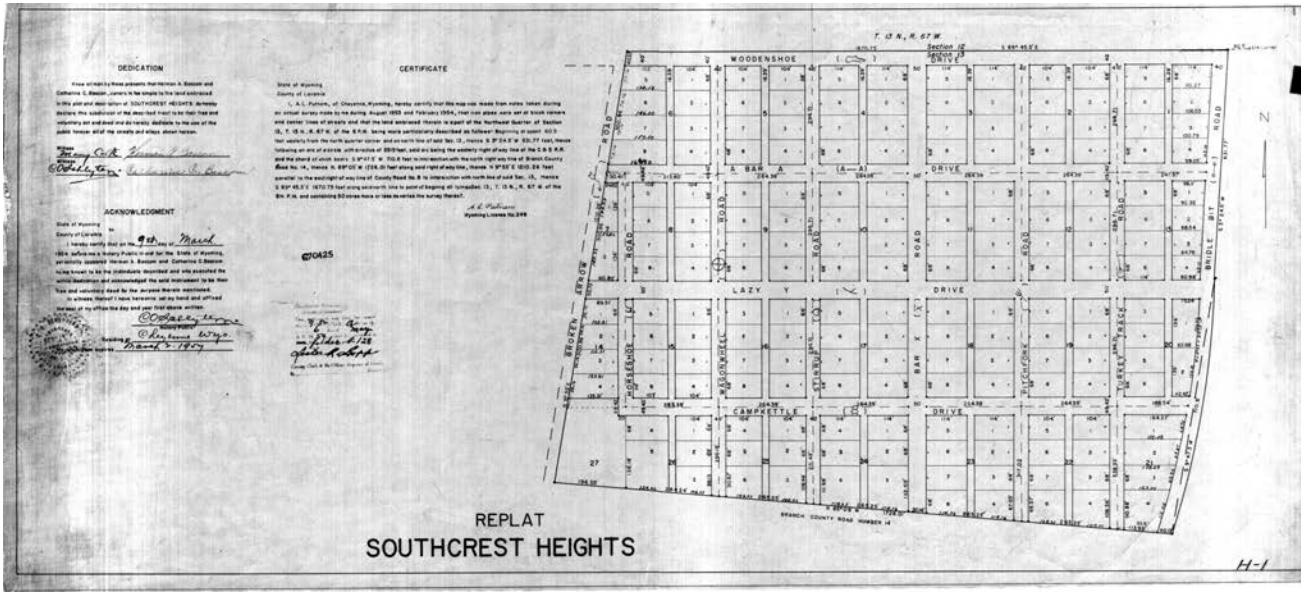
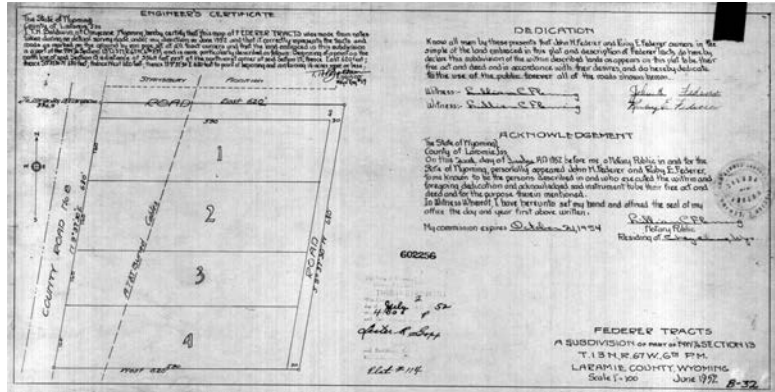
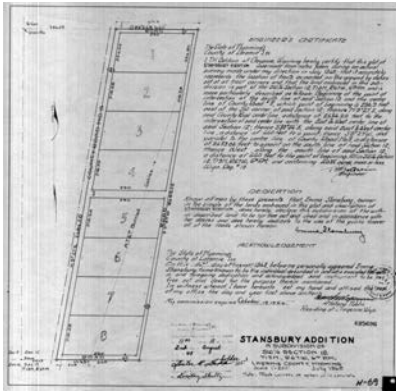


Figure 2a - Recorded Plats

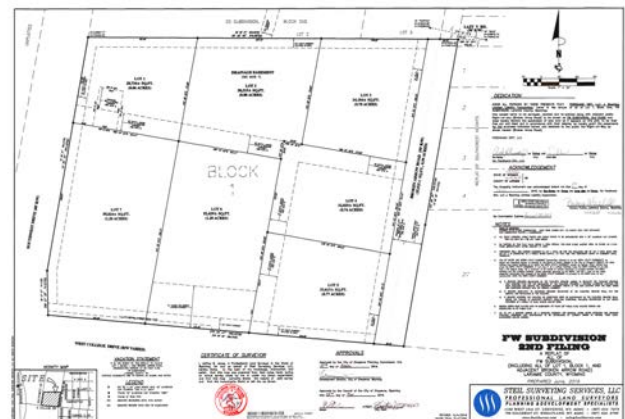
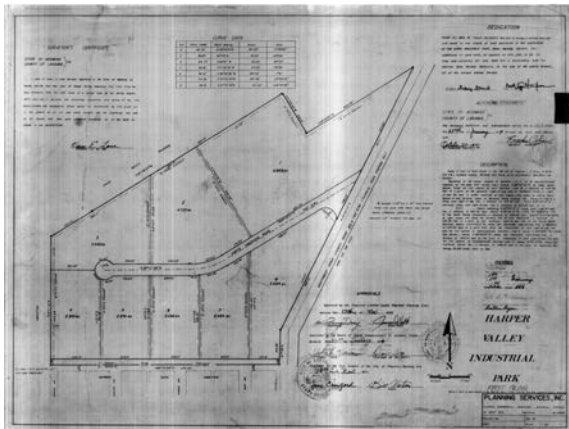


Subdivision	Surveyor	Year
Clear Creek Park Tract 1	Robert Whitney	1979
Clear Creek Park Tract 2	Robert Whitney	1979
Harper Valley Industrial Park - 1st	Vern Lane	1973
Harper Valley Industrial Park - Replat	RH Westerfield	1975
Southwest Industrial Park - 2nd	J Griggs	2018
Warren Glen Addition	FH Jones	1890
Warren Glen Replat Tract 2	William Condrey	1977
13-67: A Tract in N1/2 N1/2 Sec 12	Unknown	Unknown
H and B Tracts: Portion of Tract 1	SD Dawson	1998
H and B Tracts 2nd Filing	Adam Deschler	2019
13-67: A Tract in N1/2 Sec 12	Unknown	Unknown
Mountain View Homes Subdivision	GW Livingston	1935
Stanbury Addition Tract 1	TH Baldwin	1948
Stanbury Addition Tract 2	TH Baldwin	1948
Lindblom Subdivision	Malcom Martin	1959

**Table 1a - Legal Descriptions**

Subdivision	Surveyor	Year
Clear Creek Park Tract 1	Robert Whitney	1948
Clear Creek Park Tract 2	Robert Whitney	1948
Harper Valley Industrial Park - 1st	Vern Lane	1952
Harper Valley Industrial Park - Replat	RH Westerfield	2006
Southwest Industrial Park - 2nd	J Griggs	2019
Warren Glen Addition	FH Jones	2014
Warren Glen Replat Tract 2	William Condrey	1953-1954

**Table 1b - Legal Descriptions**



**Figure 2b - Recorded Plats**

## Boundaries

A large portion of the Southwest Drive corridor is located within the boundary of the City of Cheyenne between Lincolnway and College Drive; however, the majority of residential lots fronting to Southwest Drive and backing to Broken Arrow Road are not annexed and are still located in Laramie County. In Figure 3, the unshaded area is within the incorporated boundary of the City of Cheyenne, while the shaded area is under the jurisdiction of Laramie County.

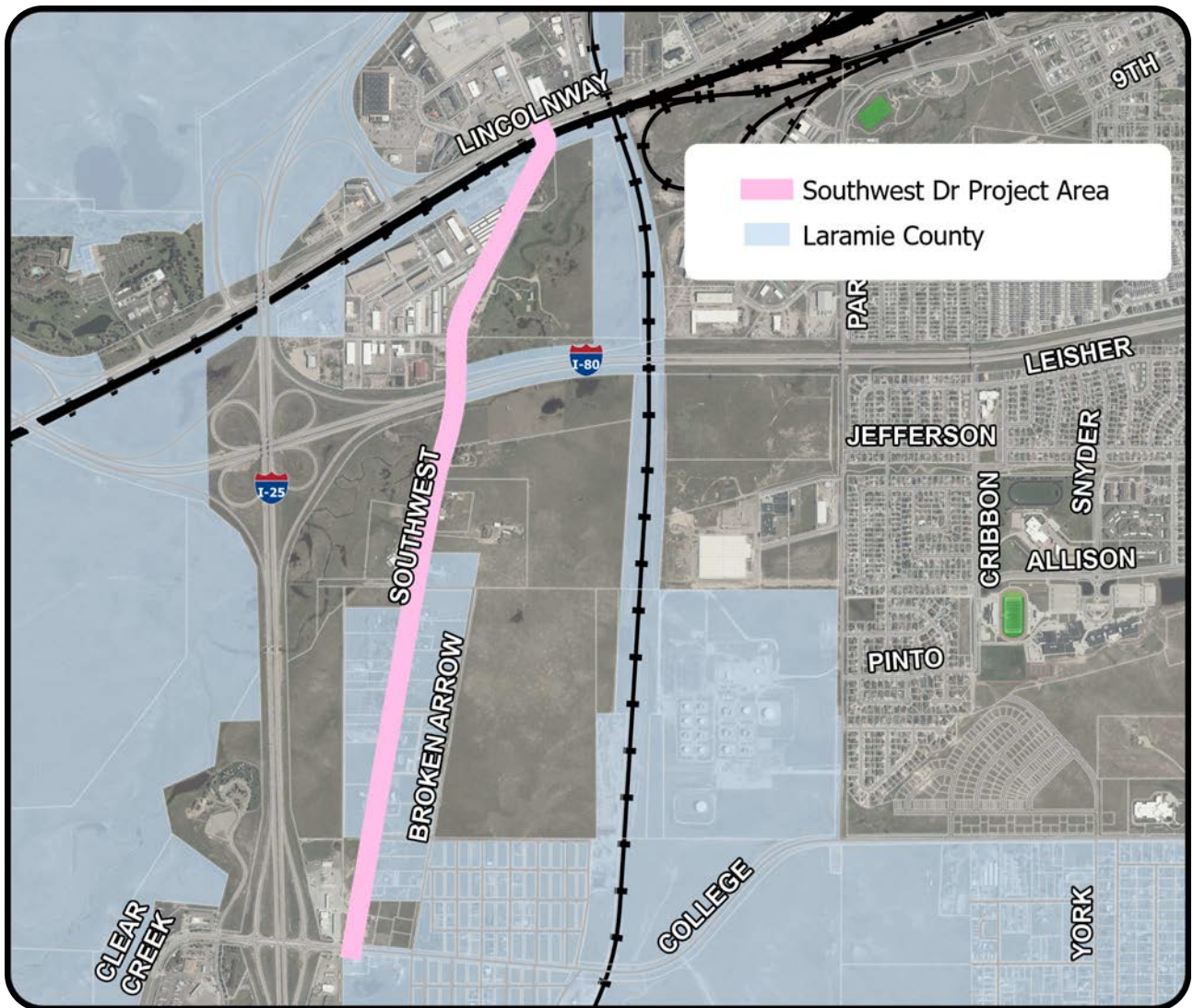


Figure 3 - City & County Boundaries



# Zoning

Zoning adjacent to the roadways varies and includes low density residential, mixed use residential, mixed-use business, community business, light industrial, public, planned unit development, and agricultural. In general, the apparent uses of the properties adjacent to the corridor correspond to the respective variety of zones.

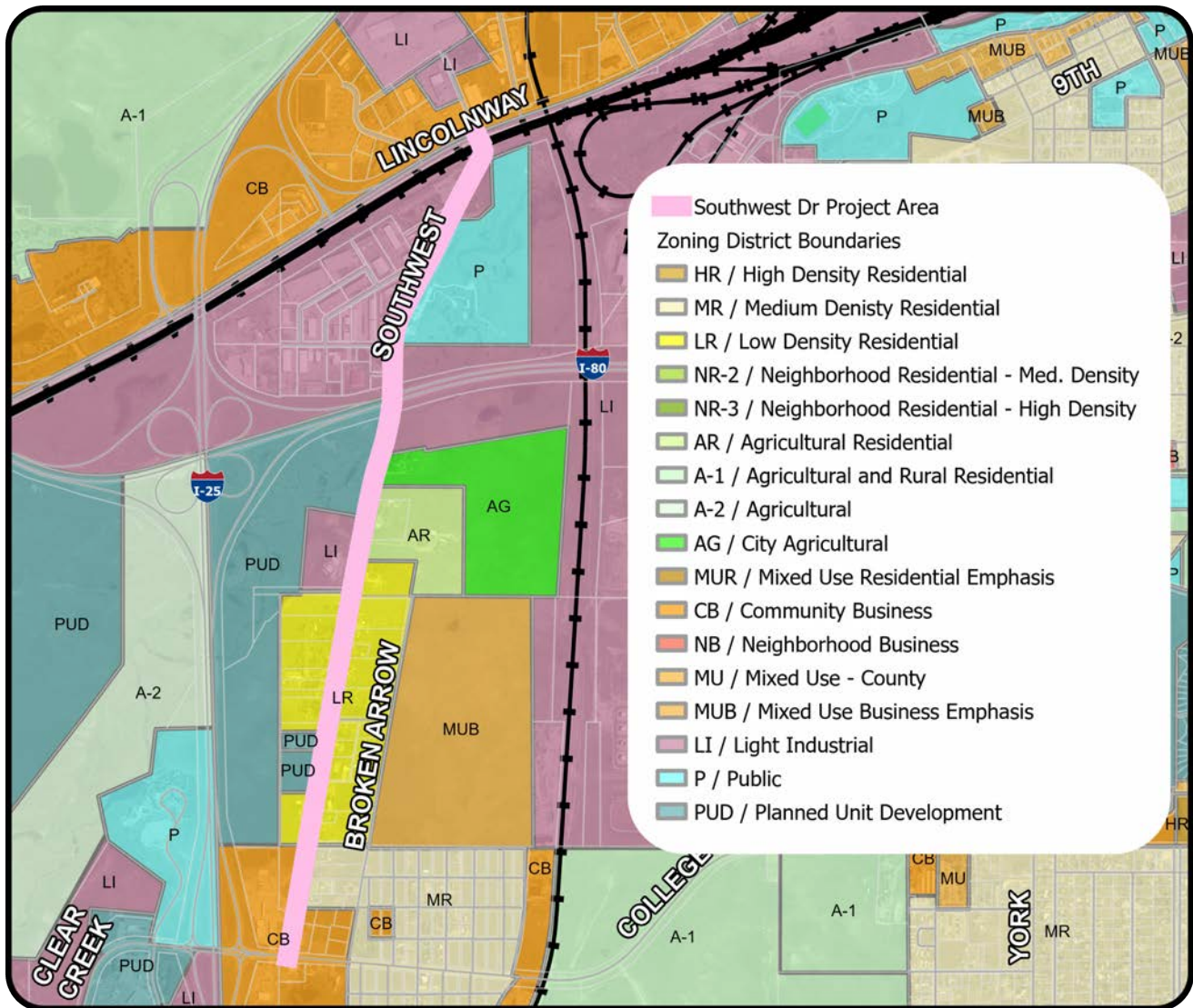


Figure 4 - Project Area Zoning

## Water & Sewer

The majority of residential properties along the Southwest Drive corridor utilize private septic systems, with two exceptions - the properties located at 1311 Southwest Drive and 3133 Lindblom Court as noted in Figure 5. These two properties show a 4" sewer connection to the 8" main line in the roadway owned and operated by the Board of Public Utilities (BOPU).



Figure 5 -BOPU Sewer Connection

All of the properties south of I-80 utilize private wells for potable water. Below is a delineation of wells that have been tested along the corridor and properties that have private septic tanks.



Figure 6 - Private Septic & Wells



## Water & Sewer

In the industrial areas north of I-80, BOPU owns and operates both sewer and water lines as delineated in Figure 7.

Sanitary manholes for the BOPU systems are noted throughout the corridor and in the roadway of Southwest Drive.



Type,Ownership   Main   Potable Distribution	Main   Sewer Collection	Status   Manhole   Sewer Collection
<span style="color:blue">—</span> IN SERVICE - DISTRIBUTION	<span style="color:green">—</span> IN SERVICE - GRAVITY MAINLINE	<span style="color:green">⊗</span> MANHOLE,IN SERVICE
<span style="color:darkblue">—</span> IN SERVICE - UNDER SIZED	<span style="color:lightgreen">—</span> IN SERVICE - GRAVITY INTERCEPTOR	<span style="color:yellow">⊗</span> MANHOLE,PENDING   DEVELOPMENT
<span style="color:red">—</span> IN SERVICE - HYDRANT_LATERAL	<span style="color:darkgreen">—</span> IN SERVICE - GRAVITY TRUNKLINE	

Figure 7 - BPOU Water & Sewer Lines



## Electric

There are numerous overhead local service electrical lines along the Southwest Drive corridor owned by Black Hills Energy. The corridor is also intersected by a Western Area Power Administration (WAPA) high voltage transmission line shown in Figure 8.

Conversations with Tom Hall, GIS Analyst for Black Hills Energy, indicated that nearly all electric and phone/cable utilities along the corridor are overhead lines. Mr. Hall stated that some of the utility poles seen in the corridor that appear shorter than typical are poles that Black Hills has vacated and cut off to indicate the defunct status of the poles.

While the “short poles” currently have lines attached, these lines are for telephone and fiber optics. The users have been notified of the vacating process and should remove their lines before Black Hills removes the shortened poles.

The following pages on Figures 9a, 9b, and 9c show existing Black Hills Energy electric lines. On the maps, orange represents primary lines and blue represents secondary lines. Solid lines represent above ground utilities and dashed lines represent underground service.

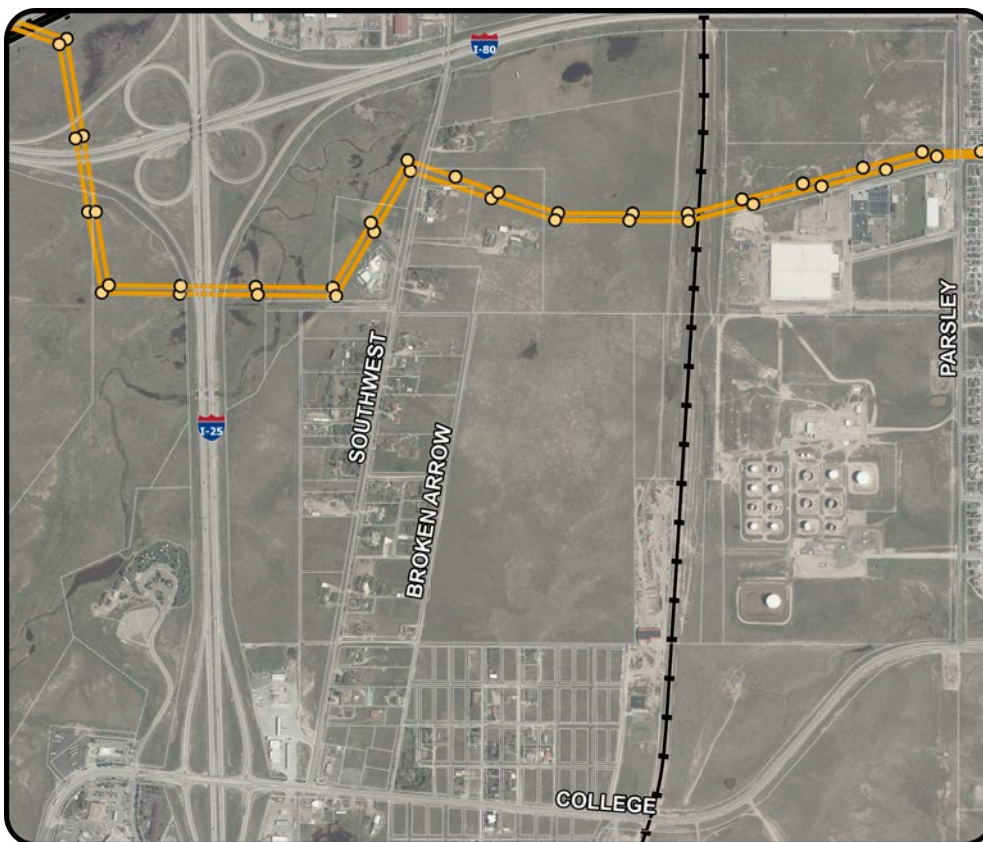


Figure 8 - WAPA High Voltage Line



Figure 9a - Black Hills Energy Electric

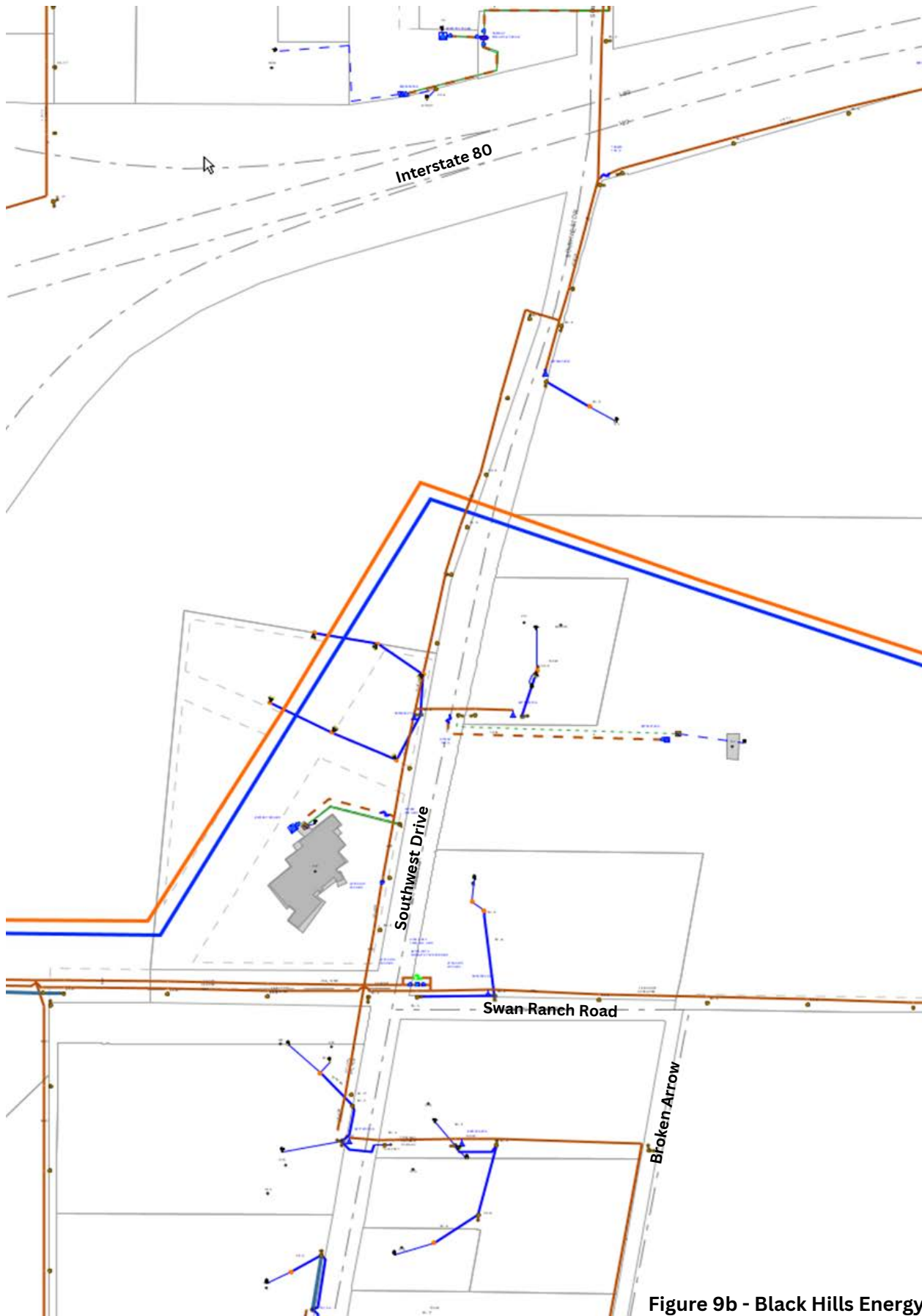


Figure 9b - Black Hills Energy Electric



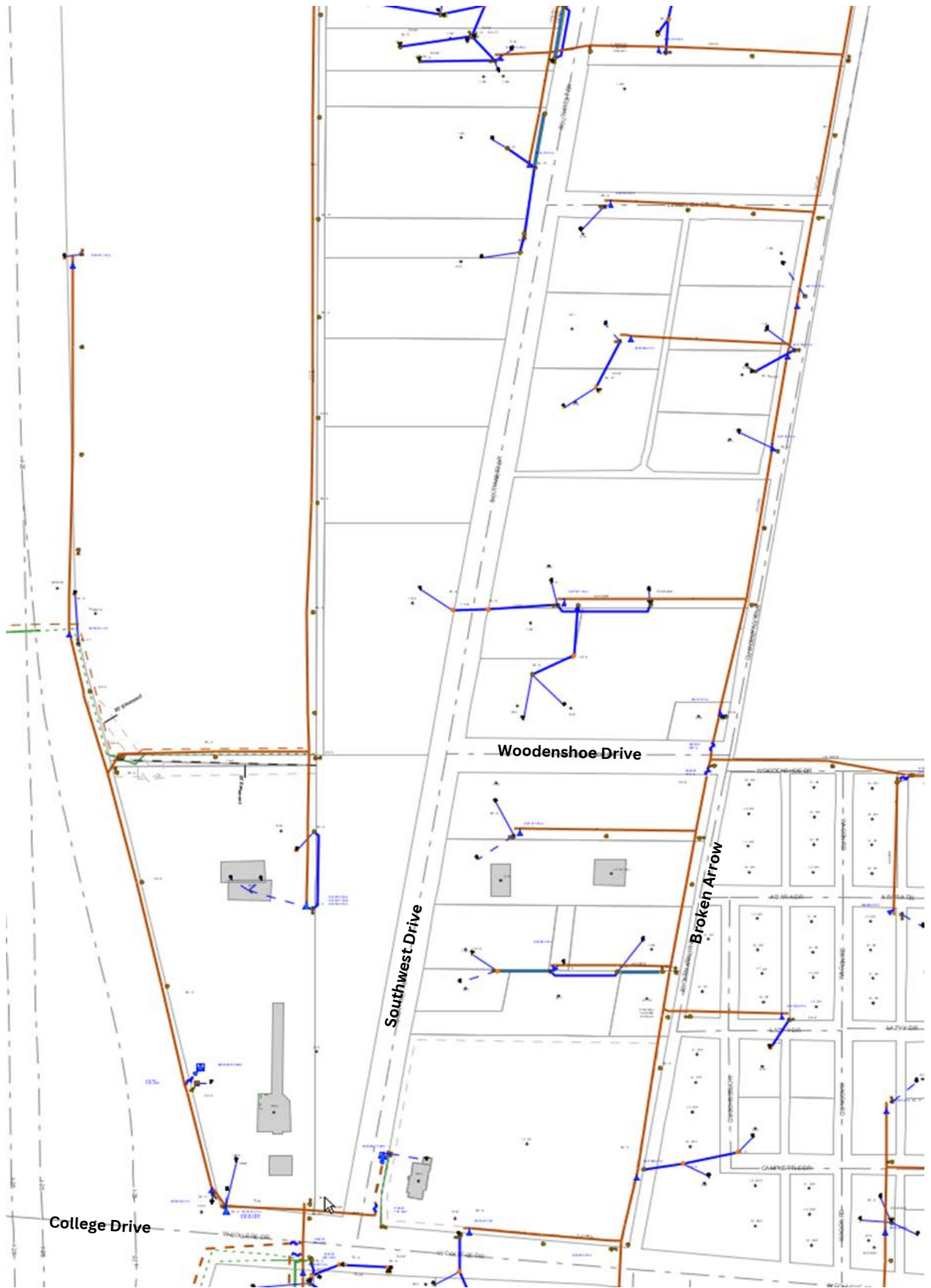


Figure 9c - Black Hills Energy Electric

# Natural Gas

Gas service is also supplied by Black Hills Energy and runs underground along the east side of both Southwest Drive and Broken Arrow's road easement as shown below in orange on Figure 10. There are two major gas lines running parallel through the project area. One is an 8" product line owned by Magellan Midstream Partners. The other is a 10" crude line owned by Sinclair Oil Corp as shown on Figure 11.

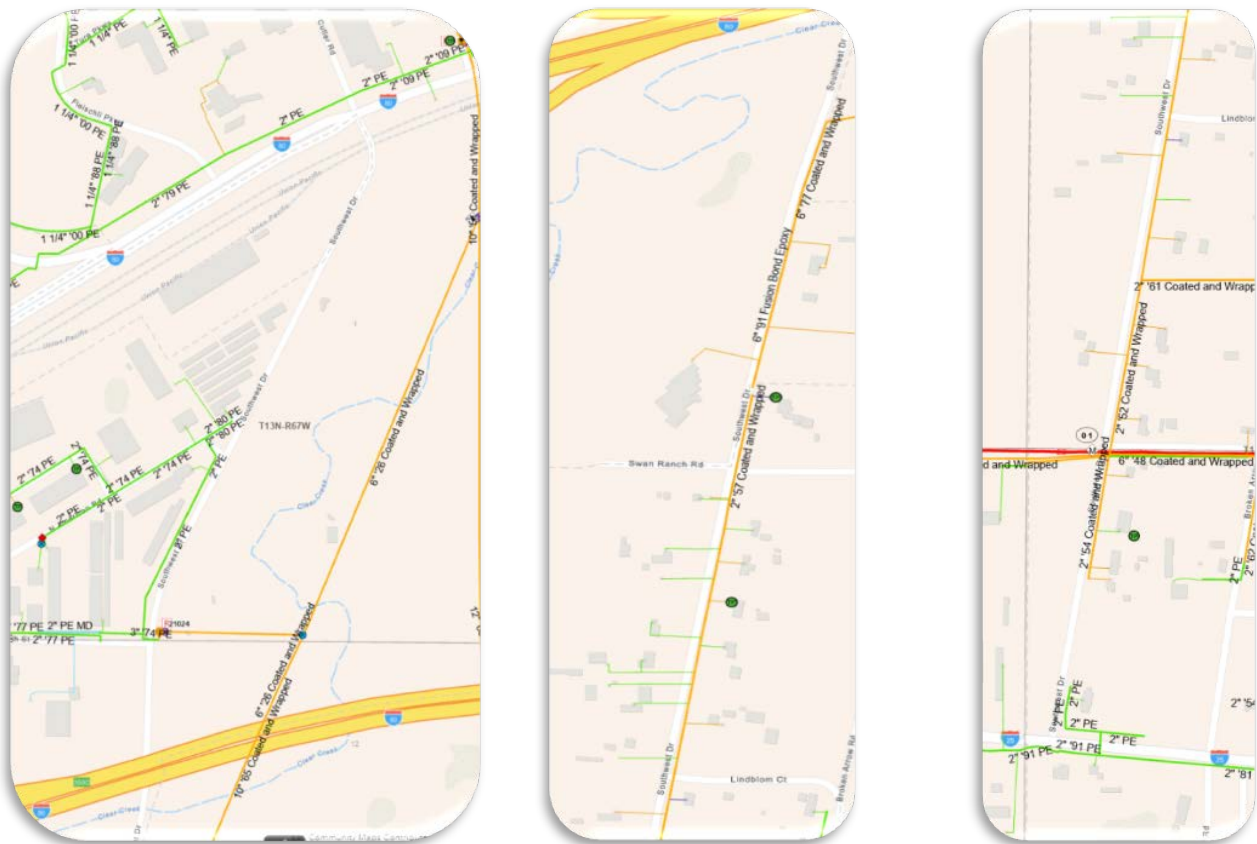


Figure 10 - Black Hills Energy Gas

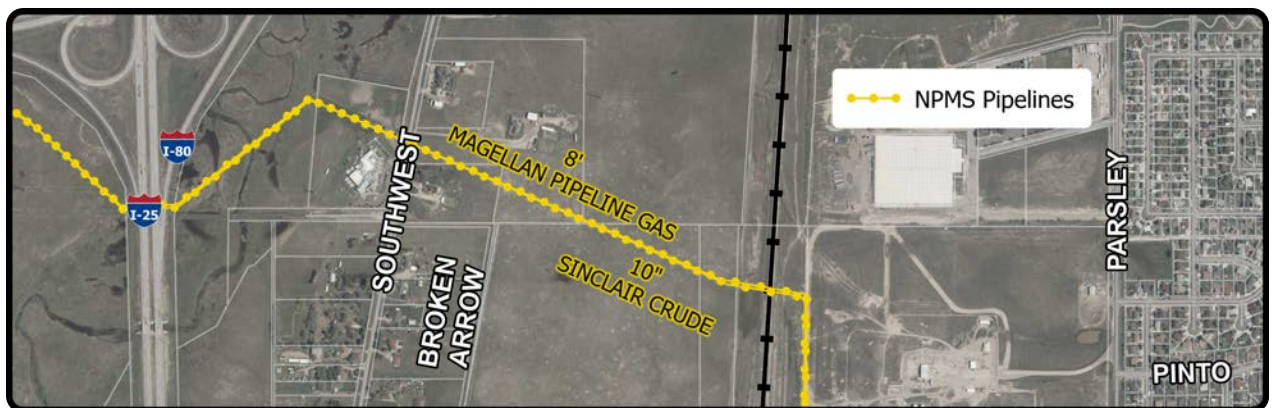


Figure 11 - Other Gas Lines

## Drainage Analysis

Southwest Drive is a roadway with storm drainage runoff managed by borrow ditches on either side of the roadway with poorly maintained culverts under driveway approaches. The Broken Arrow Road corridor to the east is an unimproved dirt road where storm drainage conveyance consists of a series of ponded areas where runoff seeps into the ground or in larger events overtops and continues towards Clear Creek to the north.

Along the Southwest Drive corridor, the area north of I-80 stormwater drains to the Clear Creek drainage both east and west of Southwest Drive. Inlets are located at the curb near the intersection of Lincolnway. Along the corridor south of I-80 stormwater drains toward the Clear Creek channel, although other constructed improvements are in place in some locations prior to discharge into the channel. A box culvert is located just south of I-80. The storm sewer network located in Southwest Drive has numerous manholes along the corridor.

Storm drainage has been an issue within the Southwest Drive corridor and adjacent Broken Arrow Road due to inadequate drainage conveyance and a lack of good conveyance paths to Clear Creek to the north. Older residential neighborhoods to the east of Southwest Drive have been impacted by poor drainage for decades with the problem being exacerbated somewhat by development along College Drive.

Currently, borrow ditches in the County section of the project area south of I-80 are not well maintained and do not have effective discharge points when they are flowing. Effective conveyance of stormwater runoff to the receiving Clear Creek drainage is problematic for the existing conditions, particularly for the Broken Arrow Road. North of I-80, there are culvert crossing at North American Road. The conceptual design efforts have included an evaluation of effective conveyance routes to Clear Creek as appropriate for the proposed reconstruction of both corridors.

Over the last two decades the developments along College Drive have added additional drainage concerns to both corridors. Anticipated development adjacent to Broken Arrow Road will only increase this impact. The following is a summary of the existing conditions:

- Grades – In general, both corridors drain to the north within poorly maintained or nonexistent borrow ditches along moderate to flat grades.
- Soil Type – In general, NRCS hydrologic soil group (HSG) B is the predominant soil condition. HSG D is predominant within the Clear Creek floodplain. The project area generally consists of Urban Land-Evanston Complex, a deep and well-drained soil; Proposhia-Trimad Complex at the border of the Clear Creek floodplain; Merdan Silty Clay Loam located within the Clear Creek floodplain and formed in silty alluvium.



## **Fire Sanitation & Schools**

The closest fire station is Laramie County Fire District #1, located approximately two miles east of Southwest Drive on Allison Road. Cheyenne Fire Department is located approximately 2 miles northeast on West 19th Street. Appropriate access and emergency vehicle movements should be considered with the ultimate plan for improvements to Southwest Drive.

Sanitation services for collection of solid waste, recycling, and compost are provided by the City of Cheyenne for properties within the City. For properties in the County, property owners utilize private companies for solid waste collection. Southwest Drive is a City Priority<sup>1</sup> snow route for the entire length between West Lincolnway and College Drive. College Drive is a Wyoming Department of Transportation (WYDOT) route for snow and ice concerns.

All schools are located north and east of Southwest Drive. Laramie County School District Number One (LCSD1) follows the Wyoming Department of Education Chapter 20 rules regarding student transportation. According to conversations with LCSD 1 bussing staff, transportation is provided for all students residing along the corridor.

## Analysis of Road Conditions

It is evident by the current infrastructure that the existing roadway was constructed over multiple phases and Southwest Drive was not constructed to accommodate all users. Over the years some improvements have been made to upgrade the intersections; however, the current state of the road indicates that it is not suitable for multimodal users.

Broken Arrow Road is currently undeveloped. Southwest Drive includes two asphalt-paved travel lanes (one in each direction) for most of the length of the corridor. At Clear Creek Park to the north edge of Harper Valley Industrial Park there is a dashed center line. A double yellow line indicates the centerline of the road. There is no paint stripe to delineate the outer edge of the travel lane for all traffic. There is a very small portion of curb and gutter adjacent to the Arby's located on the northeast corner of Southwest Drive and College Drive and abutting the Sinclair Service Station on the northwest corner of Southwest Drive and College Drive.

No turn lanes are delineated for the length of the corridor with the exception of the intersection of Southwest Drive and College Drive.

From a safety standpoint, there are multiple industrial properties at the northern end of the corridor that would benefit from a turn lane. Additionally, Clear Creek Park would benefit from a turn lane as would the Cheyenne Animal Shelter.



## Interstate Bridge Conditions

Current WYDOT reports indicate that bridge inspection work was performed in January 2022 for structures AYZ and AZA, which are the two bridges of I-80 crossing over Southwest Drive. These inspections indicated that the bridges are in fair condition. According to Randy Ringstmeyer, Bridge Inspection Engineer, Wyoming Department of Transportation, these two bridges will be replaced as part of the I 25/I 80 Interchange Project ( <https://www.i25i80.com/> ). The date of replacement is unknown at this time.

AGE AND SERVICE			
Year Built (27):	1965	Lanes On (28A):	2
Year Reconstructed (106):	1979	Lanes Under (28B):	2
Type of Service On (42A):	1 Highway	Detour Length, mi (19):	1
Type of Service Under (42B):	1 Highway	Recent ADT (29):	9434
		ADT Year (30):	2019
		Truck % (109):	55

CONDITION RATINGS / APPRAISALS			
Deck (58):	5 Fair	Channel (61):	N N/A (NBI)
Superstructure (59):	5 Fair	Waterway Adequacy (71):	N Not applicable
Substructure (60):	6 Satisfactory	Approach Alignment (72):	8 Equal Desirable Crit
Culvert (62):	N N/A (NBI)	Scour Critical (113):	N Not Over Waterway
Structural Evaluation (67):	4 Minimum Tolerable	Deck Geometry (68):	9 Above Desirable Crit
		Underclearances (69):	5 Above Tolerable
Bridge Railings Appraisal (36A):	1 Meets Standards		
Transitions Appraisal (36B):	1 Meets Standards		
Approach Guardrail Appraisal (36C):	1 Meets Standards		
Approach Guardrail Ends Appraisal (36D):	1 Meets Standards		

Roadway / Route Name: La CR 123-1 / Southwest Drive		Route (On/Under) (5A): Route Under		MP: 1.15
Route Signing Prefix (5B):	5 City Street	HPMS Milepost (11):	1.125	
Level of Service (5C):	1 Mainline	Base Highway Network (12):	Not on Base Network	
Route Number (5D):	04016	LRS Inventory Route (13A):	000ML6736I	
Directional Suffix (5E):	0 N/A (NBI)	Sub Route Number (13B):		
		Toll Facility (20):	3 On free road	
		Functional Class (26):	17 Urban Collector	
		Direction of Traffic (102):	2 2-way traffic	
Lanes On (28A):	2	Defense Highway (100):	0 Not a STRAHNET hwy	
Recent ADT (29):	1261	National Highway System (104):	0 Not on NHS	
ADT Year (30):	2019	Federal Lands Highway (105):	0 N/A (NBI)	
Truck % (109):	22	National Truck Network (110):	0 Not part of natl netwo	
Clear Roadway Width, ft (51):	25.000	Horizontal Clearance, ft (47):	33.000	Detour Length, mi (19):
Approach Roadway Width, ft (32):	25.000	Vertical Clearance, ft (10):	14.916	0

Figure 12 - Interstate Bridges





Figure 13a - I-80 Bridge Structure





**Figure 13b - I-80 Bridge Structure**

## Intersecting/Parallel Roads

The intersection at Lincolnway is controlled by signalization. There is no traffic signal at Southwest Drive and College Drive. North American Road, West 5th Street, Lindblom Court, and Woodenshoe Drive are controlled by stop signs for traffic turning onto Southwest Drive.

Three of these roads, Broken Arrow Road on the east side of Southwest Drive, Lindblom Court, and Woodenshoe Drive are unimproved gravel, dirt roads.

Southwest Drive is classified as a Major Collector per the 2021 Urban Roadway Classification. and City of Cheyenne Master Street Plan Official Map most recently approved in 2023. Broken Arrow Road is also classified as a Minor Collector on the City of Cheyenne Master Street Plan Official Map and the Cheyenne Area Master Transportation Plan. Both corridors are shown in Figure 15 on Page 23.

The functional classification of the roads that intersect Southwest Drive indicate Southwest Drive is currently providing connectivity to the greater area by providing access between residential neighborhoods and commercial areas.

Functional Classification of Roads	
Lincolnway	Principal Arterial
North American Road	Local
West 5th Street	Local
Broken Arrow Road	Unimproved
Swan Ranch Road	Unimproved
Lindblom Court	Local
Woodenshoe Drive	Local
College Drive	Principal Arterial

**Table 2 - Intersecting/Parallel Roads**



## Other Conditions

A concrete sidewalk is in place along the east side of Southwest Drive, north of College Drive for approximately 280 feet. This sidewalk was constructed in accordance with the development plan for the associated Arby's Restaurant. A concrete sidewalk is located on the west side of Southwest Drive, adjacent to the Sinclair fuel station. Neither sidewalk extends beyond the corresponding lot, and both are considered functionally obsolete at this time as they do not provide relevant foot traffic access to anything other than the adjacent property.

Numerous residences are addressed and have access from Southwest Drive. Additionally, there are 17 residential properties located in the Southcrest Heights subdivision that can access the Southwest Drive corridor via internal, unpaved roads. These properties can also access College Drive directly via four access points.

There is no street lighting along the Southwest Drive corridor except at the northern section where the commercial subdivision is located and at the south intersection with College Drive.

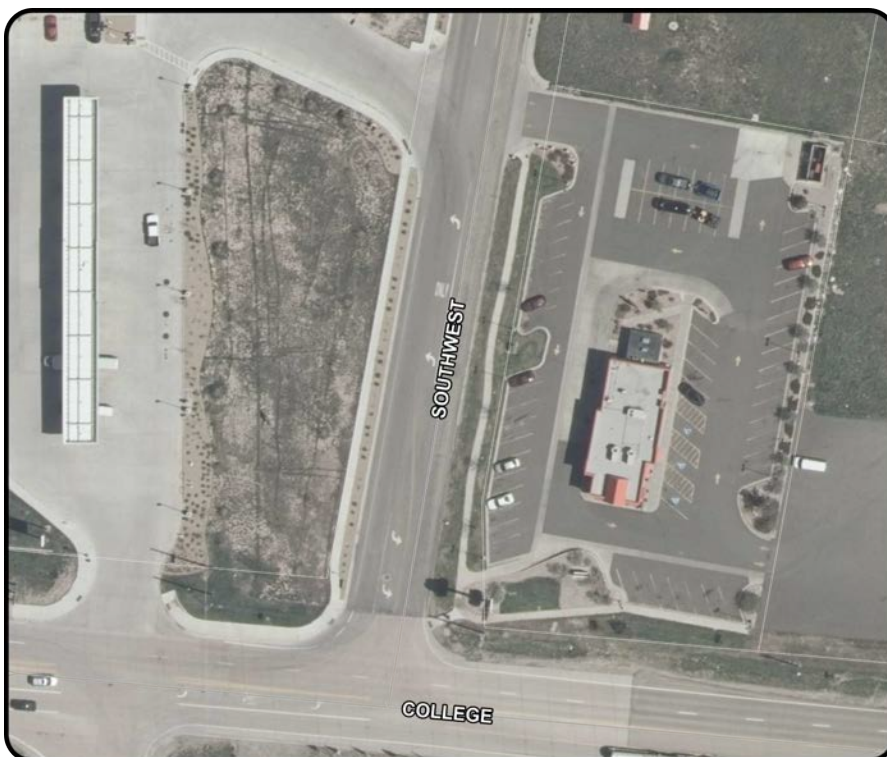


Figure 14- Sidewalks & Turn Lanes

## Past MPO Reports

The Connect 2045 Long-Range Transportation Plan lists the improvements to Southwest Drive as a Tier 3 project, slated for development in the 2031-2035 transportation plan.

The Cheyenne On-Street Bicycle Plan and Greenway Plan Update (2012) recommends shoulder bike lanes on Southwest Drive between Lincolnway and College Drive as a longer-term project. These bike lanes will help to complete existing gaps in the existing bike lane network. This report excludes any conceptual plan for the extension of a Greenway to the Southwest Drive Corridor.

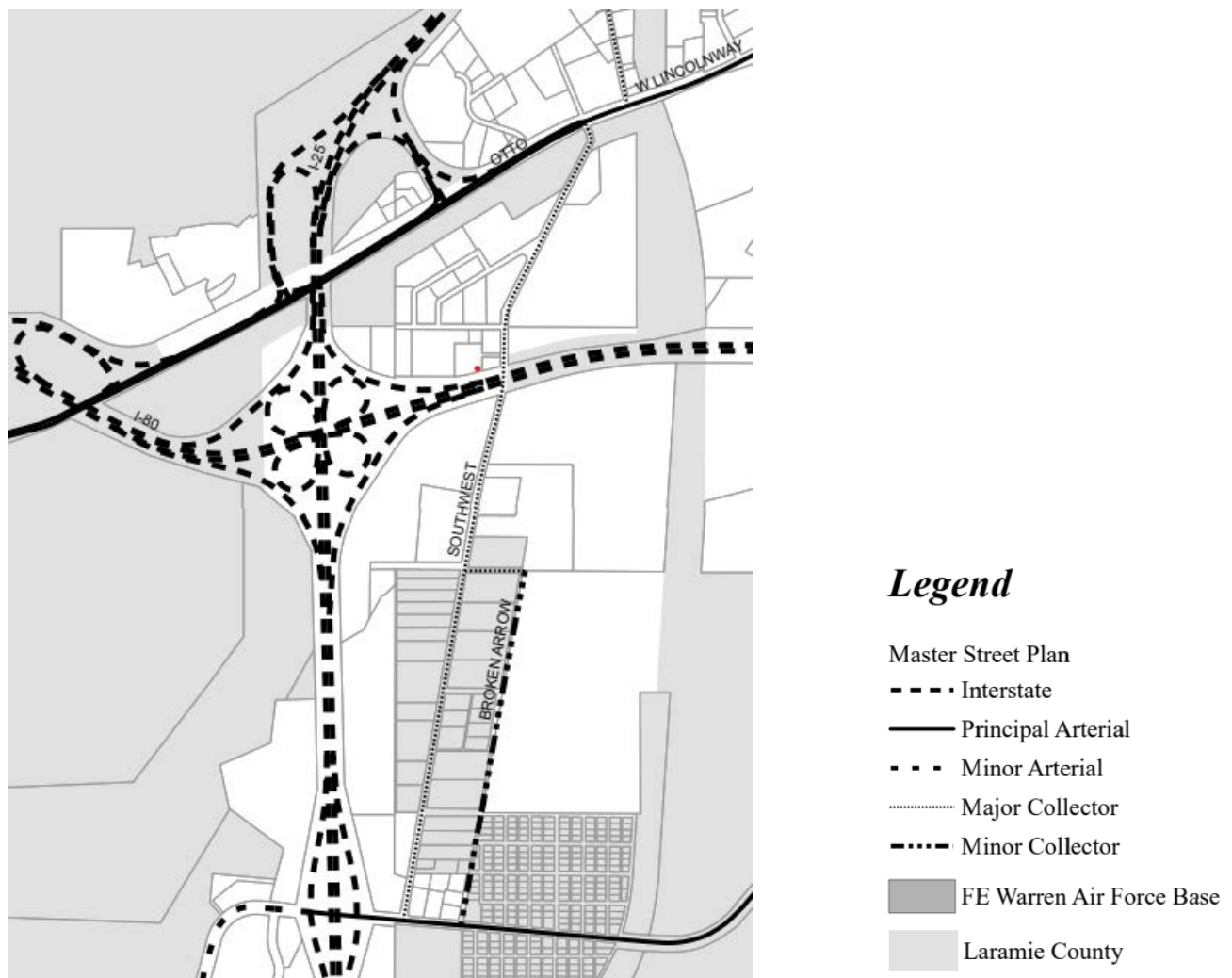


Figure 15 - Cheyenne Official Street Map

# Coordination and Public Outreach

## Steering Committee Meetings

A project kick-off meeting was held February 6, 2023, with representatives from the Cheyenne MPO, BenchMark Engineers, FHU, and GLM Design in attendance. The intent of this group was to form the basis of the expectations for the project.

On June 8, 2023, the MPO and design team, along with designated stakeholders, participated in a steering committee meeting to gather information, insight, and to offer feedback. The steering committee includes representatives from the City of Cheyenne (Engineering, Planning and Development, and Public Works), the Cheyenne Board of Public Utilities (BOPU), WYDOT (District 1 Construction and District 1 Traffic), and Laramie County Planning and Public Works. The first steering committee meeting summarized the progress to date and explored ideas for the corridor plan.

A presentation was shown to the committee members with ideas to discuss in this meeting. Figure 16 is an example of one of the presentation slides.

## Steering Committee Input



Figure 16- Steering Committee Input

On August 16, 2023, the second steering committee meeting was held, where the comments from the first Public meeting were addressed. The main areas of concern included the following:

- Concerns Per Surveys (54 Surveys; includes online and hard copy)
- Railroad Crossing Delays
- Commercial Truck Traffic
- Pedestrian Facilities
- Traffic In General
- Intersection Improvements

The third steering committee meeting was held on October 25, 2023. This was the final steering committee meeting, which addressed the alternate collector route of Broken Arrow Road, current and forecasted traffic counts and the WYDOT study concerning College Drive performed by Kimley-Horn.

Final road alignments were presented to and approved by the steering committee. These alignments included Southwest Drive, Broken Arrow Road and intersecting roads along the corridor.

## Public Outreach

The first public open house was held June 21, 2023, at the Cheyenne Animal Shelter (CAS) from 5:00 pm to 6:30 pm. The site was chosen as the facility is located within the project corridor. As a public facility, the venue featured a large meeting room, it had adequate parking, it was readily known in the neighborhood, it met accessibility needs, and accommodated up to 100 people.

Advertisement for the public meeting was coordinated by MPO staff using graphics and information provided by the design team. Seventy-one (71) postcards were mailed by BenchMark Engineers, P.C. to residents in the area. A visual message board was placed along the roadway at the north end of the corridor to notify roadway users of the public meeting. The meeting was advertised in the Wyoming Tribune Eagle, the Cap City News, on the MPO and BenchMark Engineers websites and on both organization's Facebook pages. Additionally, a news article was published in the Wyoming Tribune Eagle describing the project and public meeting.

A visual presentation was delivered to the 53 attendees. The presentation explained the specific goals of the project. It was noted the deliverables are 35% design plans. Additionally, Tom Mason of the MPO stressed that there is no funding for this project at this time.

For background purposes, roadway functional classifications and standards were discussed. Multimodal users were defined. A list of physical constraints along the corridor was presented. A summary of existing and forecasted traffic conditions was presented. The public's input was requested in the form of comment sheets, hard-copy surveys and an online survey. Attendees were requested to complete a comment sheet and leave it that evening.



Figure 17- Open House Invitation

The presentation was followed by an open house with 26 display boards depicting current and future conditions in the corridor.

General information questions requested respondents to identify if they were residents (owner or renter), property owner (non-occupant or of vacant land), a business owner or employee, or a corridor user. The responses from this question indicated outreach included a variety of people who live, work, or have a vested interest in the corridor. Another general information question asked how long the respondent had lived or worked in the area. The responses indicated that these people have witnessed a variety of changes along and within the corridor.

*Question 1: What do you like about Southwest Drive and the overall project area?*

Overall, the responses indicate favorable opinions of the area, specifically a rural feel located in close proximity to urban amenities.

*Question 2: What concerns do you have about traffic safety along Southwest Drive, and what safety improvements would you like to see?*

The concerns included traffic congestion and anticipated additional traffic, speeding and a lack of law enforcement, a lack of turn lanes, snow and ice removal, and truck traffic. Other concerns not related to traffic safety included a lack of sidewalks and crosswalks.

*Question 3: Are there areas of Southwest Drive where it is difficult for pedestrians and bicyclists to navigate and how could these be improved?*

Respondents indicated vehicle speed should be addressed, and sidewalks or bike paths should be installed the full length of the corridor.

*Question 4: If you have additional comments, please share them here:*

This section allowed respondents to provide additional insight along the corridor. Responses included noting the lack of streetlights and that a number of pedestrians walk along the corridor at night. Stormwater drainage concerns were noted in the area of West 5th Street in the industrial park. The biggest concern was the wait times at the railroad crossing at Lincolnway.



During the open house, design team staff shared additional information and provided clarification to attendees. Additional comments and the general summary of conversations include the following:

- Hazmat trucks using the corridor are problematic.
- The railroad crossing must be addressed as wait times are extremely long (30 minutes or more) and the thoroughfare is blocked multiple times a day.
- The roadway is in poor condition, which affects safety.
- Pedestrian usage is problematic as there are no sidewalks.

General and specific comments from conversations include the following pros and cons of each topic.

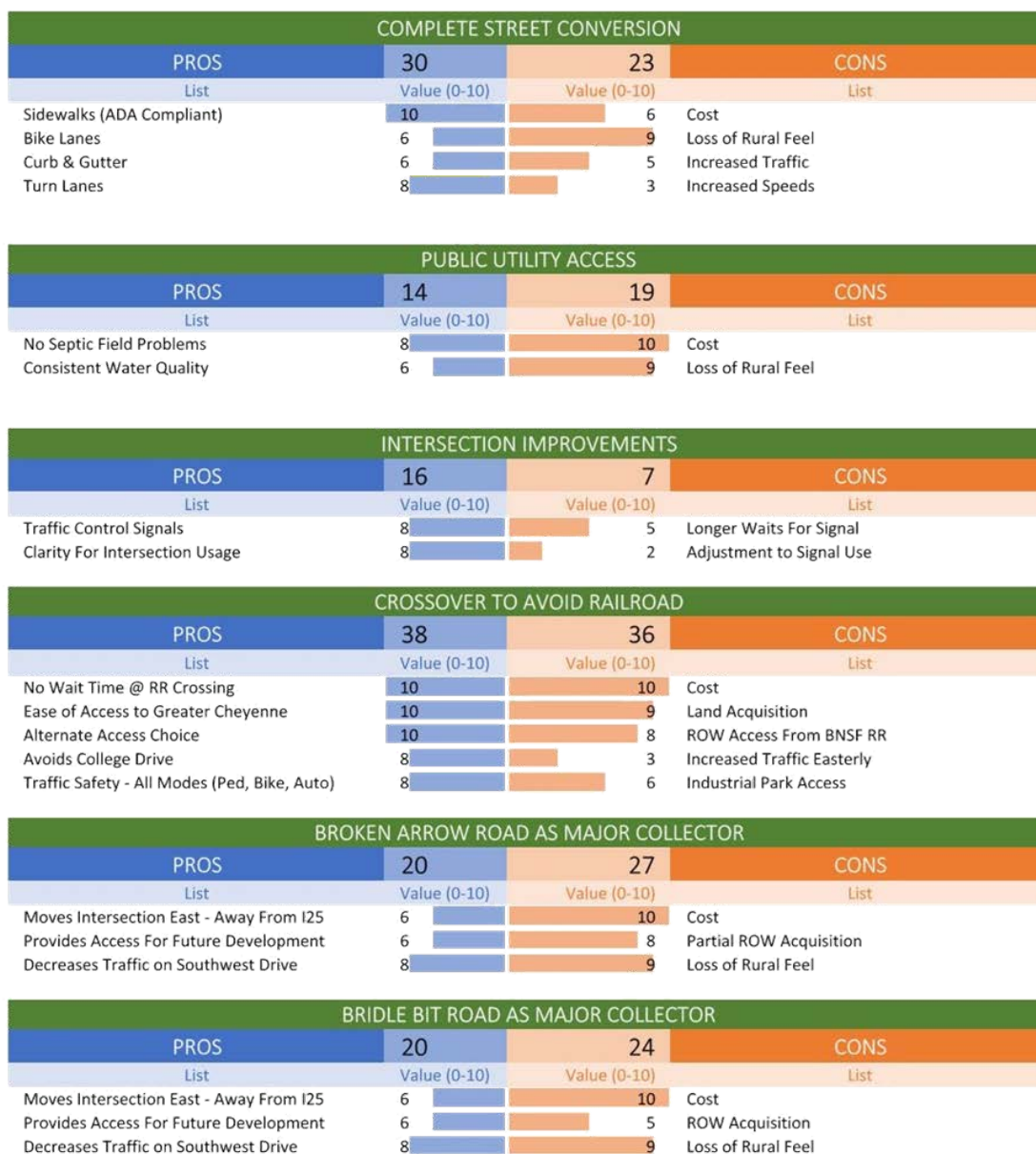


Figure 18 - SWOT Analysis

The second public open house was held November 15, 2023, at the Cheyenne Animal Shelter from 5:00 pm to 6:30 pm. As before, the facility was chosen as it is located in the Southwest Drive corridor with adequate parking and is known in the neighborhood. The meeting place met accessibility needs and could accommodate a public meeting.

Advertisement for the public meeting was coordinated by MPO staff using graphics and information provided by the MPO Director. Seventy-one (71) postcards were mailed by BenchMark Engineers, P.C. to residents in the area. The meeting was advertised in the Wyoming Tribune-Eagle on November 1, 2023. The meeting was also advertised on the MPO's and BME's websites as well as the official Facebook page of both the MPO and BME.

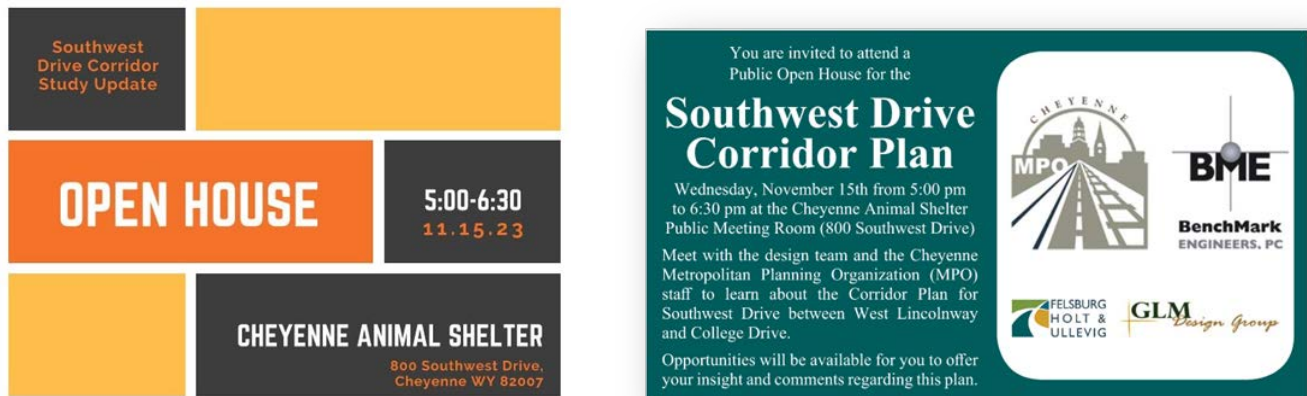


Figure 19 - 2nd Open House Invitation

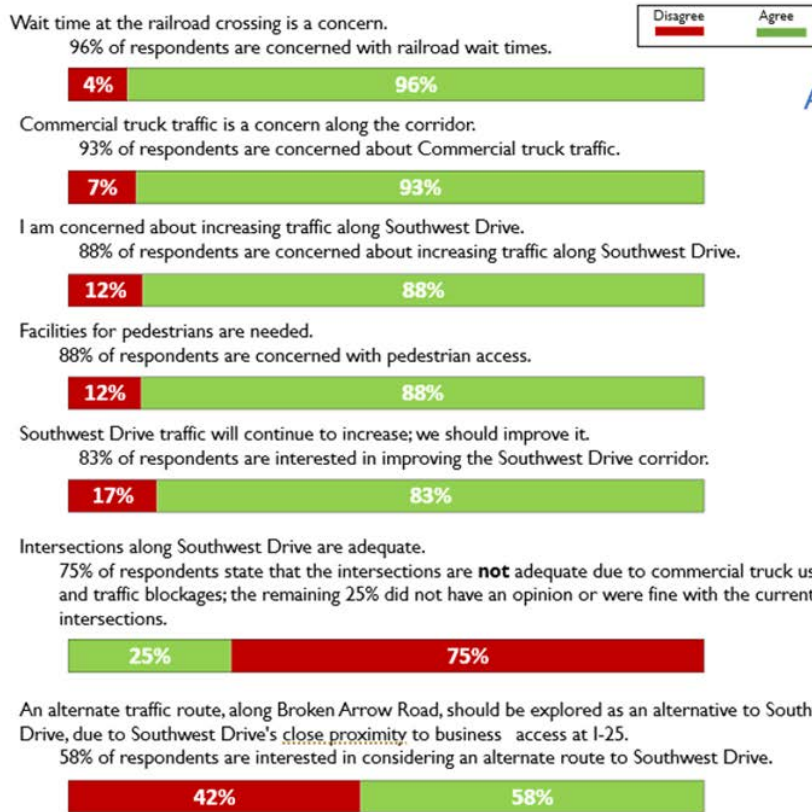
A PowerPoint presentation was delivered to those in attendance followed by an open forum where participants interacted with City, County and State representatives. Display boards were available to clarify the proposed improvements to the corridor.

Ten members of the general public attended. Additionally, five representatives of public agencies attended. The MPO had three staff members in attendance. The design team had four individuals participate in the presentation, a question and answer session, and the open house.

With the expectation that some members of the public did not attend the first meeting, the presentation described the specific goals of the project. An explanation that the deliverables for this project are 35% design plans, and that the finalization of plans and construction of improvements have not been programmed or funded. For background purposes and as a reminder, the presentation included a brief discussion of UDC standards, elements and the necessity of complete streets, and specific physical constraints. A summary of the traffic operations and safety analysis was presented, as well as suggested improvements based upon forecasted conditions. Alternatives for improvements at intersections were presented. A summary of the stormwater drainage analysis and recommended improvements was noted.

Elements of the plan were presented for all residential roadways in the corridor, intersections, pedestrian and bicycle accommodations, and general infrastructure improvements. Implementation, although not funded, was discussed for nearer-term and longer-term improvements as well as the phasing of the work.

There were three residents in attendance that own property along Broken Arrow Road, who were vocal about improvements to Broken Arrow Road. The greatest concern was land acquisition by the governing body for additional right-of-way along Broken Arrow Road as the current right-of-way is not of sufficient width for road improvements.

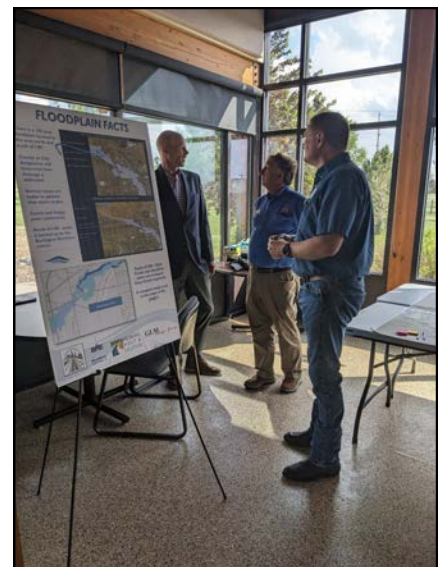


**Additional Items Considered:**

- Road Resurfacing
- Maintain Rural Feel
- Truck Parking - Interstate Closures



**Figure 20 - Public Opinion Summary**



# Alternative Development and Analysis

## Standards

The process used to develop the recommended conceptual plans considered the existing conditions and constraints, anticipated traffic volumes, multimodal uses, and adopted city/county standards. It was determined by the Steering Committee that the City of Cheyenne Unified Development Code, Amended through July 17, 2023, would be the basis for the roadway cross section as a large portion of the roadway falls within the City of Cheyenne. Figures 23-27 on pages 39-43 highlight the design standards for each road section.

Each of the standards for Collector roadways in the UDC identifies 70 feet of right-of-way as the minimum. The alternatives considered are for improvements within the existing rights-of-way with consideration of acquiring additional ROW as development occurs in the future. Incorporation of bike lanes in the paved shoulder area of the road as well as separated sidewalks are key components of complete streets. The tree lawn and landscape areas will provide flexibility at specific locations where the sidewalks need to be attached and widening of the roadway for auxiliary lanes. The tree, lawn and landscape areas may also be utilized to address grade differentiations between the roadway and existing site elevations.



<b>Collector Standards</b>			
<b>Criteria</b>	<b>Type A w/o Parking</b>	<b>Type B w/o Parking Center Turn Lane</b>	<b>Type C w/Parking</b>
Speed Limit	30-35	30-35	30-35
Number of Lanes	2	3	2
Daily Traffic Volume	5,000-7,000	6,000-10,000	5,000-7,000
Width of Lane	12'	12'	12'
Median	None	Painted - 12'	None
Parking	None	None	Shared with Bike Lane
Bicycle Lane/Shoulder	6'	6'	11' Shared with Parking
Tree Lawn/Landscape	8'	8'	8'
Pedestrian Area	6'	6'	5'
Right-of-Way	70'	80'	70'

**Table 3 - Collector Standards**

## Existing Constraints

Numerous constraints exist along the corridor. These include the I-80 bridges, an existing box culvert at Clear Creek, narrow rights-of-way which do not conform to the UDC, and a vast 100-year floodplain along Clear Creek. Additional real property will need to be obtained for public right-of-way along the Broken Arrow ROW as the existing ROW varies in width from 30' to 50' and terminates at the Swan Ranch ROW.

## Railroad Crossing at Lincolnway

Train delays were a significant concern per public input as well as supporting data highlighted in Figure 21. Conversations with Union Pacific indicated that they are not concerned with the amount of train traffic or wait times. While a bridge over or under the railroad tracks was discussed, it was determined that there is not enough space north or south of the railroad to install an over or underpass. Numerous residents believed there were laws to restrict the amount of time trains can block an intersection. Research of Wyoming laws concerning delays by train traffic indicated that in 2009, House Bill No. HB0233 was presented to the Legislature for consideration that would limit the time a train could block any intersection in Wyoming to 20 minutes. However, the Bill never made it out of Committee; therefore, the Bill died and did not go to a vote.

### Train Crossing Closure Data

Christopher Yaney with the MPO counted trains blocking Southwest Drive, for seven days, the week of August 6<sup>th</sup> to August 13<sup>th</sup>. Following is a brief synopsis of the data.

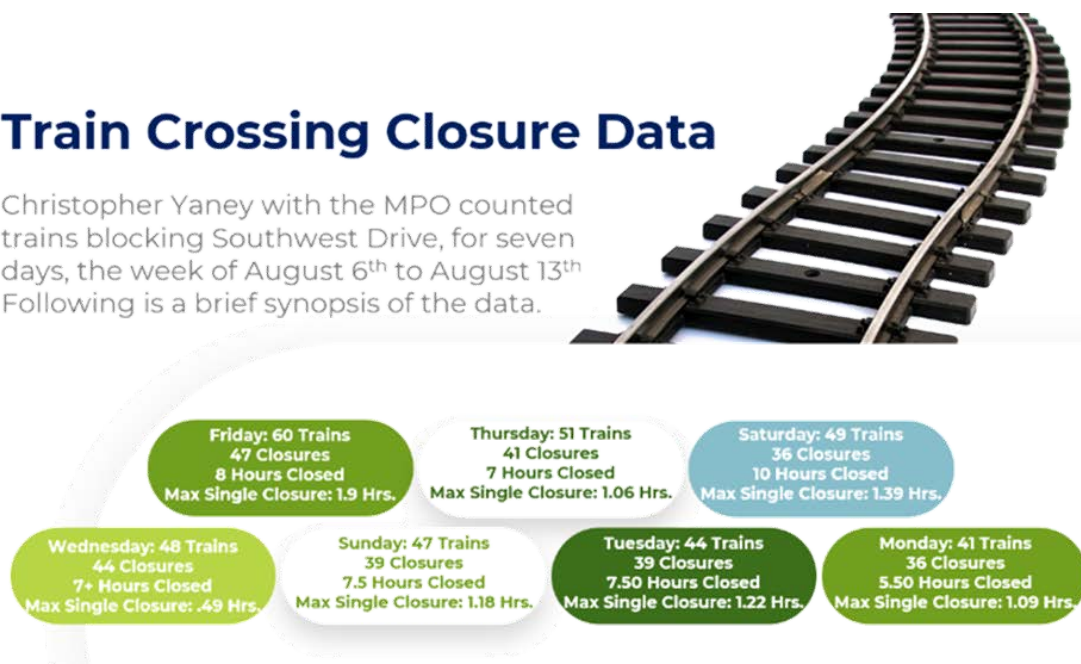


Figure 21 -Railroad Closure Data

## **Existing Right-of-Way and Development**

Per information recorded on the various plats along the corridor the Southwest Drive right-of-way is 80 feet wide; however, Broken Arrow Road, varies in width from 30' to 50' and terminates at the intersection of Swan Ranch Road. Easements recorded on plats along Broken Arrow Road, are available on the public domain via the Cheyenne and Laramie County GIS Cooperative. Refer to the 35% design plans in the Appendix for noted stationing along the corridor.

## **Residential Approaches**

Numerous residences are currently accessed from Southwest Drive and Broken Arrow Road. Most driveways and parking areas appear to be deep enough so that vehicles are not parked within the right-of-way. The property located at 1404 Broken Arrow Road is using the existing ROW for parking.

## **Existing Franchise Utilities**

Numerous utility easements are in place along Southwest Drive adjacent to the right-of-way per the various plats. Broken Arrow has a utility easement along the eastern side of the right-of-way. Although construction of improvements such as roadway, sidewalks, greenway, etc. may be possible, there is a risk of financial obligation on the public entity rather than the utility owner for repairing and/or replacing these improvements when work is completed on the respective utility. Existing utilities are both overhead and buried within the corridor.

## **Electrical Towers**

There are numerous overhead local service electrical lines along the Southwest Drive corridor owned by Black Hills Energy. The corridor is also intersected by a Western Area Power Administration (WAPA) high voltage transmission line shown on the right. Easements were granted for the transmission lines and appurtenances. Copies of these easements and WAPA guidelines are included in the Appendix of this plan.

## **BOPU**

Various items associated with the water and sanitary sewer systems owned and operated by BOPU within the project corridor may need to be adjusted. This will include addressing the box culvert south of I-80 on Southwest Drive, adjusting valves boxes, meter pit lids, and manholes to the new finished surface once Southwest Drive is repaved.

## Traffic Safety Analysis

The Cheyenne MPO provided crash history along the Southwest Drive corridor for a 5-year timeframe (2016–2020). The intersection of College Drive with Southwest Drive experienced nine crashes within this timeframe with the majority of those crashes being angle crashes. It should be noted that the failure to meet Wyoming Department of Transportation (WYDOT) Access Manual spacing requirements at this intersection could be the cause of several of these crashes. The intersection of Lincolnway with Southwest Drive experienced six crashes with half of those being rear-end crashes; however, it is common for signalized intersections to experience a higher number of rear end crashes. Since there were rear end crashes from different directions this suggests there is no pattern present.

The posted speed limit along Southwest Drive is 40 mph. Vehicle Speed data was collected on Tuesday, September 20, 2022, south of the Cheyenne Animal Shelter and south of North American Drive. Average observed speeds north of I-80 were at or below the posted speed. South of I-80, northbound travels were observed to travel less than 5 mph over the posted speed limit on average. Traveling southbound, the average observed speed was greater than 5mph over the posted speed limit but less than 10 mph over.

Existing traffic volumes were collected for the morning, mid-day, and afternoon peak hour traffic volumes. The corresponding level of service and volumes during peak hours at the six intersections range from A to E are shown in Appendix IV - Transportation Operations Report.

The Year 2045 Cheyenne MPO Travel Demand Model (TDM) developed for the Connect2045 Regional Transportation Plan Update (RTP+DEV scenario) was used to develop No Action traffic growth rates and forecasts for the study area. This travel demand model scenario includes development-driven roadway improvements anticipated to occur by 2045.



## Alternatives Development

A Transportation Operations Report was prepared by Felsburg, Holt, and Ullevig, in November 2023. The full report can be found in Appendix IV. This study included collecting the following data:

- Travel speeds
- Multimodal facility characteristics
- Intersection and corridor traffic volumes
- Surrounding land uses
- Crash history
- Travel demand model information

Throughout the analysis of the corridor the steering committee evaluated alternatives addressing intersection improvements and multimodal deficiencies as well as access spacing concerns and railroad crossing wait times. See Tables 4a & 4b below for the Evaluation Summary.

Evaluation Summary			
Category	Alternative	Advance?	Reason
Southwest Drive Typical Section	Widen to Provide Additional Travel Lanes	No	Two travel lanes sufficient for anticipated growth
	Resurface Roadway	Yes	Improve conditions for local users
	Provide Sidewalks	Yes	For residential users on east side only
	Implement Bicycle Facilities	No	Little bicycle traffic in the area
Railroad Crossing Wait Times	Add "Railroad Crossing Closed" Warning Devices	Yes	Gives drivers the option to choose another route due to long wait times
	Build Grade Separated Crossing	No	Not cost effective

**Table 4a - Alternatives Analysis**

## Evaluation Summary

Category	Alternative	Advance?	Reason
Access & Intersection Spacing	Restrict Access to Neighboring Commercial Facilities	Yes	Limit conflicting turning movements at intersection of College & Southwest
	Restrict Access from Southwest Drive	No	Rerouting traffic will lower volumes & turn conflicts at College Drive
	Improve Broken Arrow Road to Collector Standards	Yes	Moves majority of vehicular traffic farther away from i-25 ramps along College Drive. Limits turn conflicts.
	Improve Bridle Bit Road to Collector Standards	No	Proposed overpass at railroad will span past this intersection
	Improve Stirrup Road to Collector Standards	No	Limited available right-of-way with existing homes
	Block Southwest Drive North of Arby's Access	Yes	Through volumes to use Broken Arrow corridor
	Signalize Southwest & College Intersection	No	Forecasts do not meet volume warrants.
Roadway Network	Swan Ranch Road Connection	Yes	Connect 2045 Plan to connect with Parsley Blvd. Would provide relief route for at grade crossing at Lincolnway
	Broken Arrow Road Upgrade	Yes	Limits turning conflicts and improves access spacing along College. Better serves future growth.

**Table 4b - Alternatives Analysis**

## Recommendations

Based on the analysis of future conditions and existing constraints the recommended improvements between Lincolnway and College Drive are summarized in Figure 22. These recommendations are for the roadway, intersections and approaches, facilities for complete streets, stormwater drainage, and utility modifications. These recommendations should be used as the template for future development and redevelopment along the corridor.

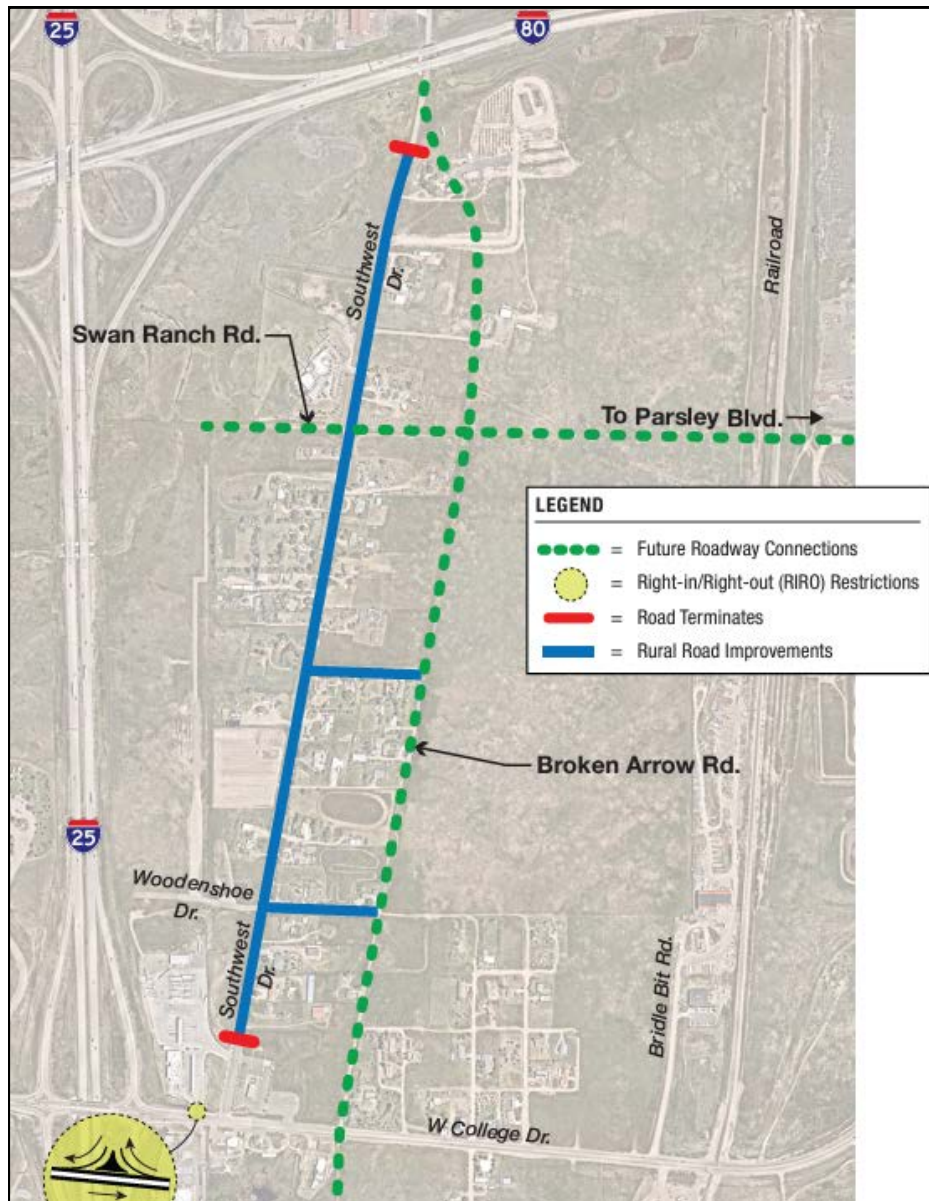


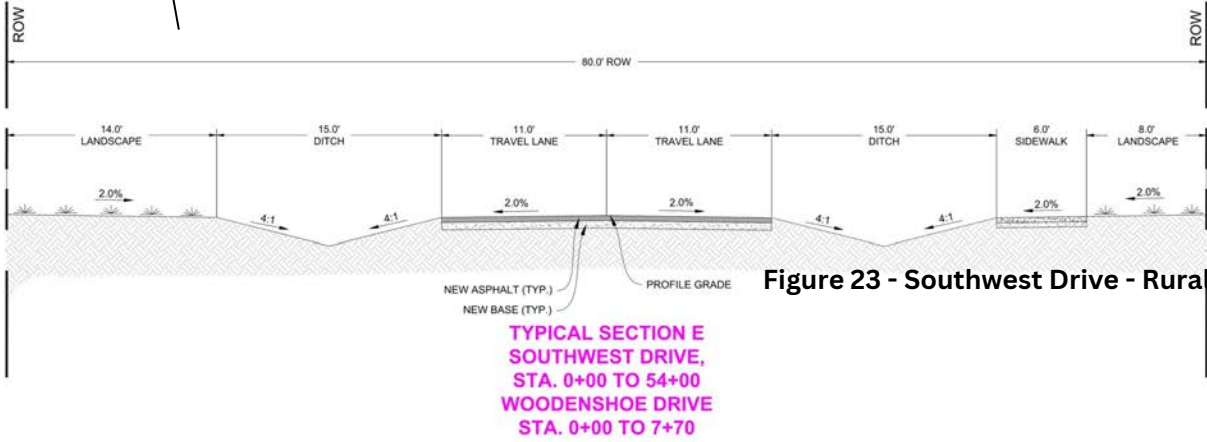
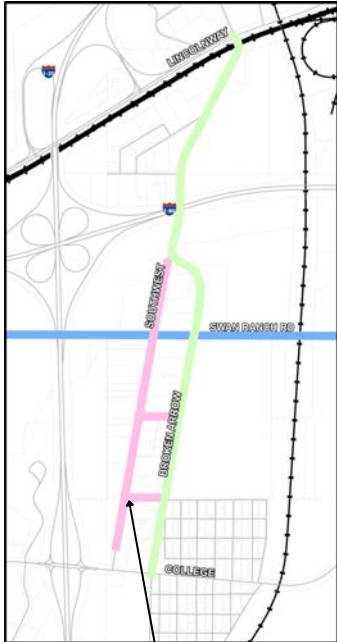
Figure 22 - Recommended Improvements

# Southwest Drive

## Recommendations

Southwest Drive is a collector road that services a mix of residential and commercial uses. To distinguish the two separate land uses and maintain the rural feel of the corridor, it is recommended to close off Southwest Drive on the north side of the Arby's and Sinclair Gas Station access drives, and just north of the Animal Shelter. These closures will isolate the existing corridor through the residential neighborhood from through traffic and deter truck access. Local traffic will access College Drive via Broken Arrow Road from Woodenshoe Drive and Linblom Court.

The existing corridor will be designed to a rural/local road standard within the 80 foot right-of-way. The street profile consists of two-12' lanes, a 15' ditch, and a 6' sidewalk on the east side of the road.





# Southwest Drive

## Recommendations

North of the Animal Shelter where Broken Arrow Road curves back into Southwest Drive, the cross section varies due to navigating an existing box culvert and the I-80 bridge structure. Two-12' travel lanes and an attached sidewalk traverse these two structures before opening up to a more complete street toward Lincolnway with 6' bikes lanes and a detached sidewalk on the east side of the road.

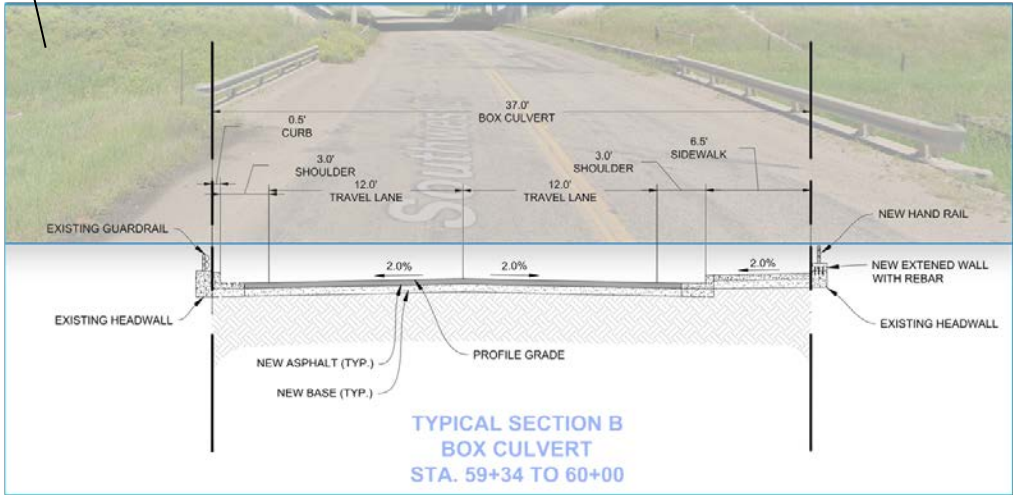
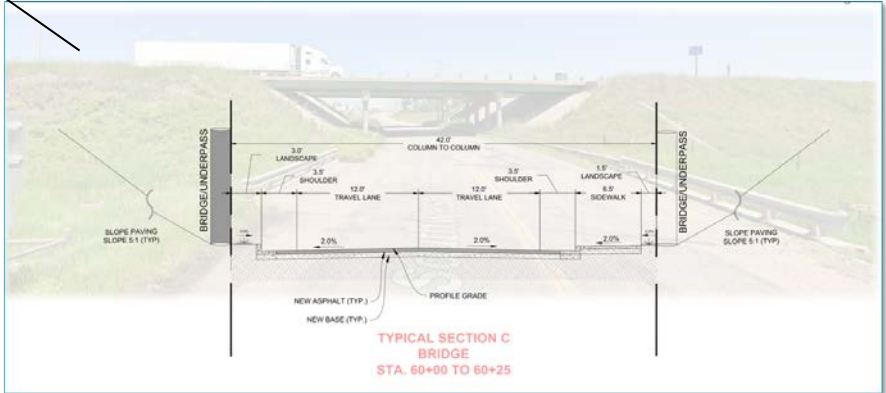
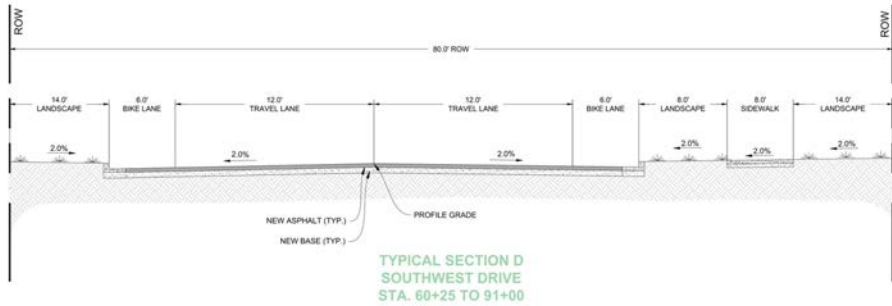
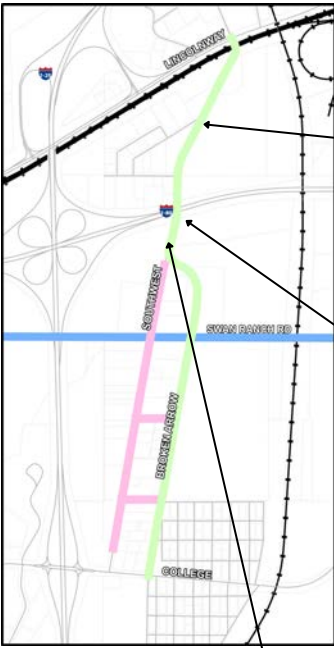


Figure 24 - Southwest Drive - Collector

# Broken Arrow Road

## Recommendations

A new major collector road is recommended following the existing right-of-way of Broken Arrow Road. The new corridor will be designed as a complete street with two-12' travel lanes, 6' bike lanes, and an 8' detached sidewalk on the east side of the road. Additional right-way will be needed to accommodate a 70'-80' right-of-way; however, only two property owners will be impacted. Currently, no signalization is required at the intersection with College Drive. Once development occurs on the large undeveloped parcels east of Broken Arrow Road, auxiliary turn lanes and a traffic signal will most likely be warranted. Advanced flashing beacons shall be installed at the south end of Broken Arrow Road and north of Swan Ranch Road to warn northbound motorists of railroad closures at Southwest Drive and Lincolnway.

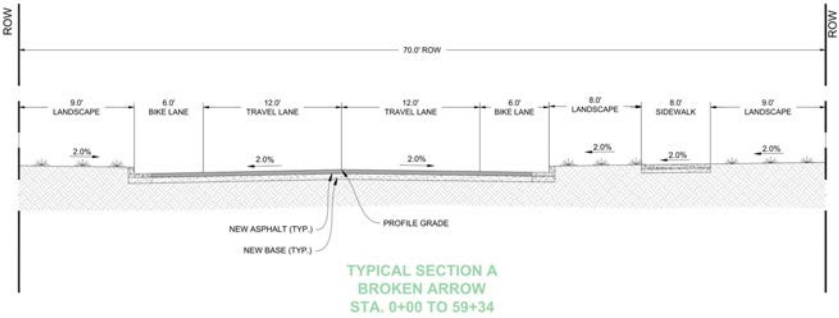
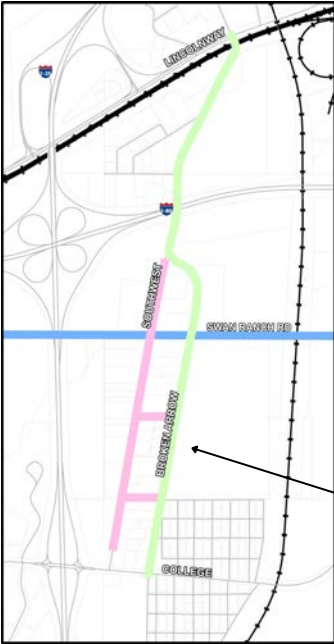


Figure 25 - Broken Arrow Road



# Woodenshoe/ Lindblom

## Recommendations

It is recommended that the existing rights-of-way of Woodenshoe Drive and Lindblom Court be improved as rural roads connecting Southwest Drive to Broken Arrow Road. The street profile will be the same as the rural section of Southwest Drive with two-12' travel lanes, open ditches, and a 6' detached sidewalk on the north side of each road.

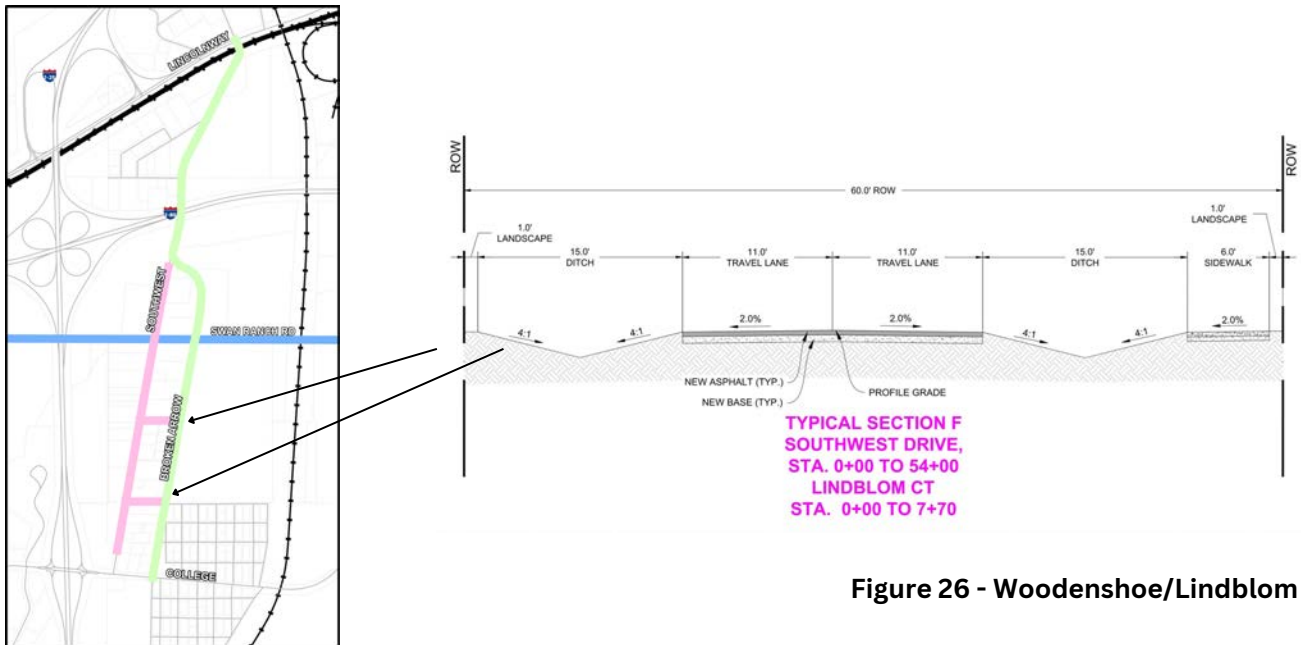


Figure 26 - Woodenshoe/Lindblom



# Swan Ranch Road

## Recommendations

Swan Ranch Road is a future east-west collector road that would provide an alternative route to downtown when trains are blocking Southwest Drive at Lincolnway. The corridor should be improved east to the BNSF railroad once development occurs on the adjacent parcels. Long term recommendations include an overpass/underpass at the BNSF railroad then connecting the road with Parsley Blvd. The corridor should be extended to the west when the I-25/1-80 interchanges is reconstructed. The cross section of the proposed 70' right-of-way includes two-18' travel lanes to accommodate future turn lanes, 6' bike lanes, and a detached 10' greenway section on the north side of the road.

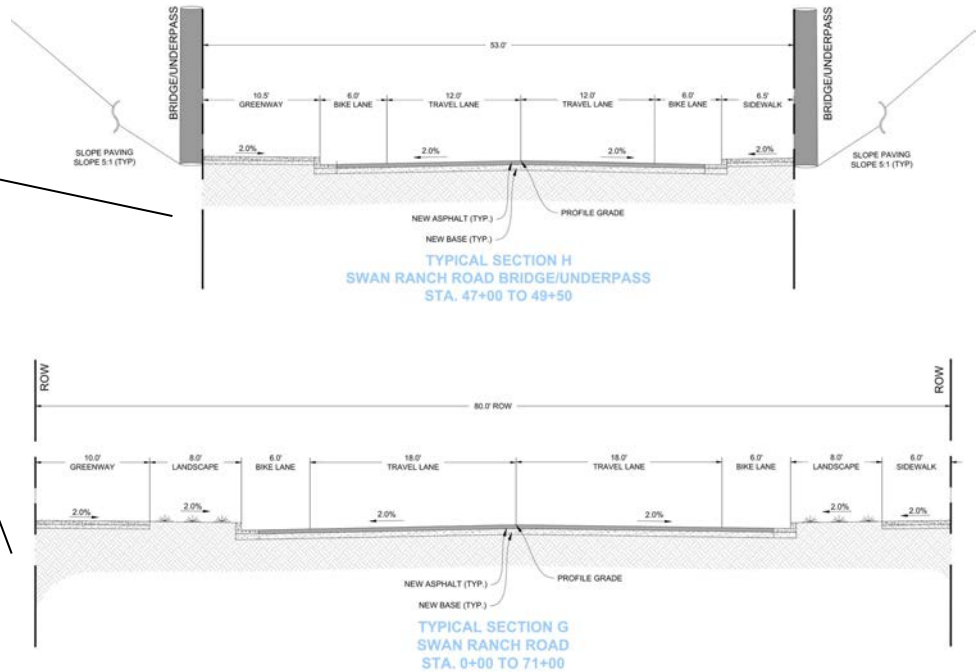
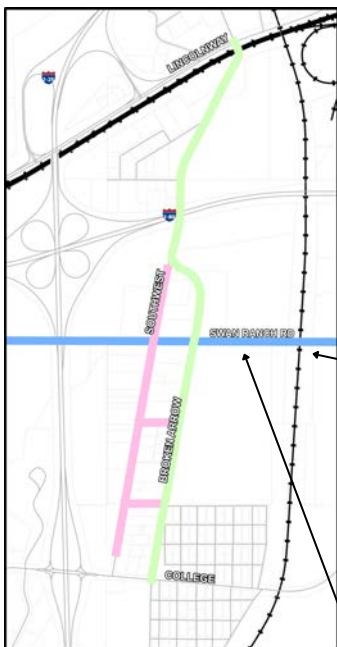


Figure 27 - Swan Ranch Road



## Alternative Network Volumes

Given this new alignment, traffic volumes at the intersection of College Drive with Southwest Drive would be lowered significantly. The through volumes on Southwest Drive would be moved further east to Broken Arrow. This action along with the restricted truck stop access will lower conflicting turning movements at the closely spaced accesses around the intersection of Southwest Drive with College Drive.

The addition of Swan Ranch Road would change traffic volumes in the study area. This new corridor is likely to reroute traffic onto Parsley Boulevard to avoid the railroad crossing on Southwest Drive.

## Alternative Evaluation

This Transportation Operations Reports in Appendix IV indicates that rerouting the vehicular traffic results in better operations at the intersection of College Drive with Southwest Drive as compared to the 2045 No Action scenario. As shown in the 2045 No Action scenario, the majority of intersections are anticipated to remain with acceptable operations; however, the intersection of College Drive with Southwest Drive would improve in this new alternative operating at LOS D or better for all movements. This alternative would also include rerouting traffic to Broken Arrow Road and all movements are anticipated to operate at LOS C or better for the 2030 alternative.

In 2045, the majority of movements and intersections in the study area would remain acceptable with the recommended improvements; however, the intersection of College Drive with Southwest Drive would see one LOS E in the AM for the southbound left turn movement. It is not uncommon for side street stop-controlled movements to experience higher than average delay during peak hours, and this intersection is not anticipated to warrant signalization. The intersection of College Drive with Broken Arrow Road would also experience some failing levels of service, but, similar to the Southwest Drive intersection, this is not uncommon, and the intersection is not anticipated to meet signal warrant criteria.

## Considerations

Considerations given of moving the collector road to a new alignment from the current Southwest Drive alignment included:

1. The close proximity of the intersection of College Drive and Southwest Drive with the business accesses at the intersection and the I-25 Interchange creates traffic flow issues especially during peak times. As a result, it is preferred that the intersection be closed to thru traffic and moved further to the east to provide adequate distance between the congested area created by all the existing business accesses.
2. The vast majority of residents along Southwest Drive would like to keep the rural feel to their roadway/corridor, limit the access to trucks, and reduce speeding on the roadway.

Rationale for selecting Broken Arrow Road as the alignment for the collector:

1. Broken Arrow Road is approximately 635 feet east of Southwest Drive, which will improve the traffic movements surrounding the business accesses and this collector roadway.
2. There is a significant amount of existing dedicated ROW that currently exists for Broken Arrow Road, which reduces the amount of ROW that would need to be obtained.
3. The Cheyenne Area Master Transportation Plan has shown Broken Arrow Road south of College Drive to tie in with Wallick Road extended for years. The Broken Arrow corridor creates a straight alignment instead of having the travelling public jog over one block on College Drive to stay on the major collector roadway.
4. The slope of College Drive to the west of Broken Arrow is at a 3.5% grade and a 3.8% grade to the east of Broken Arrow. It only becomes a concern for roadways when the grades get close to 10%, so these grades are far from being a concern. The City of Cheyenne allows for street grades to be upwards of 6% to 8% and the County allows for grades up to between 6% to 10%. In addition, currently there is 200' of "flat" area on College Drive centered at the intersection with Broken Arrow, so the slopes do not start for almost 100' on each side of Broken Arrow.

5. Consideration was given to utilizing other alignments to the east of Broken Arrow. However, WYDOT has indicated they have plans to construct a railroad overpass for College Drive at the existing BNSF Railroad crossing. Due to the amount of fill required to get over the RR with an overpass, the length of the embankment would only allow roadways from Stirrup Road west to access College Drive. This would eliminate the option for using any alignment east of Stirrup Road. Also, Stirrup Road was considered for the collector alignment, but due to there being approximately seven existing residences within close proximity to the existing ROW for Stirrup Road (i.e., the some of the existing houses are less than 25' from the ROW), obtaining additional ROW would impact all of these residences. The Broken Arrow Road alignment would only impact one existing residence that is approximately 90' setback from the existing ROW for Broken Arrow Road. In addition, there is more existing ROW width on Broken Arrow (50') than on Stirrup Road (40'), so the impact would be less on Broken Arrow Road. Furthermore, Stirrup Road does not align with the planned collector on the south side of College Drive and vehicles would need to jog over to Broken Arrow to stay on the collector roadway.
6. The Broken Arrow alignment works best with the future development to the north by utilizing the existing ROW and aligned with the outside of the area instead of dividing it.

Benefits of using Broken Arrow alignment for the collector and closing Southwest Drive off as a through roadway:

- Moves the intersection further from the businesses and interchange.
- Allows Southwest Drive to maintain its rural atmosphere.
- Reduces or eliminates truck traffic through the rural setting.
- Since Southwest Drive will not be a through street, speeding should be reduced as traffic volumes would be reduced.
- A significant amount of property along the Broken Arrow alignment is planned to be urban residential which would be more suitable for a major collector to be located since more traffic will be generated from the development than the existing rural properties.
- The proposed alignment lends itself to being constructed by a developer.
- The alignment follows the Cheyenne Area Master Transportation Plan.

## Additional Recommendations

No on-street parking is currently allowed and is not recommended at any location along this corridor. Additional signage to prevent on-street parking may be necessary, particularly near College Drive and higher-density areas.

At College Drive, the alignment of turn lanes for Broken Arrow Road will need to be coordinated with the College Drive improvement project. Adjustments to lane widths and landscape areas may be considered to better align the travel lanes with the future construction of Broken Arrow Road.

At the southern end of Southwest Drive, it is recommended the current access be closed to through traffic north of the commercial accesses and a physical barrier be installed such as adequate barricades, an earthen berm, etc. Additionally, it is recommended that Southwest Drive be closed off just south of I-80 to create a separated rural road for the residential properties from the newly aligned Broken Arrow corridor. Both recommended closures will allow Southwest Drive to remain a rural roadway with a rural feel, limit truck traffic and traffic in general, which in turn will also minimize/reduce speeding.

A boundary survey should be completed by a licensed professional land surveyor for the full length of the corridor to verify and certify the right-of-way and location of easements. Utility, drainage, access, and other easements that are no longer needed or in-use should be vacated. All of the Southwest Drive right-of-way should be incorporated into the City of Cheyenne to reduce confusion regarding jurisdictional limitations of various entities.

Any development or redevelopment of properties adjacent to Southwest Drive should comply with the recommendations of this plan as a part of the entitlement and approval processes associated with access and off-site improvements.

The proposed drainage system is designed to convey stormwater more efficiently from the corridor and contributing offsite basins to the receiving catchment, Clear Creek. A 5,133-foot storm sewer for the improved Broken Arrow Road corridor to convey stormwater more effectively to Clear Creek is proposed. Also, a series of shorter culverts/storm sewers for Southwest Drive should be installed north of I-80 to convey stormwater more effectively from the corridor and adjacent sub-basins to the open sump area within Clear Creek Park. For the rural section of Southwest Drive south of Clear Creek, it is proposed to improve borrow ditches and driveway culverts to convey flow north into Clear Creek. Please refer to Appendix V for the full Storm Drainage Study conducted by GLM Design Group.



## Timeframe

Interim improvements may be made prior to full construction of Broken Arrow Road to a two-lane collector roadway.

- Resurface Southwest Drive to bring to current standards
- White edge striping for all travel lanes
- Install detached 6-ft sidewalk on the east side of Southwest Drive to the northern terminus of Southwest Drive.
- Development and redevelopment of properties adjacent to Southwest Drive and Broken Arrow Road should include appropriate improvements to the recommendations
- Complete a boundary survey
- Obtain additional rights-of-way

The following outlines the recommendations for a phased approach to the various components of the corridor.

### **Immediate/Short Term Recommendations**

The current condition of Southwest Drive is extremely poor and needs to be addressed. The existing pavement has deteriorated. In most areas, it does not appear there are base or subgrade failures only just failures of the pavement itself. The areas where there are base and/or subgrade failures, spot repairs can be made prior to the overlay. In the immediate future, it is recommended that the existing roadway is milled and overlaid.

### **Intermediate Recommendations**

The intermediate recommendations would include the construction/reconstruction of Broken Arrow Road and Southwest Drive north of the connection with Broken Arrow Road. In addition, the closure of Southwest Drive can be done when the new collector following Broken Arrow Road alignment is completed from West College Drive to I-80 and, the widening of the newly closed off Southwest Drive along with its sidewalk. Simultaneously, the recommended improvements to Woodenshoe Drive and Lindblom Court would need to be accomplished.

### **Long Term Recommendations**

Mainly due to the cost associated with the construction of Swan Ranch Road over or under the railroad and over or under I-25, it is recommended and anticipated that the construction of this roadway will be the last element to this plan to be implemented. A developer may be able to construct a small segment of the roadway between Broken Arrow Road and the railroad in the interim; however, it is anticipated that the connection to Parsley Blvd. will happen in the long term followed by the connection to the west side of I-25.

## Cost Estimates

It should be noted that all cost estimates within this report are based on 2024 construction costs. Cost estimates will need to be adjusted in accordance with current market values when the work is initiated. Due to significant fluctuations in market pricing, the costs here may not be relevant in the future.

A cost estimate to construct the recommended improvements is for the project at one time, under one contract as shown in Table 5. Quantities are based on the 35% Design Plans included in Appendix I and detailed itemization is included in Appendix II.

The City of Cheyenne and Board of Public Utilities Construction Specifications and Standard Drawings, 2022 Edition was used for pay items, units, and estimated costs. For pay items not identified in the standard specification, or where non-standard measurement is noted in the estimate, written special provisions to the standard specification will be required for incorporation into the bid and contract documents.

No inflation rate is included, and adjustments should be made for work completed in the future. Unit prices are based on data from other projects bid and engineering judgement.

Cost estimates do not include water and sewer as these locations will be determined by the developer of the vacant property along Broken Arrow Road and installed by the same. In addition, there are several feasible alignments for the water and sanitary lines. Many of the potential alignments will not be within Broken Arrow Road or Southwest Drive and would be internal to the properties, except for some potential road crossings. A developer would bear the cost of any new water and sanitary sewer improvements.

<b>Engineer's Estimate of Probable Costs</b>	
Immediate/Short Term Improvements (Overlay)	\$802,526
Intermediate Improvements (Corridor)	\$10,208,370
Long Term Improvements	\$842,000
Overpass/Underpass	\$15.5 million

**Table 5 - Construction Costs**

## Underpass/Overpass Cost

The future alignment of Swan Ranch Road from Broken Arrow Road to South Parsley Blvd. results in the need for a crossing of the BNSF railroad. At the location where the crossing is being proposed, the elevation of the railroad is approximately 15' higher than the grades to the west of the railroad and approximately 6' lower than the grades to the east of the railroad.

If the current railroad elevation is the same as the grades to the east and west, the cost of an underpass would be similar to the cost of an overpass. Based on information pertaining to the west side of the railroad, it may be slightly more cost effective to build an underpass instead of an overpass. On the east side, since the grades are higher than the tracks, it may be slightly more cost effective to build an overpass. The costs are similar for either an overpass or an underpass; therefore, we cannot determine, at a conceptual design plan level of investigation, which one, if either, would be more cost effective.

There are a few potential challenges with an underpass that may outweigh any cost advantage to this approach. The first challenge is providing adequate and reliable drainage for the underpass. The second challenge is that BNSF generally opposes railroad underpass facilities and strongly prefers overpasses.

Given the constraints, BNSF will most likely impose the option of an overpass. At the current conceptual stage, the cost implications of an underpass cannot be determined to the degree that would make it the clear choice, from a cost only standpoint. Additional in-depth investigations and concept designs for each need to be completed to determine if there is a significant cost savings for one vs. the other.

In conclusion, the cost for either an overpass or an underpass is approximately \$15.5 million excluding property acquisition costs and including design costs.

When and if the property where Swan Ranch Road is proposed between Broken Arrow Road and the railroad is developed, it is imperative that the City ensure there is adequate room dedicated and reserved for an overpass or underpass such that it can be constructed without negatively impacting the roadway system and/or development.

With either an overpass or an underpass, there will be a significant length out from the railroad tracks until Swan Ranch Road can tie into existing grades. This would minimize the access to and/or across Swan Ranch Road for a significant distance west of the railroad; therefore, the development of that property would need to make accommodations for the overpass or underpass extents.

## Right-of-Way Costs

Additional rights-of-way will be needed to properly construct the proposed improvements. Table 6 summarizes the additional property that will be needed based on the 35% design plans and includes estimated costs. It is assumed the City of Cheyenne will take the lead in final designs and construction; therefore, funds will not be exchanged for the city-owned parcels. Areas should be finalized with the final design plans and costs should be negotiated with specific property owners based upon industry standards.

If development in the vacant properties east of Broken Arrow Road initiates some of the recommended improvements, some of the ROW would be dedicated by the developer when platting of the development occurred and the city would not have to purchase the ROW. The total amount of ROW dedicated by the developer would be dependent on the final layout of the development but at this initial stage, it appears Parcel Nos. 4 – 8 would be all dedicated by the developer. Table 6 shows ROW costs if the City were to purchase all the ROW needed, which most likely will not be the case.



**Properties Impacted by the Project**



Additional Rights-of-Way				
Parcel No.	Location	Area Needed (SF)	Cost/SF	Total
1	2011 Broken Arrow Block 14, Lots 1-4 & 27	21,883	\$10	\$218,830
2	2011 Broken Arrow Block 14, Lots 1-4 & 27	11,227	\$10	\$112,270
3	2011 Broken Arrow Block 14, Lots 1-4 & 27	11,456	\$10	\$114,560
4	Eaast Side of Broken Arrow Road	136,233	\$10	\$1,362,330
5	707 Southwest Drive Block 1, Lot 2	82,116	\$10	\$821,160
6	707 Southwest Drive Block 1, Lot 2	3,600	\$10	\$36,000
7	521 Southwest Drive Tract 1 of H&B Tracts	27,722	\$10	\$277,220
8	Tract 1 of H&B Tracts	12,391	\$10	\$123,910
<b>Rights-of-Way Total</b>				<b>\$3,066,280</b>

**Table 6 - Right-of-Way Costs**

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