

December 2014



# Gold Corridor Ward Station/Ridge Road Catalytic Project Final Report



**WARD STATION/RIDGE ROAD CATALYTIC PROJECT  
FINAL REPORT**

***Prepared for:***

Denver Regional Council of Governments  
City of Wheat Ridge  
City of Arvada

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## I. EXECUTIVE SUMMARY

The Denver Regional Council of Governments (DRCOG) conducted this study in conjunction with the cities of Wheat Ridge and Arvada to plan multi-modal access improvements to the Wheat Ridge-Ward Station (Ward Station), which will be the western end-of-line station for the Regional Transportation District (RTD) Gold Line Commuter Rail, scheduled to open for service in 2016.

For the planning phase of the study, the larger Planning Study Area was used, allowing for planning of multi-modal connections between the Ward Station and the surrounding major arterial streets: Ward Road to the west and Kipling Street to the east. These two arterial streets are approximately 1.5 miles apart. The second phase of the project consisted of a conceptual design study for future improvements to Ridge Road between Miller Street and Tabor Street (approximately 0.9 mile)—the Focus Study Area.

Based on the survey and evaluation of existing and future conditions, a series of multi-modal improvement needs was developed to improve access to the Ward and Arvada Ridge stations and the transit-oriented development (TOD) planned in the station areas. The needs are summarized below and, where appropriate, depicted on **Figure 1**.

### *Bus Routes*

RTD is currently conducting a study to develop preliminary plans for bus rerouting with the opening of the Gold Line in 2016. It is expected that RTD will coordinate with Wheat Ridge and Arvada and other key stakeholders in refining the preliminary plan to develop a final bus plan for implementation with the Gold Line opening. Following is a summary of the key needs that have been identified by participants in the Ward Station/Ridge Road Catalytic Project for consideration in the bus planning.

- ▶ Existing Route 72X, connecting between downtown Denver and western Arvada, is expected to be eliminated with the opening of the Gold Line. A new local route or routes should be established to replace Route 72X to provide service between the Ward Station and neighborhoods in Arvada, Wheat Ridge, and Jefferson County to the west. This route should also include a stop south of the Ward Station near the Ward Road/north Interstate 70 (I-70) Frontage Road intersection to service the Kaiser Permanente facility.
- ▶ Route 44 along 44<sup>th</sup> Avenue currently stops at the park-n-Ride northwest of the I-70/Kipling Street interchange, which provides relatively close accessibility for Kaiser Permanente. When the park-n-Ride is closed with the opening of the Ward Station, RTD should explore routing the 44 bus to provide a stop which directly serves Kaiser Permanente.



**Figure 1**  
Recommended Access Improvements

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### *50<sup>th</sup> Avenue/Ward Road Traffic Signal*

- ▶ A traffic signal is recommended at the 50<sup>th</sup> Avenue/Ward Road intersection as soon as it can be approved, funded, and constructed. With this signal, 50<sup>th</sup> Avenue would become the primary access route between the Ward Station and Ward Road for drivers coming to and exiting the station from the north or south. A signal would provide a safe bicycle and pedestrian crossing of Ward Road from the station, extending bike/pedestrian connectivity with the planned bicycle lanes and sidewalks on the 50<sup>th</sup> Avenue/Ridge Road extension west of the station. Additionally, a signal would allow RTD buses accessing the station to use 50<sup>th</sup> Avenue for both ingress and egress, reducing bus travel times and eliminating the impacts of buses that would otherwise use 52<sup>nd</sup> Avenue.

### *Bike and Pedestrian Connections to Ward Road*

**Figure 1** shows three different bike and pedestrian improvements in the vicinity of the Ward Station that are recommended in the short term to coincide with or follow soon after the 2016 opening of the Gold Line, including:

- ▶ Improvement to the Tabor Street/north I-70 Frontage Road route from the station to Ward Road, including on-street bike lanes and continuous sidewalks. These improvements have been funded and are programmed by Wheat Ridge.
- ▶ Create a signed bike route on the Taft Street/52<sup>nd</sup> Avenue route between the station and Ward Road. Additional improvement to this section of 52<sup>nd</sup> Avenue may be explored in the mid- to long-range future, but a short-range signing of this route to direct bicyclists from Ridge Road to the existing traffic signal at 52<sup>nd</sup> Avenue/Ward Road and not through the busy Ward Station area is recommended.
- ▶ Continuous sidewalks along the east side of Ward Road between 52<sup>nd</sup> Avenue and the north I-70 Frontage Road are needed as close to the Ward Station opening as possible to allow for safe and convenient walking routes between the station and the existing Ward Road signalized crossings and businesses along the street.

### *Ridge Road Complete Street*

Improvements to Ridge Road between the Ward Station and Miller Street are recommended and are discussed in greater detail in **Chapter V**. Recommended improvements include on-street bike lanes in both directions, continuous sidewalks on the north side of the street, and center left-turn lanes where needed.

### *Kipling Street Access*

The City of Arvada is currently exploring options to develop a Kipling Street intersection to provide more direct access for the TOD site north of the Arvada Ridge Station. This intersection would also improve the directness of access for Red Rocks Community College and its planned expansion, as well as for other existing and future land uses on both sides of Kipling Street.

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## II. INTRODUCTION

### A. STUDY PURPOSE, NEEDS AND GOALS

DRCOG conducted this study in conjunction with the cities of Wheat Ridge and Arvada to plan multi-modal access improvements to the Ward Station, which will be the western end-of-line station for the RTD Gold Line Commuter Rail, scheduled to open for service in 2016. **Figure 2** shows the study areas for the project.

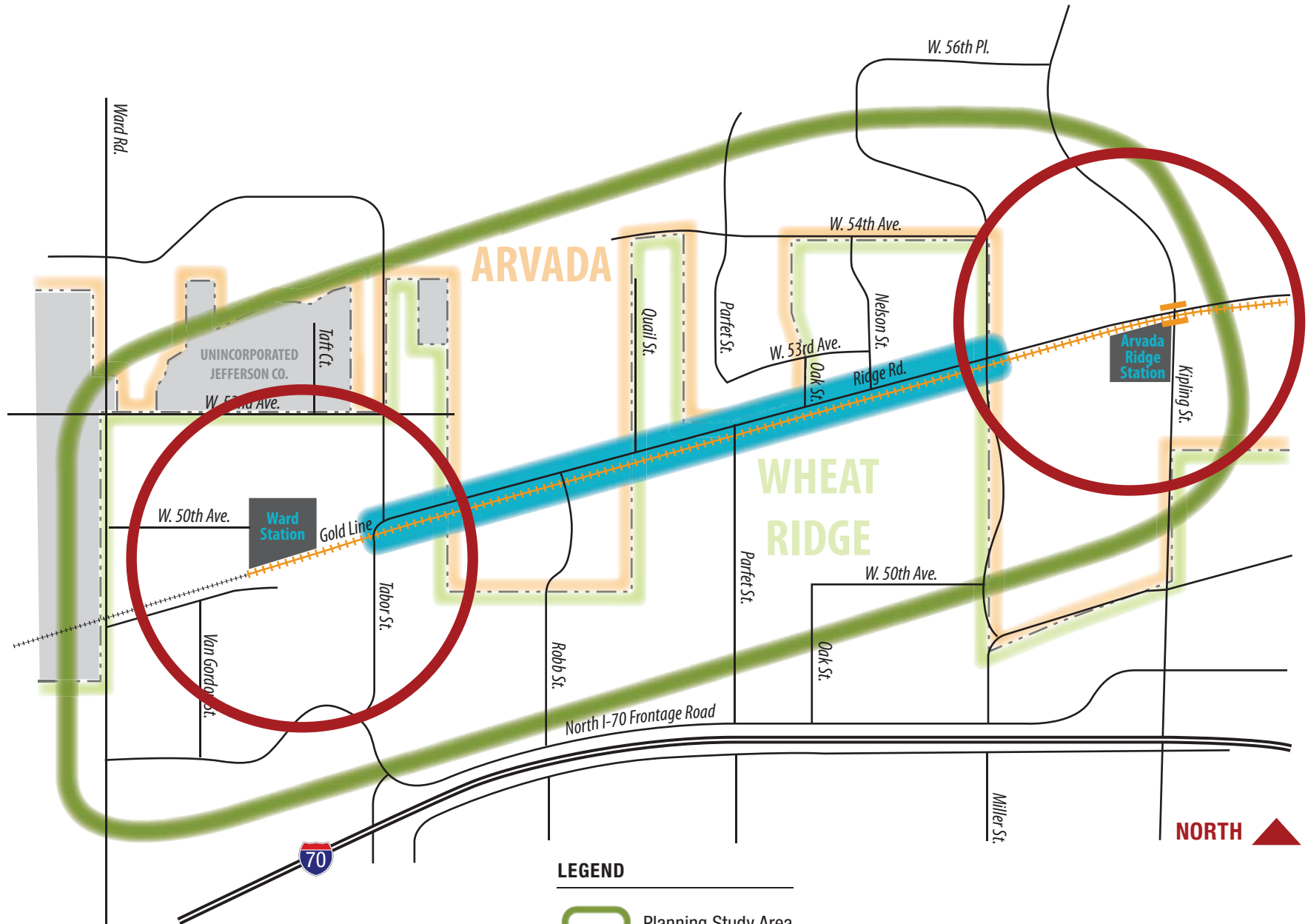
For the planning phase of the study, the larger Planning Study Area was used, allowing for planning of multi-modal connections between the Ward Station and the surrounding major arterial streets: Ward Road to the west and Kipling Street to the east. These two arterial streets are approximately 1.5 miles apart.

The second phase of the project consisted of a conceptual design study for future improvements to Ridge Road between Miller Street and Tabor Street (approximately 0.9 mile)—the Focus Study Area. Ridge Road is located parallel and adjacent to the Ward Station.

The **purpose** of the Ward Station/Ridge Road Catalytic Project is to help reach transportation and mobility goals for the western end of the Gold Line by encouraging the planning of future land use, transportation, environmental, and infrastructure needs in an integrated manner. Both the City of Arvada and the City of Wheat Ridge have adopted plans that strongly encourage higher-density mixed-use development, including housing and jobs within a half (½) mile of the Arvada Ridge and Ward stations. Those plans encompass the majority of the Ridge Road corridor, which connects the two communities. Ridge Road presents a unique opportunity to provide multi-modal connectivity between the two communities that will knit together a neighborhood that will have excellent transit and multi-modal accessibility.

Primary **needs** and **goals** for the project include:

- ▶ The project should identify transportation system improvements to facilitate safe and convenient access to the Ward Station and the Arvada Ridge Station, for pedestrians, bicyclists, automobiles, and RTD buses.
- ▶ The project will focus on developing a complete street corridor on Ridge Road connecting from the Arvada Ridge Station on the east to Ward Road on the west.
- ▶ The project should facilitate TOD as desired by the cities of Wheat Ridge and Arvada by providing the necessary infrastructure to attract higher-density housing and employment opportunities.
- ▶ The project should promote social and economic mobility by providing multi-modal access between homes, jobs, schools, recreational facilities, and everyday shops and services, such as grocery stores, day care, and health care.
- ▶ The project should contribute to the creation of high quality, comfortable, and attractive public spaces, including the streetscape, parks, and plazas.
- ▶ The project should minimize sound pollution and protect sensitive environmental resources, such as wetlands, significant wildlife habitat, and historic features.



- LEGEND**
- Planning Study Area
  - Focus Study Area
  - 1/4 Mile Station Area

**Figure 2**  
Study Area



## **B. COORDINATION AND OUTREACH**

The study was guided by an Agency Resource Group that included representatives from DRCOG, City of Wheat Ridge, City of Arvada, and RTD. This group met as a full group three times during the course of the study and several additional coordination meetings were held between the consultant team and individual agencies.

A public open house was held on October 28, 2014, at Red Rocks Community College's Arvada Campus in the eastern part of the planning study area. Approximately 500 invitations were mailed to property owners and businesses in the study area and meeting notices were posted by the two cities, as well as the Denver Post. Approximately 35 members of the public attended. A meeting summary is provided as **Appendix A**.



### III. EXISTING AND FUTURE CONDITIONS

This purpose of this chapter is to provide a foundation for both the planning phase and Ridge Road conceptual design phase of the study. The existing conditions information is presented in five sections, including:

- ▶ **Existing Transportation System** – An inventory of study area roadways including geometric and traffic control characteristics, traffic volumes, accident history, pedestrian and bicycle facilities, and RTD bus service.
- ▶ **Environmental Conditions** – An overview of environmental conditions focusing on the Ridge Road corridor and conditions that will need to be considered in the design of Ridge Road improvements.
- ▶ **Land Use** – An inventory of existing land use in the study area, planned developments, current zoning, and a review of previous Wheat Ridge and Arvada land use planning for the study area.
- ▶ **Traffic Analysis** – Examination of forecasted travel demand and transportation planning by Wheat Ridge, Arvada, and RTD that will influence transportation in the study area.
- ▶ **Urban Design Character** – A review of existing urban design character focusing primarily on the Ridge Road corridor with an overview of conditions on other key Ward Station access streets including Tabor Street, 50<sup>th</sup> Avenue, and 52<sup>nd</sup> Avenue.

#### A. EXISTING TRANSPORTATION SYSTEM

Information about the existing study area transportation system was collected from a number of sources, including Wheat Ridge, Arvada, RTD, Colorado Department of Transportation (CDOT), All Traffic Data, Inc., and field review. The following sections and **Figures 3** through **8** provide summaries of this transportation system review.

##### Existing Street System

**Figure 3** depicts the existing street system in and around the planning study area. Ward Road and Kipling Street both have four through lanes and all other surface streets in the area have two through lanes.

Rights-of-way on study area streets vary by segment. **Figure 3** shows rights-of-way at selected locations on key streets to assist in the evaluation of street improvement alternatives on Ridge Road, 50<sup>th</sup> Avenue, 52<sup>nd</sup> Avenue, and Ward Road. On the focus segment of Ridge Road between Tabor Street and Miller Street, the right-of-way is approximately 41 feet with a 24-foot street for much of the length. A segment generally between Nelson and Parfet Streets has been widened to the north with recent development, and this segment has an approximate 40-foot street width in a 61-foot right-of-way.

##### Traffic Control

**Figure 4** shows the traffic control in the study area. Ward Road currently has two traffic signals in the study area north of its interchange with I-70. Signals on Ward Road are at the north I-70 Frontage Road and 52<sup>nd</sup> Avenue, approximately 0.5 mile apart. Kipling Street has three signalized intersections north of the I-70 interchange, at the north Frontage Road, 50<sup>th</sup> Avenue, and 51<sup>st</sup> Place.









**LEGEND**

- Planning Study Area
- 4 Number of Through Lanes (if >2)
- 89' Existing Right-of-Way Width
- 24' Existing Pavement Width

**Figure 3**  
Existing Street System



**LEGEND**

-  Planning Study Area
-  Existing Traffic Signal
-  Planned Traffic Signal
-  45 mph Posted Speed (if > 30mph)
-  Railroad Crossing - Flashing Lights and Quad Gates (Existing)
-  Railroad Crossing Flashing Lights and Quad Gates (Planned with Gold Line)

**Figure 4**  
Traffic Control



Crossings of the BNSF Railroad currently have varying traffic control. Ridge Road intersections with each street that crosses the railroad and Gold Line, including Tabor Street, Robb Street, Parfet Street, and Miller Street, will have traffic signals installed as part of the Gold Line project. In addition the at-grade railroad crossings at each of these locations will have quad gates and flashing lights with the Gold Line construction, consistent with the railroad quiet zone that is planned to be established along this stretch.

Posted speeds are shown on **Figure 4** for collector and arterial streets with posted speeds greater than 30 miles per hour (mph), including 35 mph posted speed on Ridge Road.

### Current Traffic Volumes

Existing daily traffic volumes on key study area streets are shown on **Figure 5**. Count data were obtained from a variety of sources, including CDOT, DRCOG, Wheat Ridge, and Arvada data bases, and counts taken for this study by All Traffic Data, Inc., in June 2014. The map also shows the year of each count. Since Gold Line construction affected traffic patterns during the June counting period, previous counts that were not affected by current construction are believed to be more representative of typical conditions on Ridge Road and Tabor Street, so those 2010 and 2011 counts are shown on **Figure 5**.

Traffic volumes on Ward Road are approximately 36,000 vehicles per day (vpd) and volumes on Kipling Street are approximately 33,000 vpd. Recent transportation planning performed for the Arvada Comprehensive Plan shows a planning level capacity for four-lane arterial roadways like Kipling Street and Ward Road as approximately 32,000 vpd, suggesting that both roads currently have traffic volumes slightly exceeding planned capacities and can currently be considered moderately congested roadways during peak periods.

Ridge Road currently carries in the range of 3,000 to 4,000 vpd, which is well within the approximate 10,000 vpd capacity of a two-lane collector level street.

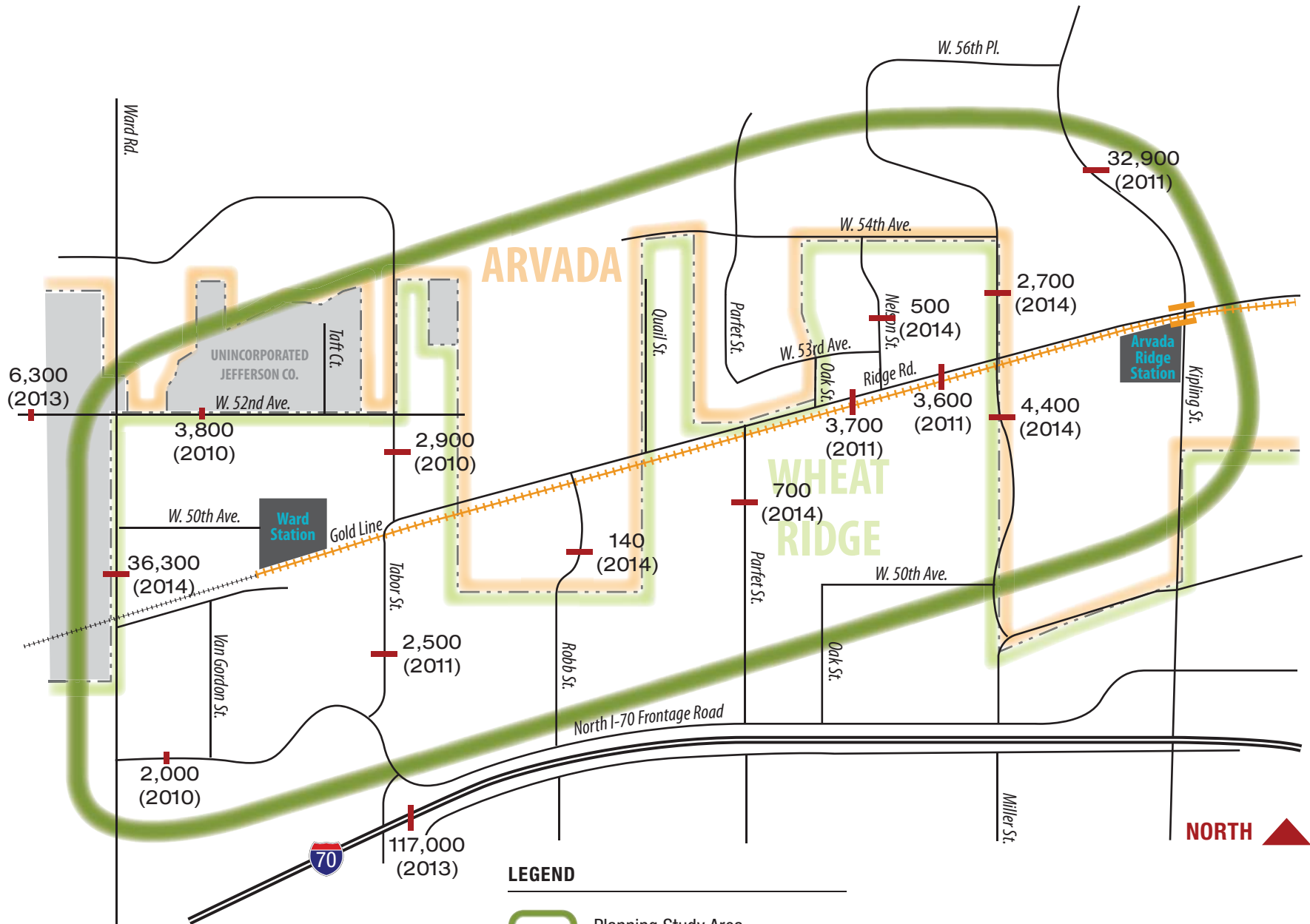
### Crash History

Crash history information was obtained from the City of Wheat Ridge for the Ridge Road focus corridor and for Ward Road between the north I-70 Frontage Road and 52<sup>nd</sup> Avenue. **Figure 6** shows the number of crashes and any injuries that resulted for the five-year period from 2009 to 2014. Two locations had more than two accidents during the five-year period: the Ridge Road/Miller Street all-way stop intersection with nine crashes which were predominantly front-to-side accidents and 12 crashes at the Ward Road/52<sup>nd</sup> Avenue intersection which included both front-to-side and rear-end accidents.


### Bike and Pedestrian Facilities

**Figure 7** provides a general depiction of the existing bicycle and pedestrian facilities on study area streets. Ridge Road currently has no designated bicycle facilities and only sporadic sidewalks, generally in the newly developed Nelson Street to Parfet Street area. Ward Road has sporadic sidewalk segments in and around the study area, including a detached segment on the west side of the street north of 52<sup>nd</sup> Avenue that can accommodate pedestrians and bicycles and other attached sidewalk segments that serve pedestrians only.

Study area bicycle facilities include on-street bike lanes on Miller Street/56<sup>th</sup> Place and 54<sup>th</sup> Avenue in the northeastern part of the study area, and shared bicycle/pedestrian detached paths along Kipling Street.

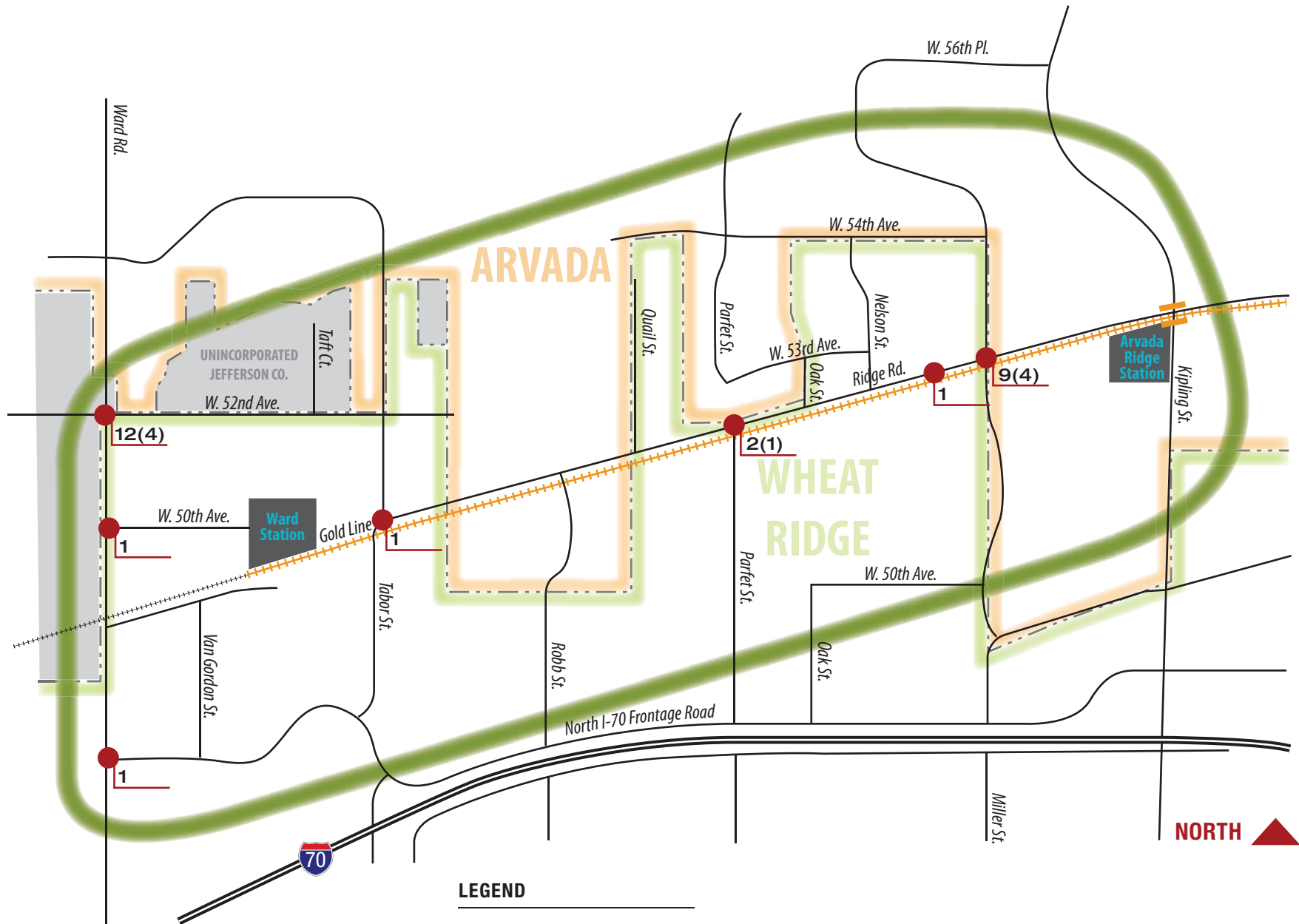


**LEGEND**

-  Planning Study Area
- xx(xxxx) Daily Traffic Volume (Year of Count)



**Figure 5**  
Existing Traffic Volumes



**LEGEND**

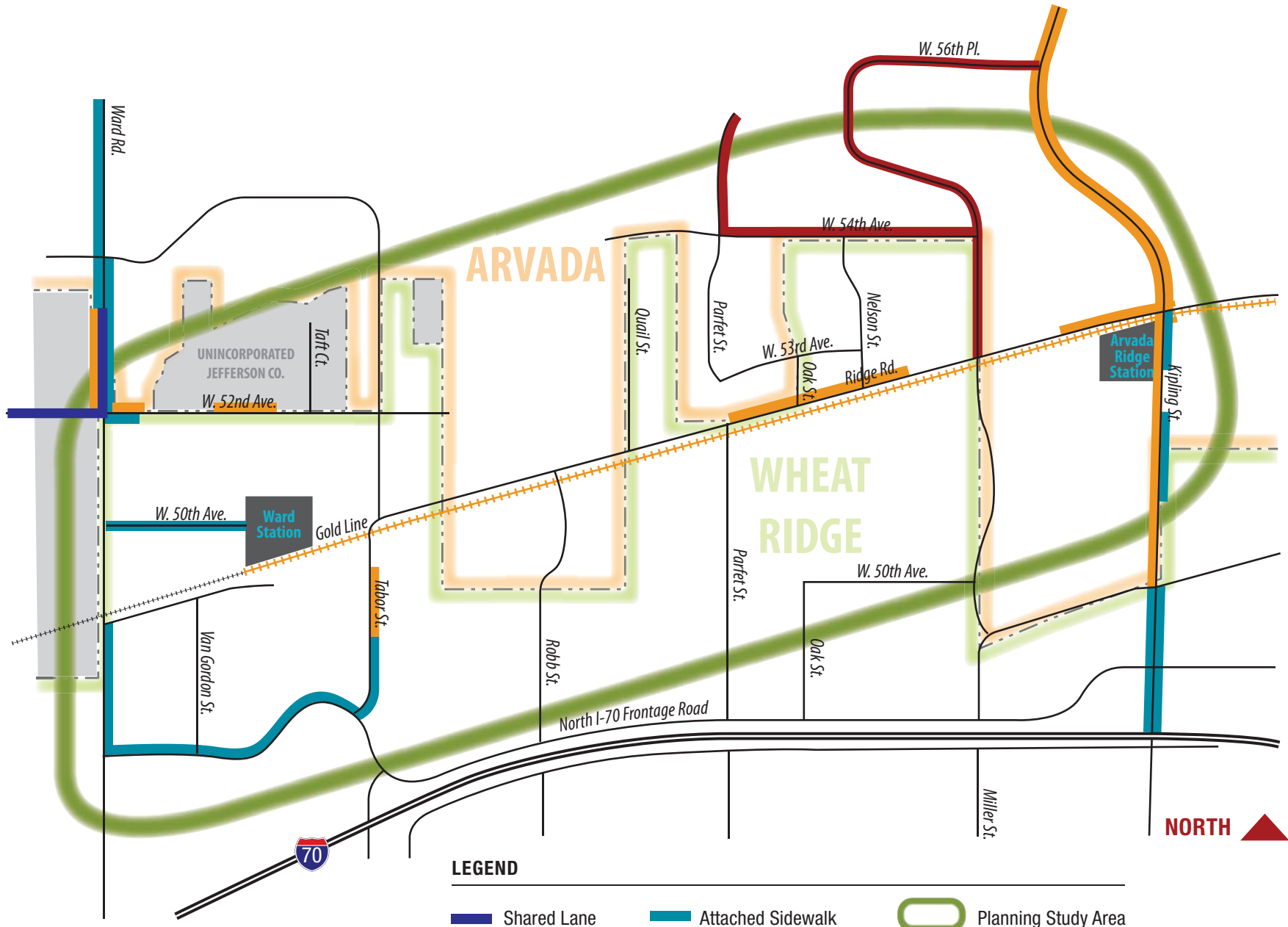
Planning Study Area

**X(X)** Number of Crashes Reported (Number of Injuries) 2009-2014



**Figure 6**  
Crash History





**Figure 7**  
Existing Bicycle and Pedestrian Facilities





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## Transit Service

**Figure 8** shows the five existing RTD bus routes operating within and in the vicinity of the study area. Route 72X is the only route that currently passes by the future Ward Gold Line station along Ward Road. The map also shows the future Gold Line, which will terminate at the Ward Station. RTD is currently conducting a study to determine how buses will be rerouted with the opening of the Gold Line in 2016.

There is an existing RTD park-n-Ride northwest of the I-70/Ward Road interchange with 490 parking spaces. RTD plans to close the park-n-Ride with the opening of the Gold Line Ward Station.

## B. ENVIRONMENTAL CONDITIONS

A cursory-level environmental inventory of existing conditions was conducted within the Focus Study Area and included the areas adjacent to Ridge Road, and between Tabor Street and Miller Street. The purpose of identifying existing environmental conditions within the corridor is to have a clear understanding of the existing physical opportunities and/or constraints within the Focus Study Area related to environmental resources.

### Methods

The methods used to conduct the environmental inventory within the Focus Study Area included a desktop review of existing information, including existing geographic information system (GIS) data and available information from relevant agencies (e.g., RTD and US Fish and Wildlife Service [USFWS]). A site reconnaissance was not performed as part of the preliminary environmental inventory.

A preliminary inventory was conducted for the following “priority” resources identified within the Focus Study Area:

- ▶ Hazardous Materials/Waste
- ▶ Noise Conditions
- ▶ Historic Resources
- ▶ Park and Recreation Resources
- ▶ Section 6(f) Resources
- ▶ Threatened/Endangered/Candidate Species and Migratory Birds
- ▶ Wetlands

“Priority” resources include resources that can potentially affect the alternatives development process and/or may have more complex environmental clearance processes. Other resources that were not identified as “priority” resources and could require future inventory and analysis at the project level include: air quality, vegetation/noxious weeds, environmental justice, and archaeology/paleontology. Future resource analysis needs are dependent on project funding sources and individual project characteristics.



## Hazardous Materials/Waste

This section provides a preliminary review of properties with potential issues related to hazardous materials/waste located within or adjacent to the Focus Study Area. These types of sites have the potential to present a materials management and/or worker health and safety issue. The methodology used to identify sites with potential issues related to hazardous materials/waste included a review of data from environmental agencies (Satisfi Inc., 2012) and a review of previous studies conducted within the Focus Study Area (RTD, 2009). Three sites with potential issues related to hazardous materials/waste were identified within the Focus Study Area (**Figure 9**). These sites include two closed leaking underground storage tank sites and one open, above-ground storage tank site.

## Noise Conditions

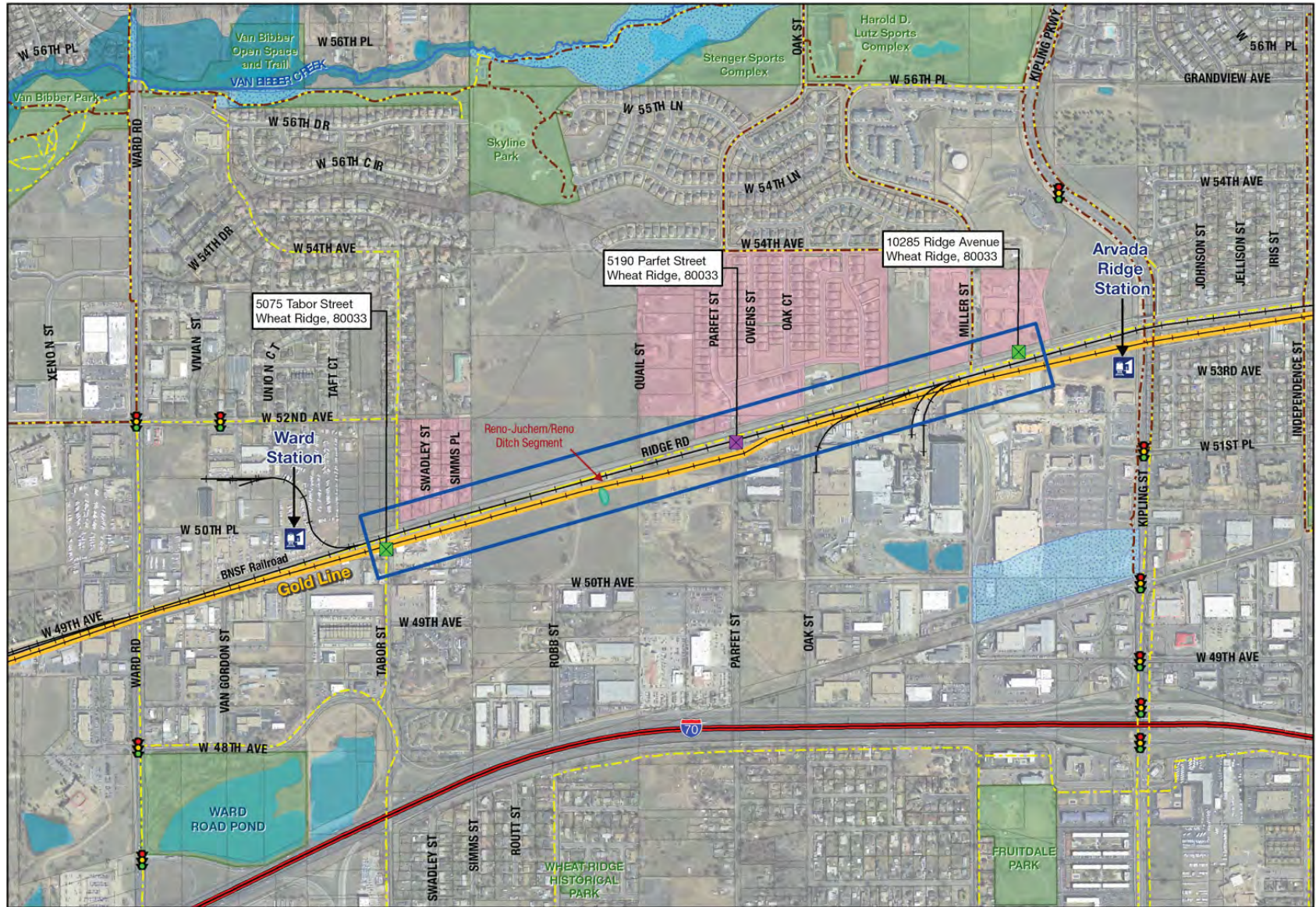
Noise from transportation infrastructure can be a concern, primarily for typical sensitive receptors such as residential neighborhoods, schools, parks, or churches. Therefore, the purpose of this analysis was to review sensitive receptors near any potential project improvements within the Focus Study Area. Several noise sensitive areas, including residences and an institutional facility, were identified within the Focus Study Area (**Figure 9**). Any proposed improvements to Ridge Road near these locations would be the primary concerns for potential noise impacts and the focus of any subsequent noise analysis for the project during any future National Environmental Policy Act (NEPA) process.

## Historic Resources

Historic resources are those buildings, sites, structures, objects, or districts that are important to the understanding of our cultural heritage. Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.

Based on a search of the online COMPASS database (Office of Archaeology and Historic Preservation), at least one previously identified and evaluated historic resource (5JF.4362.2 Reno-Juchem/Reno Ditch – *officially eligible* [8/20/2008]) was identified in the Focus Study Area. The Reno-Juchem/Reno Ditch is eligible to the National Register of Historic Places (NRHP) due to its association with early agricultural development in Colorado. In addition to this previously recorded historic resource, one structure and eight buildings located within the Focus Study Area are potentially eligible for the NRHP, including the segment of the Burlington Northern and Santa Fe Railroad (formerly Colorado Southern Railroad) that runs through the Focus Study Area. Other segments of this resource outside of the Focus Study Area have been evaluated and determined to be Officially Eligible to the NRHP in the past. As a result, the segment that runs through the Focus Study Area is likely to be eligible for the NRHP due to its location along the historic alignment of the Colorado Southern Railroad.





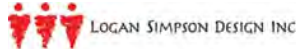
**Legend**

- |                        |                         |                |                          |                  |                                 |
|------------------------|-------------------------|----------------|--------------------------|------------------|---------------------------------|
| Hazmat Site - LUST     | Traffic Signals         | Bike Trails    | Floodplain               | Wetlands         | Potential Noise Sensitive Areas |
| Hazmat Site - UST      | Railroad                | Trails         | Lakes                    | Parks/Open Space | Parcels                         |
| Proposed Rail Stations | Proposed Gold Line Rail | Rivers/Streams | River Preservation Areas | Focus Study Area |                                 |

0' 500' 1,000'



**Figure 9**  
Environmental Inventory





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## Park and Recreation Resources

Park and recreation resources are important community facilities that include parks, trails, and open space areas that provide opportunities for both passive and active recreational activities. The following resources were reviewed to identify park and recreation resources within the Focus Study Area:

- ▶ City of Arvada Parks and Open Space Trail Map and Guide (June 2011)
- ▶ Jefferson County Open Space System (No Date)
- ▶ City of Wheat Ridge Parks and Recreation Master Plan (November 2006)

There were no existing or planned park and recreation resources identified within or adjacent to the Focus Study Area.

## Section 4(f) Resources

Section 4(f) resources are protected under the US Department of Transportation Act and include publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites. The Reno-Juchem/Reno Ditch would be considered a Section 4(f) resource.

## Section 6(f) Resources

Section 6(f) resources include land or facilities that have been purchased or improved with Land and Water Conservation Fund Act funds. Section 6(f) applies to all transportation projects involving possible conversions of any Section 6(f) land or facility and would need to be considered during any future NEPA process. Currently there are no properties in the Focus Study Area that have been identified as being afforded Section 6(f) protection.

## Waters of the US/Wetlands

Waters of the United States (WUS), including wetlands, are protected under Section 404 of the Clean Water Act. The definition of WUS under U.S. Army Corps of Engineers (USACE) jurisdiction defines WUS as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. The USACE definition does not include wetlands that lack a surface connection to and, therefore, are isolated from regulated waters. However, isolated wetlands are protected under Executive Order 11990 (Protection of Wetlands).

Wetlands within the Focus Study Area were identified through a review of available GIS mapping data from the USFWS National Wetlands Inventory and a review of previous studies conducted within the Focus Study Area (RTD, 2009). A formal wetland delineation was not conducted as part of this study. One potential wetland was identified within the Focus Study Area near the Reno-Juchem/Reno Ditch (**Figure 9**).

## Threatened, Endangered, and Candidate Species

Federally listed threatened and endangered species are protected under the Endangered Species Act (ESA) (16 United States Code [U.S.C.] 1531 et seq.). Under Section 7 of the ESA, a consultation and clearance process with the USFWS is required if a federally listed species or its habitat will be affected by project activities. A preliminary assessment was conducted to identify potential habitat for federally listed species within the Focus Study Area, including threatened, endangered, and candidate species. This assessment included collecting data from

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the USFWS Information, Planning, and Conservation System (IPac) to identify any potential species habitat within the Focus Study Area. A detailed habitat evaluation was not performed as part of this study. A list of threatened and endangered species potentially located in Jefferson County is included below (**Table 1**).

**Table 1. Federally Threatened and Endangered (T&E) Species Potentially Found in Jefferson County**

Common Name/Scientific Name	Status*
Mexican Spotted Owl ( <i>Strix occidentalis lucida</i> )	T
Colorado Butterfly plant ( <i>Gaura neomexicana</i> var. <i>coloradensis</i> )	T
Ute Ladies'-tresses ( <i>Spiranthes diluvialis</i> )	T
Canada Lynx ( <i>Lynx Canadensis</i> )	T
North American wolverine ( <i>Gulo gulo luscus</i> )	PT
Preble's Meadow Jumping Mouse ( <i>Zapus hudsonius preblei</i> )	T
<b>Species that may be affected, but only under certain conditions</b>	
Interior Least Tern** ( <i>Sternula antillarum</i> )	E
Pallid Sturgeon** ( <i>Scaphirhynchus albus</i> )	E
Piping Plover** ( <i>Charadrius melodus</i> )	T
Whooping Crane** ( <i>Grus Americana</i> )	E
Western Prairie Fringed Orchid** ( <i>Platanthera praeclara</i> )	T
* T = Threatened Species, E = Endangered Species, PT = Proposed Threatened	
** Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other states.	
Source: USFWS, 2014.	

## Migratory Birds

Migratory birds, including raptors, are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712). The eggs and active nests of migratory birds are also protected under the MBTA. Activities that may harm or harass migratory birds during the nesting and breeding season are prohibited by the MBTA. This includes the removal of active nests, which could result in the loss of eggs or young. A detailed habitat evaluation for migratory birds was not performed in the Focus Study Area. However, suitable migratory bird habitat (e.g., suitable trees for nesting) may be present in the Focus Study Area.

## C. LAND USE

### Existing Land Use

Existing land use in the Planning Study Area is shown on **Figure 10** and summarized below.

- ▶ Much of the land north of Ridge Road consists of residential development, particularly single-family homes. There are also pockets of medium-density residences north and south of Ridge Road, including new apartment buildings near the Arvada Ridge Station and an assisted living facility by Tabor Street and I-70.
- ▶ Industrial buildings are the predominant land use on the western side of the Planning Study Area and between Parfet and Miller Streets, where the Rocky Mountain Bottling Company is located.
- ▶ Commercial uses are focused in the Arvada Ridge Marketplace, west of Kipling Boulevard, anchored by a Super Target. Another commercial node is located west of Parfet Street, where an antique mall and car dealerships take advantage of interstate frontage.
- ▶ Uses considered public include a fire station at Oak Street and the Red Rocks Community College east of Miller Street near land and buildings owned by the state.
- ▶ Agricultural and utility uses primarily consist of a horse pasture north of Ridge Road and west of Quail Street, and an electric substation south of Ridge Road and west of Parfet Street.
- ▶ Vacant land occupies several mid-size parcels throughout the Planning Study Area, while a land use designated as Other in Wheat Ridge is focused along I-70 and includes two large ponds.

### Review of Land Use Plans

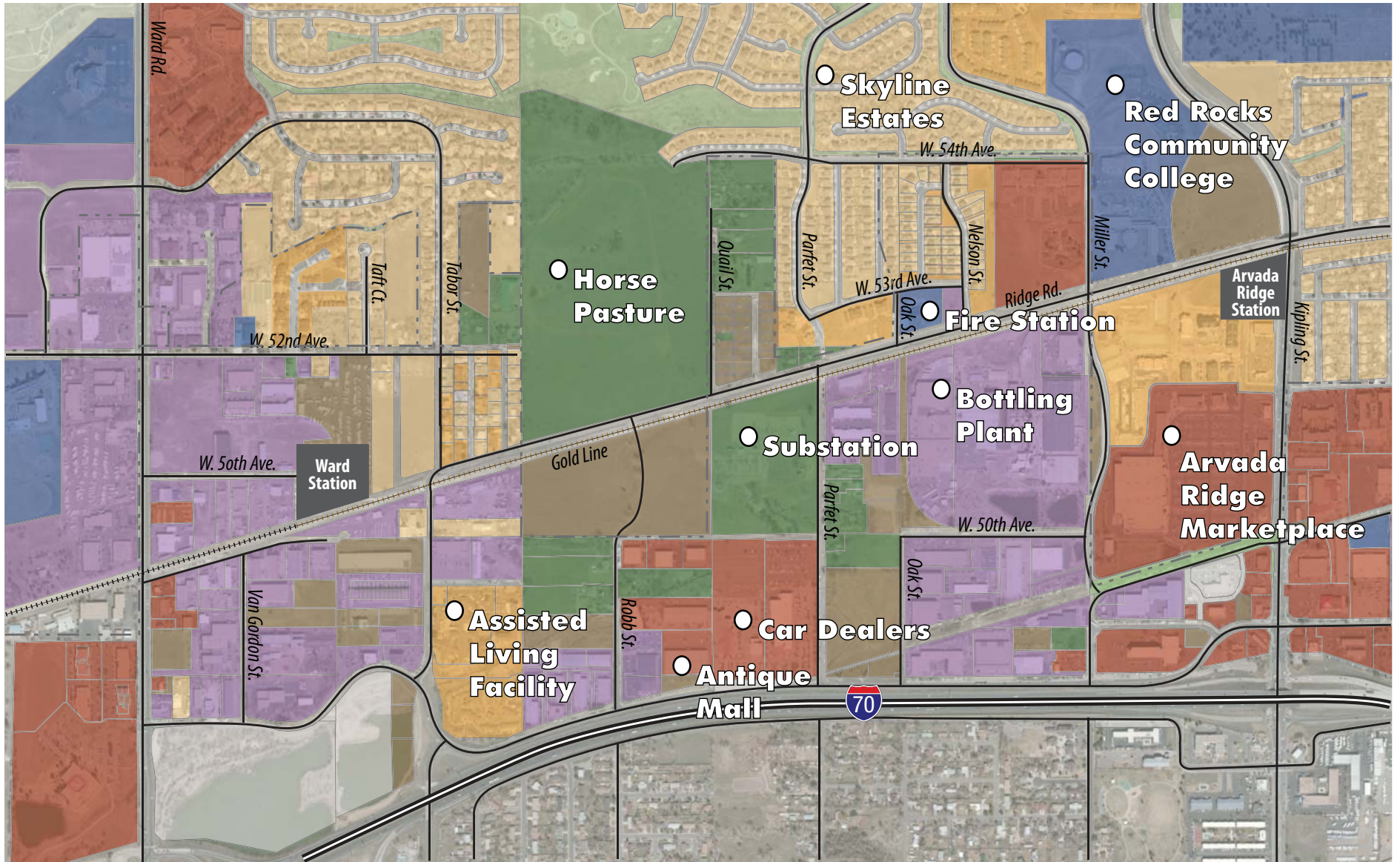
#### Wheat Ridge Northwest Subarea Plan

In 2006, the City of Wheat Ridge adopted the Northwest Subarea Plan. The plan, which was updated in 2013, calls for mixed-use, pedestrian-friendly development around Ward Station with a focus on employment-supporting land uses in the area. The City's comprehensive plan, *Envision Wheat Ridge*, identifies the Northwest Subarea as one of five priority redevelopment areas in the city. In 2009, the entire Northwest Subarea became part of the I-70/Kipling Corridors Urban Renewal Area (URA), making it eligible for certain financing tools. The URA is exempt from height and density restrictions in the City Charter.

#### Arvada Comprehensive Plan

The Arvada Comprehensive Plan was recently updated and seeks transit-oriented redevelopment along the Gold Line with more compact forms of housing and mixed-use neighborhoods in the vicinity of the city's three transit stations, including Old Towne, Sheridan, and Arvada Ridge. The plan acknowledges the influence of Ward Station, which lies wholly within Wheat Ridge, but does not include specific recommendations regarding redevelopment of the surrounding area. The plan also does not specifically address Ridge Road, but focuses on other priority corridors. However, the plan's Multimodal Transportation chapter advocates a well developed street grid to provide vehicular, bicycle, and pedestrian connectivity within and between Arvada's neighborhoods and activity centers.





**LEGEND**

- |   |                            |  |            |   |              |
|---|----------------------------|--|------------|---|--------------|
|  | Low Density Residential    |  | Industrial |  | Agricultural |
|  | Medium Density Residential |  | Public     |  | Vacant       |
|  | Commercial                 |  | Open Space |  | Other        |

0' 500' 1,000'



**Figure 10**  
Existing Land Use



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## Future Land Use and Planned Developments

Wheat Ridge's desires for future land uses in the Planning Study Area are focused on the Northwest Subarea, which is outlined on **Figure 11**. Future uses are proposed to transition from predominantly vacant, industrial, commercial, and office to mixed-use TOD with a focus on employment uses south of 49<sup>th</sup> Place. A transitional corridor along Ward Road is envisioned to focus on commercial uses, while residential uses are encouraged along Tabor Street north of Ridge Road.

In Arvada, future land use changes are focused in two key areas, including north of the Arvada Ridge Station and north and south of Ridge Road, between Simms Place and Quail Street. Northwest of Arvada Ridge Station and Kipling Boulevard, the City would like to see a mix of uses embracing Red Rocks Community College. Northwest of Ridge Road and Quail Street, land that is currently undeveloped and used as a horse pasture is slated for suburban and medium-density residences, while undeveloped land south of Ridge Road is intended for industrial uses.

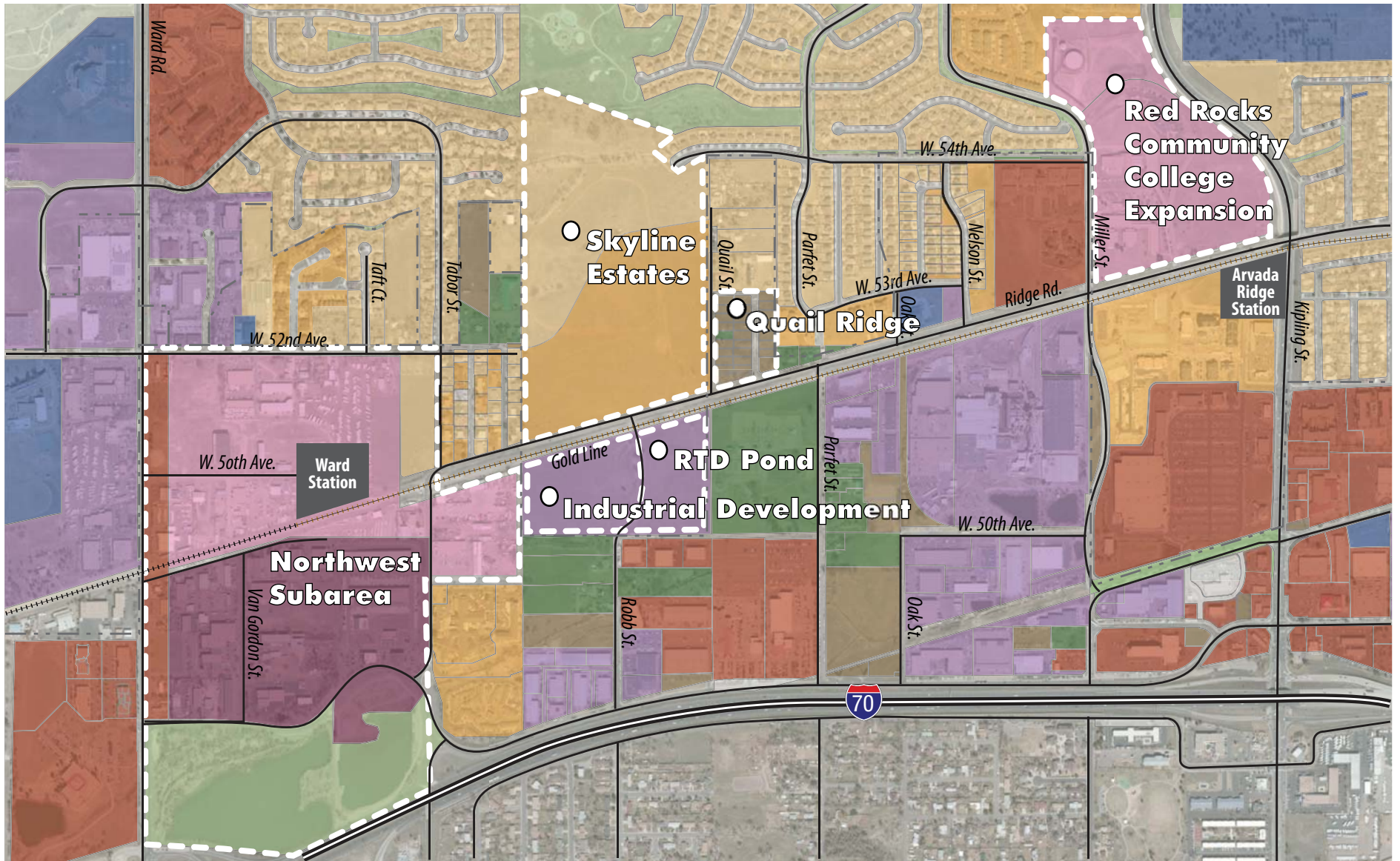
The Planning Study Area includes five known projects that are planned or under construction. These projects are shown on **Figure 11** and summarized below.

- ▶ The Arvada campus of Red Rocks Community College is adding a two-story, 50,000-square-foot building that will connect to the existing one-story building. Construction is expected to complete by the fall of 2016. The project would allow the school's full-time student population to triple from 300 to 900.
- ▶ The remainder of the Skyline Estates subdivision, already consisting of approximately 300 homes, will fill in undeveloped land north of Ridge Road, between Simms Place and Quail Street.
- ▶ The Quail Ridge subdivision north of Ridge Road, between Quail and Parfet streets in Wheat Ridge, consists of a residential development with specific characteristics currently being planned.
- ▶ An industrial site south of Ridge Road, west of Robb Street, could potentially be developed by George T. Sanders Company. The company has conducted a pre-application meeting with Arvada to discuss construction of a 100,000-square-foot building on about 4.7 acres, which would create 20-30 full-time jobs. The company would sell another 6 acres to other industrial uses.
- ▶ An RTD detention pond south of Ridge Road, east of Robb Street, is under construction.













## Zoning

Existing and future land uses in the Planning Study Area are regulated by the zoning codes of Arvada and Wheat Ridge, which define permitted uses among other requirements, such as building height, setbacks, and parking ratios. The area contains several zoning districts among both jurisdictions, as shown on **Figure 12**. In general, approximately one-third of the area is zoned for industrial uses, including much of the southern portion of the Northwest Subarea, slated for employment-focused TOD. Industrial uses are also allowed in the area where Skyline Estates plans to expand. All of the parcels zoned for residential uses lie north of Ridge Road.





**LEGEND**

- |  |  |  |
|--|--|--|
|  Low Density Residential    |  Public       |  Other                      |
|  Medium Density Residential |  Open Space   |  Mixed Use                  |
|  Commercial                 |  Agricultural |  Mixed Use / Employment TOD |
|  Industrial                 |  Vacant       |  Future Developments        |

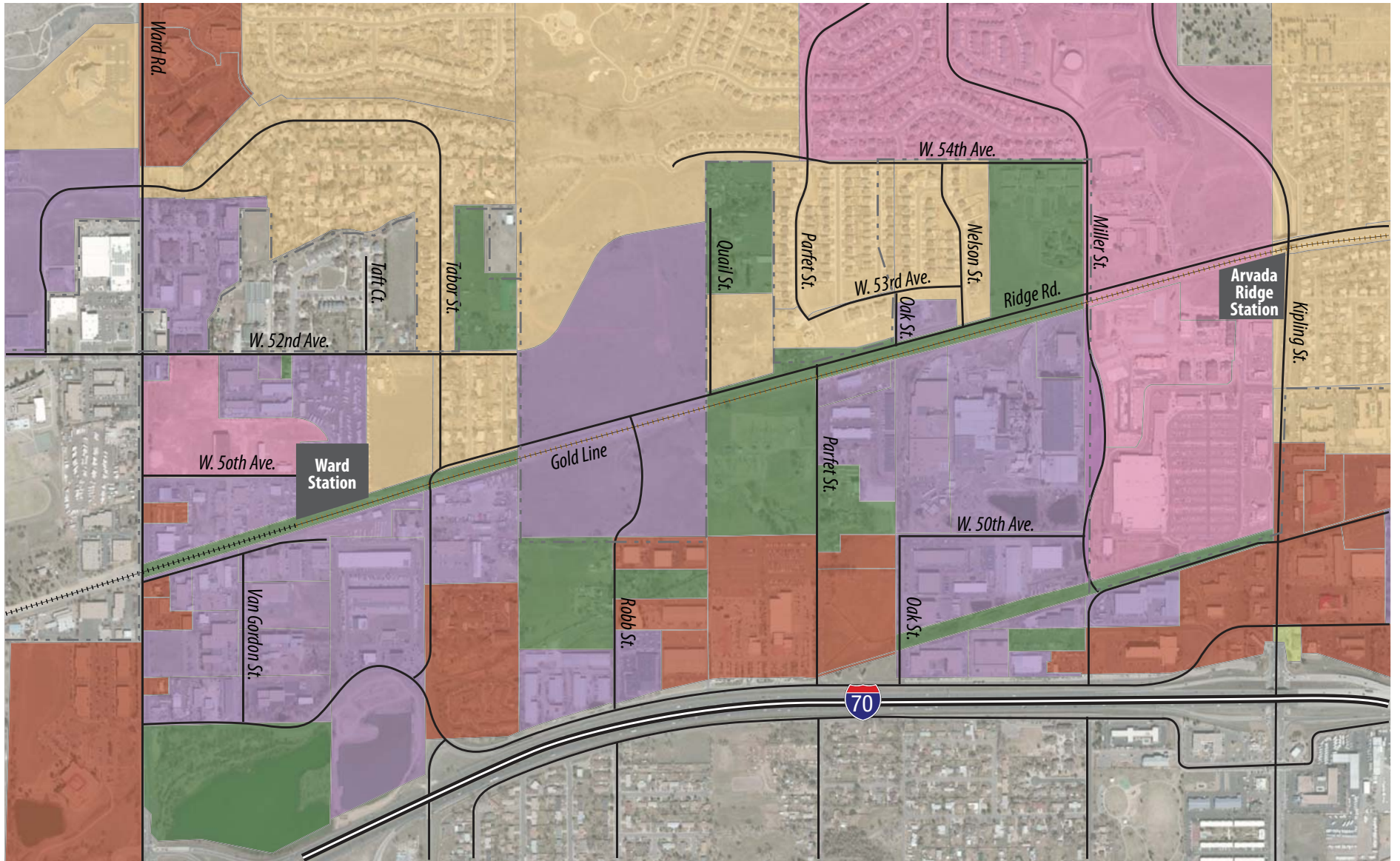
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**Figure 11**  
Future Land Use



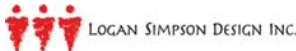




**LEGEND**

- |   |  |   |
|---|--|---|
|  Residential |  Industrial   |  Mixed Use |
|  Commercial  |  Agricultural |   |

0' 500' 1,000'



**Figure 12**  
Generalized Zoning

Land zoned for agricultural uses covers approximately one-third of the Planning Study Area in Wheat Ridge, including the proposed Quail Ridge subdivision and the existing electric substation. Commercially zoned land in Wheat Ridge is concentrated near I-70. A 14-acre property in the Northwest Subarea in Wheat Ridge was rezoned in 2012 to the newly created Mixed Use-Commercial TOD zoning district, allowing for taller buildings and reduced parking ratios, while requiring development to meet architectural design guidelines that promote TOD. In Arvada, a mix of uses is permitted north of 54<sup>th</sup> Avenue and east of Miller Street.

## D. FUTURE TRANSPORTATION

### Future Transit System

The existing transit system map provided as **Figure 8** also shows the planned Gold Line, which will provide rail transit service between Denver Union Station (DUS) and the Ward Station. The 17 mile trip on the Gold Line between DUS and Ward Road is anticipated to take 25 minutes using the Gold Line. Approximately 3,000 daily boardings are forecasted at the Ward Station in 2030. The Gold Line Traffic Impacts Technical Memorandum predicts access to the Gold Line at the Ward Station to be approximately 50 percent each by automobile and bus, with small percents by walking and bicycle.

Approximately 290 parking spaces are planned at the Ward Station for the 2016 opening day. Provisions have been made for addition of up to 150 spaces at the station to accommodate growing demand.

RTD is currently conducting a study to determine how buses will be rerouted with the opening of the Gold Line in 2016. RTD's service planner currently anticipates that the 72X bus route will be discontinued between Ward Road and downtown with the opening of the Gold Line, and that the bus route may be reconfigured as a Gold Line feeder. The possibility of Routes 52 and 72 being routed to the Ward Station, along with the specific bus ingress and egress at the station, is being evaluated as part of the RTD study, scheduled for completion in the fall of 2014.

### Planned Bicycle and Pedestrian System

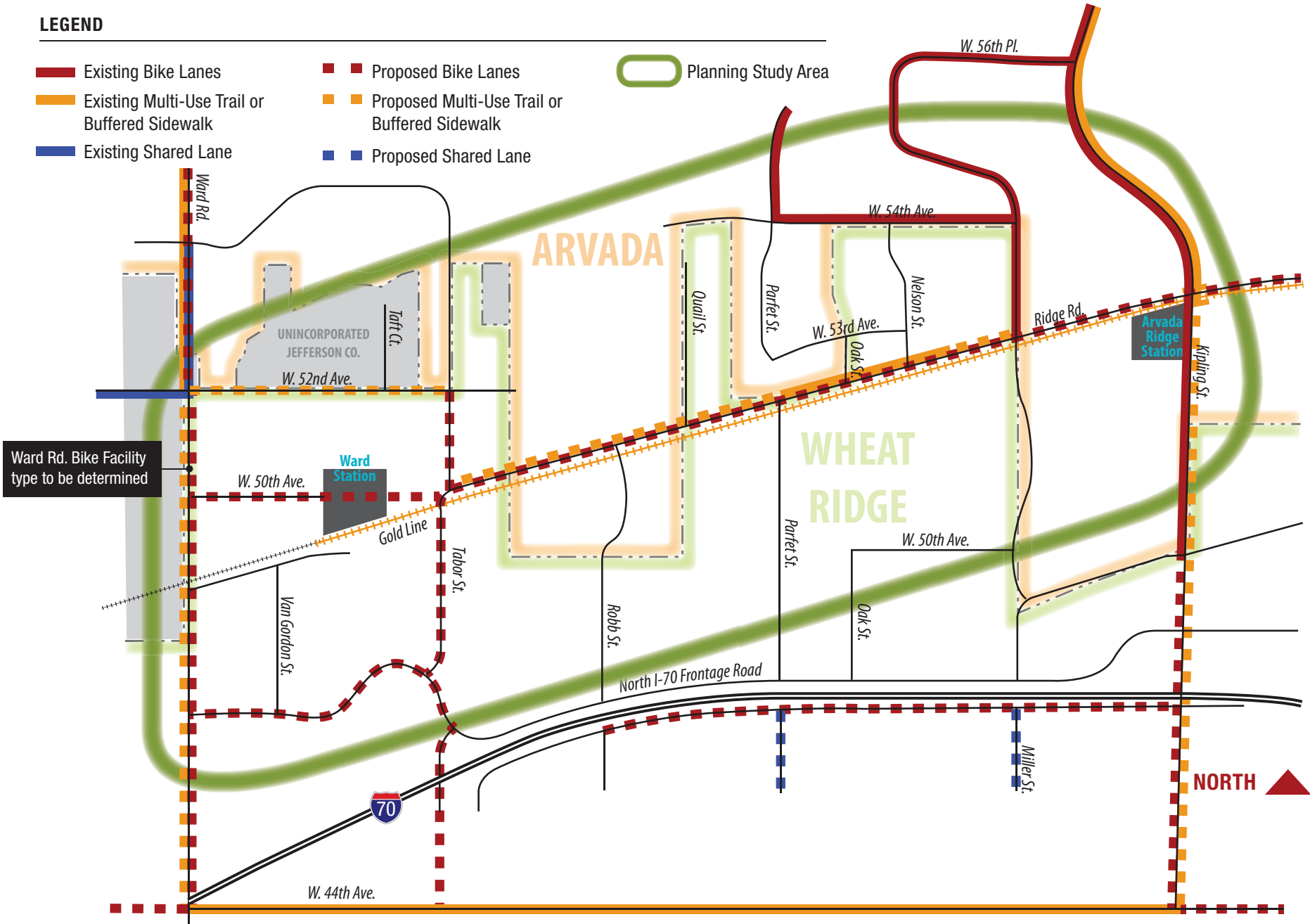
Proposed improvements to the bicycle and pedestrian systems in and around the planning study area were compiled primarily from four sources: the Wheat Ridge Northwest Subarea Plan (originally adopted in 2006 and updated in 2013), the Wheat Ridge Bicycle and Pedestrian Master Plan (2010), the Arvada Bicycle and Trail Master Plan, and the Arvada Comprehensive Plan (2014).

**Figure 13** provides a compilation of the proposed bicycle and pedestrian improvements contained in these plans. Included in the proposed improvements is an extensive network of on-street bike lanes on study area streets, including Ridge Road continuing west onto 50<sup>th</sup> Avenue, Ward Road, Tabor Street, the north and south I-70 Frontage Roads, and Kipling Street south of Ridge Road.

The cities' plan maps do not explicitly depict all of the detached and attached sidewalks that are proposed on study area streets, so these sidewalks are not depicted on **Figure 13**. However, both cities' street standards include continuous sidewalks on all city streets. Additionally, both cities' plans place a strong emphasis on providing high quality sidewalks and pedestrian crossing accommodations within TOD areas like those surrounding the Ward and Arvada Ridge stations that comprise a majority of the study area.

**LEGEND**

- Existing Bike Lanes
- Existing Multi-Use Trail or Buffered Sidewalk
- Existing Shared Lane
- Proposed Bike Lanes
- Proposed Multi-Use Trail or Buffered Sidewalk
- Proposed Shared Lane
- Planning Study Area



Ward Rd. Bike Facility type to be determined



**Figure 13**  
Bicycle System Plans



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## Planned Street Network

**Figure 14** shows the existing study area street network along with the two new road connections that are planned. Both new road connections are part of RTD's Gold Line/Ward Station project, including:

- ▶ Extension of Ridge Road west of Tabor Street and through the Ward Station to connect with 50<sup>th</sup> Avenue, which will be reconstructed to Ward Road
- ▶ Taft Court extending from the Ward Station north to 52<sup>nd</sup> Avenue

## Travel Demand Forecasts

Baseline 2035 traffic forecasts for study area roadways were developed based on regional travel model results from the Arvada Comprehensive Plan development process and forecasts developed as part of the Gold Line Environmental Impact Statement process, which were very closely matched with each other on major streets including Kipling Street and Ward Road. Forecasts assume that the Gold Line is in place. Forecasted 2035 traffic forecasts are shown on **Figure 14**.

**Figure 14** also shows intersection level of service (LOS) findings at three key study area intersections. LOS is a frequently used measure of congestion on roadways and at intersections measured on a scale from A to F, with LOS A representing light traffic conditions with essentially free-flow conditions and LOS F representing over-capacity conditions with very high levels of congestion and delay. LOS D or better is typically considered acceptable operations during peak periods at urban or suburban intersections.

- ▶ The signalized intersection at Ward Road/52<sup>nd</sup> Avenue is expected to operate at LOS E in the AM and PM peak hours in 2035 with the current lane configuration.
- ▶ The intersection of Ward Road/50<sup>th</sup> Avenue would operate at LOS F in both peak hours with its current stop-sign control for 50<sup>th</sup> Avenue. If the intersection were to be signalized, LOS is projected to improve to A in the AM peak hour and C in the PM peak hour.
- ▶ Ridge Road/Miller Street is expected to operate at acceptable LOS B in the AM peak hour and LOS C in the PM peak hour with the current four-way stop control and single lane approaches in all four directions.

## Ward Road Traffic Analysis

Due to the importance of providing convenient Ward Station access to Ward Road, an additional traffic analysis was conducted on Ward Road intersections. A particular focus of this analysis was the intersection of 50<sup>th</sup> Avenue/Ward Road to evaluate potential signalization at this location.

The RTD Goldline planning team developed 2030 traffic forecasts for Ward Road intersections that are presented in the 2009 *FasTracks Gold Line Traffic Impacts Technical Memorandum*. **Table 2** shows the DRCOG 2035 forecasts for the two traffic analysis zones (TAZs) immediately surrounding the station: 564 to the north and 580 to the south. A review of DRCOG 2030 forecasts showed similarly modest household and employment growth projections for these TAZs. Thus, the traffic forecasts developed by DRCOG and RTD, as reflected in the **Figure 14** baseline forecasts, do not reflect significant TOD around the Ward Station.



**LEGEND**

XXXX Forecasted 2035 Daily Traffic Volumes

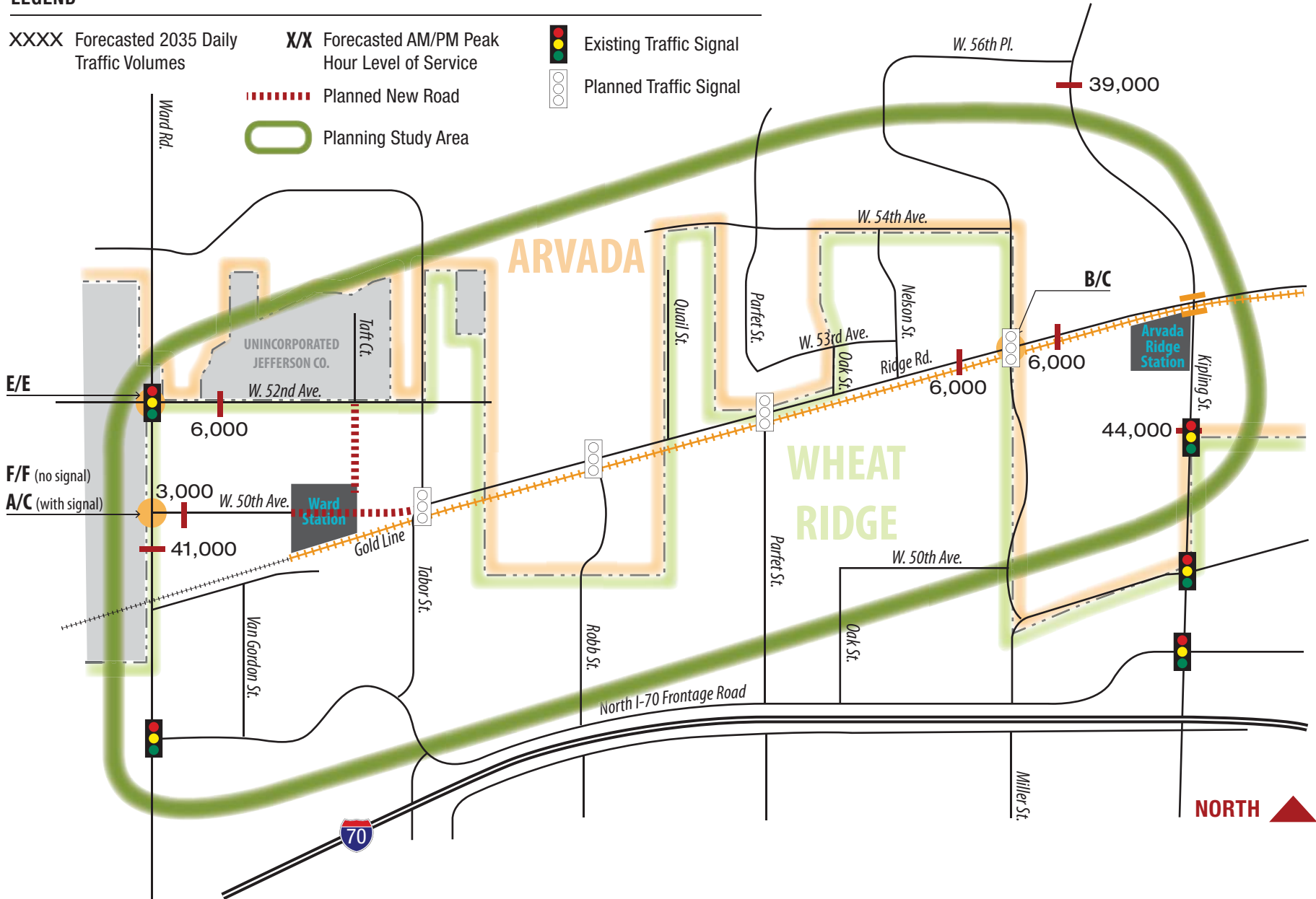
X/X Forecasted AM/PM Peak Hour Level of Service

 Existing Traffic Signal

 Planned New Road

 Planned Traffic Signal

 Planning Study Area



NORTH 

**Figure 14**  
Planned Street Network and Traffic Forecasts

**Table 2. DRCOG 2035 Land Use Forecasts**

TAZ	2010		2035		2010 to 2035 Growth	
	Households	Employment	Households	Employment	Households	Employment
564	457	1,310	751	1,535	294	225
580	46	1,564	215	1,847	169	283

In order to provide forecasts that do account for planned TOD, land use type and density assumptions were applied to Wheat Ridge's *Northwest Subarea Plan's* TOD in the vicinity of the Ward Station. **Table 3** displays the assumed land uses for the TOD and the estimated daily trips that would be generated by these uses.

**Table 3. TOD Land Use Assumptions**

Land Use Category	Residential Dwelling Units	Retail (Square Feet)	Office (Square Feet)	Daily Trips (Trips per Day)
Mixed Use TOD	360	17,400	435,600	8,160
Mixed Use/Employment TOD	280	87,100	1,306,800	17,040
Residential Transition	48	-	-	5,110
Commercial Transit to Ward Rd	-	52,270	130,700	6,060
<b>Subarea Total</b>	<b>688</b>	<b>156,770</b>	<b>1,873,100</b>	<b>36,370</b>

Traffic generation based on TOD assumptions described above was added to the baseline 2035 forecasts described above to derive the 2035 traffic forecasts with TOD that are shown on **Figure 15**. TOD traffic forecasts were developed using ITE *Trip Generation Manual* trip generation factors reduced by 30 percent to reflect the high transit, bike and pedestrian mode shares expected for relatively high-density, mixed-use TOD. A 40 percent share of the TOD generated traffic was assigned to Ward Road. Traffic forecasts assume that the Ward Road/50<sup>th</sup> Avenue intersection would be signalized in the future. If the intersection is not signalized, westbound left-turning vehicles would be more attracted to 52<sup>nd</sup> Avenue due to its signal and ease of completing left-turning movements.

### Traffic Operations

Traffic operations were reviewed for both 2016 Gold Line opening year and 2035 forecasts with TOD. Opening year traffic operations results were provided from the 2009 *FasTracks Goldline Traffic Impacts Technical Memorandum*. The 2035 traffic operations were evaluated based on the traffic forecasts shown on **Figure 15** with TOD. **Table 4** displays the LOS and delay at 50<sup>th</sup> Avenue and 52<sup>nd</sup> Avenue. The 2016 scenario evaluated 50<sup>th</sup> Avenue without a signal in. The 2035 evaluations are provided both without and with a signal at 50<sup>th</sup> Avenue. It can be seen that without signalization of 50<sup>th</sup> Avenue, the westbound approach would exceed normal LOS F delays.

Figure 15. 2035 Traffic Forecasts with TOD

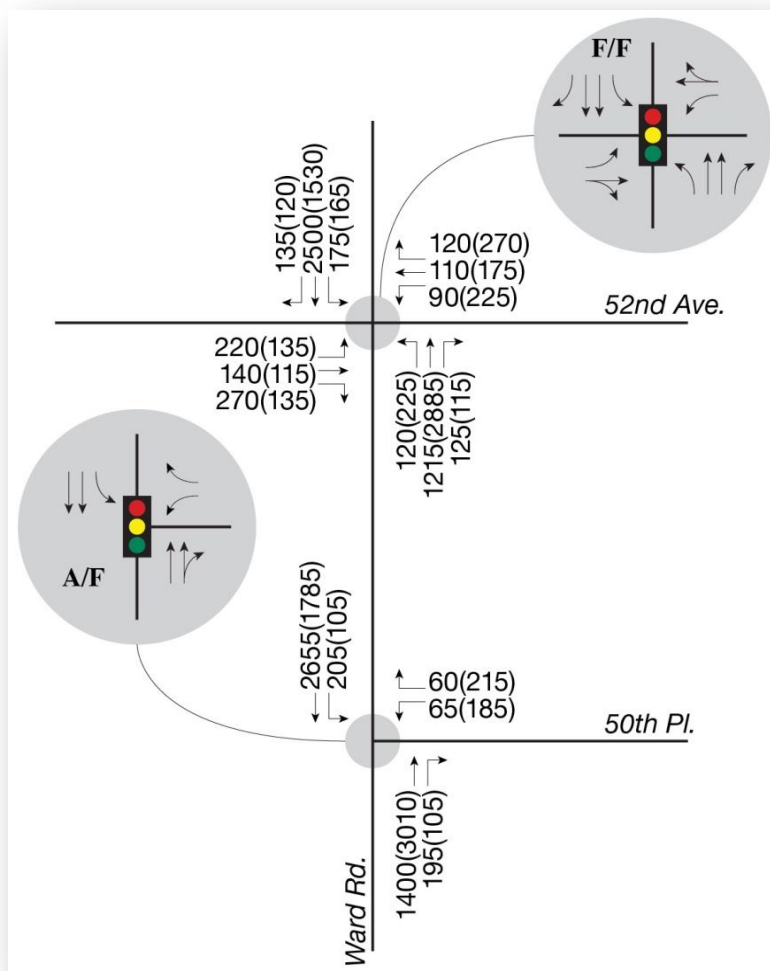


Table 4. Ward Road Intersection Levels of Service

Intersection	2015		2035	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
50 <sup>th</sup> Avenue (Unsignalized)	F (>100)	F (>100)	F (error)	F (error)
50 <sup>th</sup> Avenue (Signalized)	--	--	A (8)	F (>100)
52 <sup>nd</sup> Avenue (Signalized)	D (43)	D (43)	F (>100)	F (>100)

It can be seen that with 50<sup>th</sup> Avenue signalized, there is still LOS F during the PM peak hour but it is within measurable LOS delays. Year 2035 LOS in the PM peak would be LOS F at both intersections with or without signalization due to the fact that Ward Road forecasts are beyond the capacity of a 4-lane roadway.

## Signal Warrant Analysis

Using the Manual on Uniform Traffic Control Devices (MUTCD), signal warrants were reviewed for the Ward Road/50<sup>th</sup> Avenue intersection using the 2035 traffic forecasts. Warrant 3 (Peak Hour Vehicular Volume) was reviewed for this location. With the high major street volumes present on Ward Road, the peak hour traffic volume required on the 50<sup>th</sup> Avenue approach to Ward Road is 150 vehicles per hour (vph). **Table 5** shows the 50<sup>th</sup> Avenue approach threshold forecasts.

**Table 5. Signal Warrant Analysis for Westbound 50<sup>th</sup> Avenue**

Scenario	Peak Hour Westbound Approach Volume
MUTCD Volume Threshold	150
Gold Line Opening Year	75
2030 with Minimal TOD	173
2035 with TOD Build-out	400

This comparison of the 75 vph opening year and 400 vph 2035 forecasts with the 150 vph signal warrant threshold shows that less than 25 percent of the forecasted growth would be required to meet the peak hour signal warrant at this location.

## Progression along Ward Road

Progression along Ward Road was also reviewed with a signal at 50<sup>th</sup> Avenue. Ward Road, which serves as State Highway 72 in the study area, is categorized by CDOT as a Non-Rural Principal Highway (NR-A). According to CDOT's State Highway Access Code, signal progression on an NR-A highway should provide progression of 35 percent or better efficiency, and a new signal should not degrade the existing signal progression. The progression between 52<sup>nd</sup> Avenue and the north I-70 Frontage Road with the addition of a signal at 50<sup>th</sup> Avenue ranges from approximately 55 percent to 60 percent progression for both peak hours. The 50<sup>th</sup> Avenue signal would not affect the established progression along Ward Road.

The distance between the proposed signal at 50<sup>th</sup> Avenue and the existing signal at 52<sup>nd</sup> Avenue is approximately 850 feet, which exceeds CDOT's rule of thumb for minimal signal spacing of 600 to 660 feet. The distance to the next signal to the south of 50<sup>th</sup> Avenue is the north I-70 Frontage Road, which is approximately one-third mile away.

## Summary of Benefits of a Ward Road/50<sup>th</sup> Avenue Traffic Signal

The addition of a traffic signal at the Ward Road intersection with 50<sup>th</sup> Avenue would be beneficial for a number of reasons:

- ▶ Without a signal the intersection of 50<sup>th</sup> Avenue, the most direct and primary access between the Ward Road Station and Ward Road, would occur at an unsignalized intersection with extremely long delays, particularly for drivers turning left from 50<sup>th</sup> Avenue to southbound Ward Road.
- ▶ A signal would provide a safe bicycle and pedestrian crossing of Ward Road from the station, extending bike/pedestrian connectivity with the planned bicycle lanes and sidewalks on the 50<sup>th</sup> Avenue/Ridge Road extension west of the station.

- ▶ A signal would allow RTD buses accessing the station to use 50<sup>th</sup> Avenue for both ingress and egress, reducing bus travel times and eliminating the impacts of buses that would otherwise use 52<sup>nd</sup> Avenue.
- ▶ The signal would not degrade signal progression along Ward Road, which would exceed the CDOT green-band guidelines for Ward Road.
- ▶ A comparison of traffic forecast with established traffic signal warrants shows that a relatively small proportion of the station area build-out forecasts would generate sufficient volumes to meet signal warrants.

## E. URBAN DESIGN CHARACTER

### Ridge Road Corridor

As the Gold Line is currently under construction, the urban design character along Ridge Road is largely defined by the linearity of the tracks along the south side of the corridor and the expanse of open space the rail right-of-way creates (**Figure 16**). RTD has recently completed curb and gutter with rock and a chain link fence as part of the Gold Line project.

North of Ridge Road, the urban design varies between rural and suburban in character, with intermittent sidewalks and land uses rotating from residential to agricultural. Where sidewalks exist, they are detached, including an approximately 1,200-foot section buffered by a tree lawn roughly bound by Parfet and Nelson streets and an almost 700-foot crumbling path bordered by dirt and weeds between Miller Street and Kipling Boulevard. Large trees dot the roadway to the north, while power lines run along sections north and south. Where bus stops exist, amenities like benches and shelters are lacking.

### Tabor Street

South of Ridge Road, Tabor Street rises northward from the I-70 frontage road and light industrial uses to the west are set lower in elevation than the street, providing excellent westward views of the mountains. A stretch of sidewalk lines the east side of the street along an assisted living facility. The rest of Tabor Street lacks sidewalks. North of Ridge Road, the right-of-way is constrained by single-family homes facing the street on the east, set back 20 feet to 30 feet with one residence adjacent to the roadway. In contrast, undeveloped land and an alpaca farm to the west create a sense of openness. North of 52<sup>nd</sup> Avenue, the streetscape is lined with well-maintained, 2-story homes with nicely landscaped front yards (**Figure 17**).

### 52<sup>nd</sup> Avenue

52<sup>nd</sup> Avenue is a quiet street with a mix of residential buildings and light industrial / flex uses. The fronts and sides of homes are set back 30 feet to 50 feet from the street. The street largely lacks sidewalks, but feels safe to walk down due to low traffic volume and a sense of enclosure provided by mature trees (**Figure 17**).

### 50<sup>th</sup> Avenue

The tone of this area is set by industrial uses that delineate the southern edge of 50<sup>th</sup> Avenue and vacant land and the Ward Gold Line Station site to the north. Partly due to the dead-end of 50<sup>th</sup> Avenue, the area feels isolated. An attached sidewalk on the northern side of the street that leads to nowhere and a lack of landscaping contribute to the non-pedestrian friendly environment (**Figure 17**).



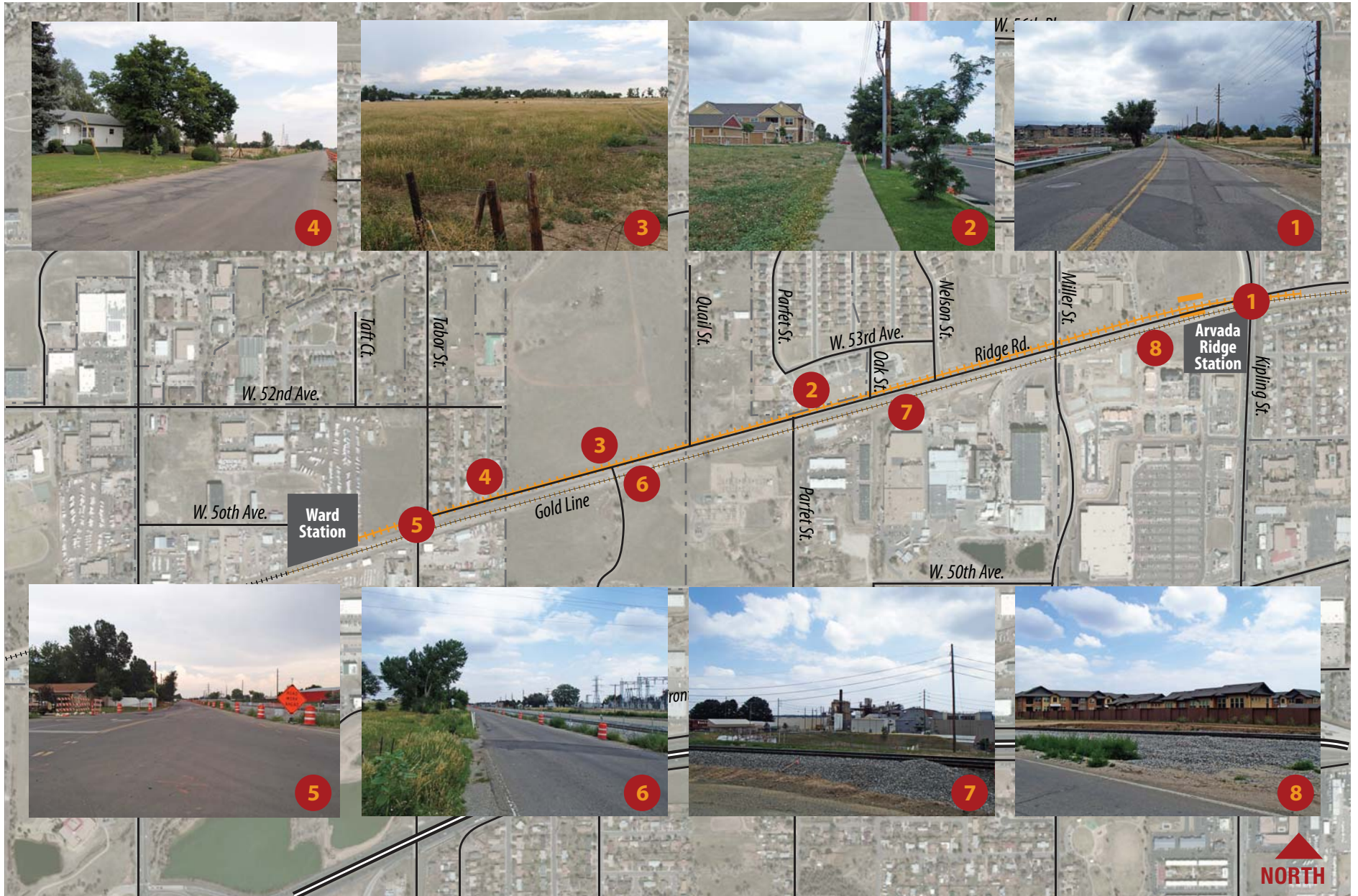
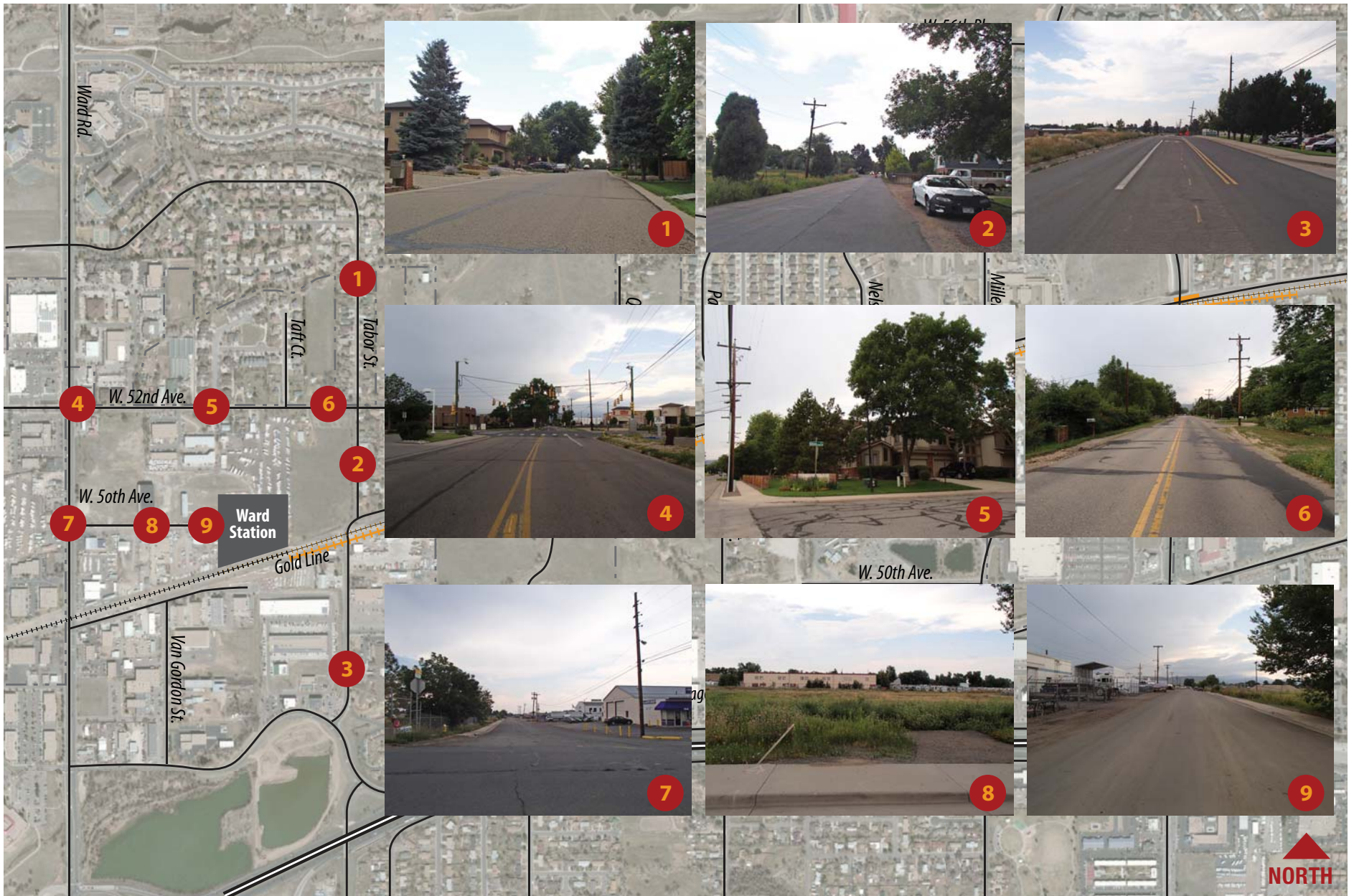


Figure 16  
Existing Urban Design: Ridge Road





**Figure 17**  
Existing Urban Design:  
Tabor Street, W. 52nd Avenue, W. 50th Avenue



## IV. TRANSPORTATION IMPROVEMENT NEEDS

Based on the survey and evaluation of existing and future conditions, a series of multi-modal improvement needs was developed to improve access to the Ward and Arvada Ridge stations and the TOD planned in the station areas. The needs are summarized below and, where appropriate, depicted on **Figure 18**.

### *Bus Routes*

As indicated previously, RTD is currently conducting a study to develop preliminary plans for bus rerouting with the opening of the Gold Line in 2016. It is expected that RTD will coordinate with Wheat Ridge and Arvada and other key stakeholders in refining the preliminary plan to develop a final bus plan for implementation with the Gold Line opening. Following is a summary of the key needs that have been identified by participants in the Ward Station/Ridge Road Catalytic Project for consideration in the bus planning. (Refer to **Figure 8** for reference to existing bus routes.)

- ▶ Existing Route 72X, connecting between downtown Denver and western Arvada, is expected to be eliminated with the opening of the Gold Line. A new local route or routes should be established to replace Route 72X to provide service between the Ward Station and neighborhoods in Arvada, Wheat Ridge, and Jefferson County to the west. This route should also include a stop south of the Ward Station near the Ward Road/north I-70 Frontage Road intersection to service the Kaiser Permanente facility.
- ▶ Route 44 along 44<sup>th</sup> Avenue currently stops at the park-n-Ride northwest of the I-70/Kipling interchange, which provides relatively close accessibility for Kaiser Permanente. When the park-n-Ride is closed with the opening of the Ward Station, RTD should explore routing the 44 bus to provide a stop which directly serves Kaiser Permanente.

### *50<sup>th</sup> Avenue/Ward Road Traffic Signal*

A traffic signal is recommended at the 50<sup>th</sup> Avenue/Ward Road intersection as soon as it can be approved, funded, and constructed. With this signal, 50<sup>th</sup> Avenue would become the primary access route between the Ward Station and Ward Road for drivers coming to and exiting the station from the north or south. A signal would provide a safe bicycle and pedestrian crossing of Ward Road from the station, extending bike/pedestrian connectivity with the planned bicycle lanes and sidewalks on the 50<sup>th</sup> Avenue/Ridge Road extension west of the station. Additionally, a signal would allow RTD buses accessing the station to use 50<sup>th</sup> Avenue for both ingress and egress, reducing bus travel times and eliminating the impacts of buses that would otherwise use 52<sup>nd</sup> Avenue.

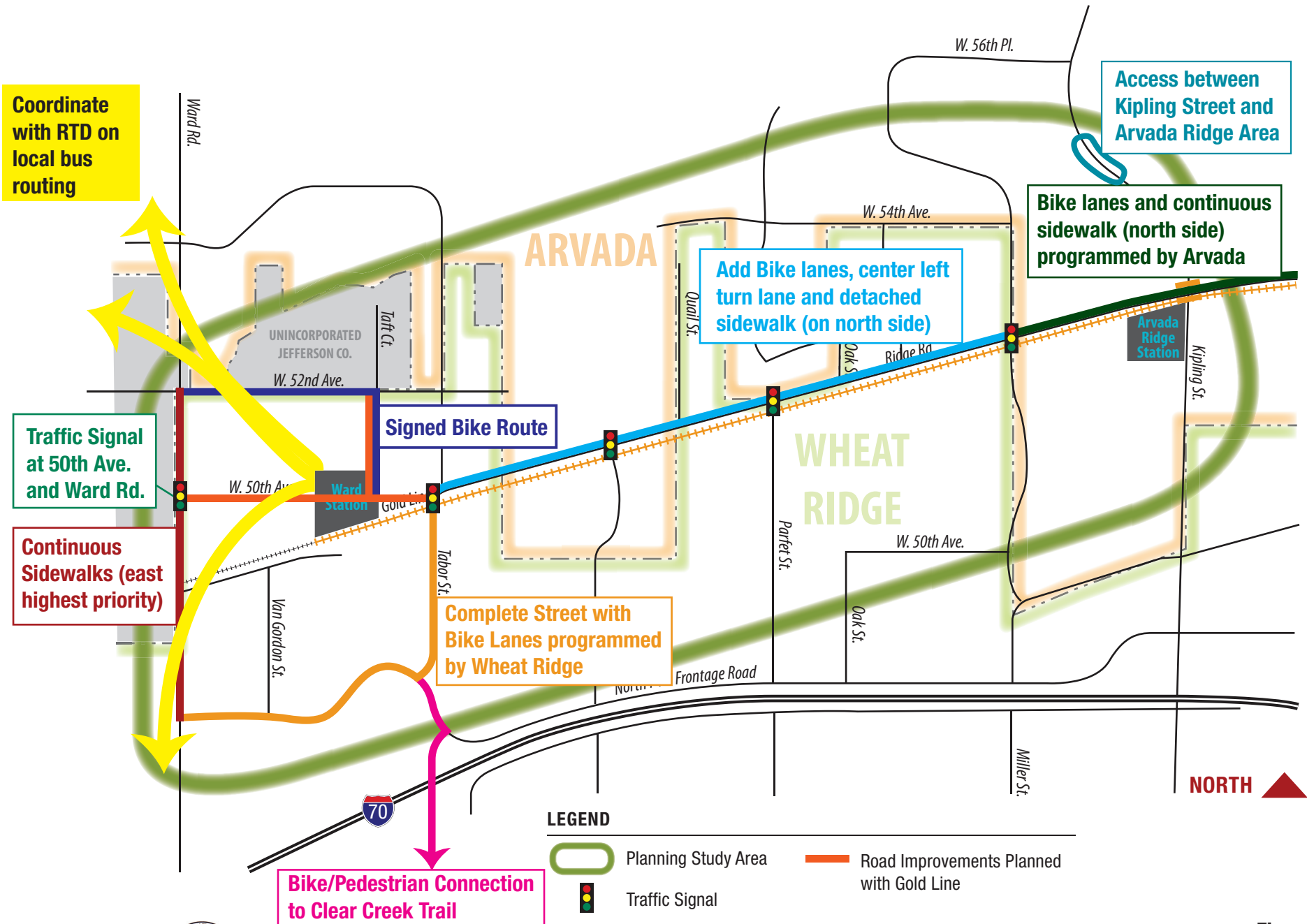


Figure 18  
Recommended Access Improvements

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## *Bike and Pedestrian Connections to Ward Road*

**Figure 18** shows three different bike and pedestrian improvements in the vicinity of the Ward Station that are recommended in the short term to coincide with or follow soon after the 2016 opening of the Gold Line, including:

- ▶ Improvement to the Tabor Street/north I-70 Frontage Road route from the station to Ward Road, including on-street bike lanes and continuous sidewalks. These improvements have been funded and are programmed by Wheat Ridge.
- ▶ Create a signed bike route on the Taft Street/52<sup>nd</sup> Avenue route between the station and Ward Road. Additional improvement to this section of 52<sup>nd</sup> Avenue may be explored in the mid- to long-range future, but a short-range signing of this route to direct bicyclists from Ridge Road to the existing traffic signal at 52<sup>nd</sup> Avenue/Ward Road and not through the busy Ward Station area is recommended.
- ▶ Continuous sidewalks along the east side of Ward Road between 52<sup>nd</sup> Avenue and the north I-70 Frontage Road are needed as close to the Ward Station opening as possible to allow for safe and convenient walking routes between the station and the existing Ward Road signalized crossings and businesses along the street.

## *Ridge Road Complete Street*

Improvements to Ridge Road between the Ward Station and Miller Street are recommended and are discussed in greater detail in the next chapter. Recommended improvements include on-street bike lanes in both directions, continuous sidewalks on the north side of the street, and center left-turn lanes where needed.

## *Kipling Street Access*

The City of Arvada is currently exploring options to develop a Kipling Street intersection to provide more direct access for the TOD site north of the Arvada Ridge Station. This intersection would also improve the directness of access for Red Rocks Community College and its planned expansion, as well as for other existing and future land uses on both sides of Kipling Street.

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## V. RIDGE ROAD CONCEPTUAL DESIGN

Conceptual designs were developed for the 0.9-mile segment of Ridge Road between Tabor Street and Miller Street. The design concepts were tied into designs that have previously been developed on either side: RTD plans for the extension of Ridge Road west of Tabor Street at the Ward Station on the west and plans developed by the City of Arvada for reconstruction of Ridge Road east of Miller Street to Independence Street. This chapter presents a summary of the approach and assumptions used in the conceptual design and cost estimation processes, followed by descriptions and drawings of long-term and short-term concepts for the road. Cost estimation details are provided in **Appendix B**.

### A. DESIGN APPROACH

#### Approach to Conceptual Design

- ▶ Use of aerial photography and GIS information as opposed to design level survey information to support the conceptual design level of the project.
- ▶ The south curb line (and road edge) of Ridge Road is being constructed as part of the Gold Line improvements for RTD and will not be disturbed by future improvements to Ridge Road.
- ▶ The profile of Ridge Road and connecting roadways will generally remain in the same vertical location. This assists in traffic control and project phasing, as well as matching to side roads. This may introduce impact into adjacent properties, but given the relatively flat grades, this is not considered significant and allows for minor adjustment in final design.
- ▶ Given the flat grades and surrounding terrain, widening was assumed to be minor and would not require landscape walls or major slope work to tie into existing conditions on the north side for Ridge Road.
- ▶ Given that profiles remain largely unchanged, the conceptual design impacts associated with intersecting roads and streets are minimal; for most cases the conceptual design and associated costs do not extend past curb returns at intersections (up side streets).
- ▶ Utility relocations and adjustments were based on visual features and GIS information. A full utility inventory and survey is strongly recommended for Final Design.
- ▶ With respect to storm sewer facilities, the major assumption was that a new system, primarily due to introduction of curb and gutter, would be required along the north side of the road. It was further assumed that any storm sewer needed for the south side of the road has been considered in the curb and gutter introduction by the Gold Line improvements.
- ▶ Undergrounding of electrical lines was assumed to be a project cost for the north side of the road only. This appears to be minor in nature. Oftentimes, there are franchise agreements in place with electrical providers that could be used.

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## Approach to Ridge Road Quantities and Unit Costs

- ▶ The approach to costing the Ridge Road corridor improvements was to provide actual quantities where possible. Percentage values for items that are associated with projects (environmental costs, traffic control and phasing, utility adjustments, etc.) are generally better priced upon completion of further design. The values provided are based on engineering judgment and comparison to similar past projects.
- ▶ Conceptual costs consider a two-phased improvement approach. For example, long term improvement costs assume that short term improvements were previously made. Should the corridor move directly from the current condition to the long term vision without the intermediate phase, the costs for both the short term and long term improvements should, with a few exceptions, be considered the sum of the two estimates provided.
- ▶ Right-of-way costs are generally based on fair market values. Given that this has not been pursued in this corridor to date, the unit prices assume significant cost and include valuation of property impacts such as property owner improvements including fences, walls, landscaping, and other visible surface features within the unit price.
- ▶ For the conceptual level, right-of-way was assumed to be a complete purchase into private properties. For estimating, the quantities assume the length of curb and gutter, additional width for bicycle lanes, additional lanes – where possible in the short term – and roadside needs for sidewalk and/or buffer strips.

Short term improvements assumed that permanent right-of-way (acquisition) would be set at the back of the proposed curb and gutter. Permanent easements were considered as applicable for the area between the back of curb and gutter and back of sidewalk.

Long term improvements assumed that additional right-of-way would be donated as part of redevelopment agreements and, therefore, no additional costs have been provided.

Temporary easements for construction of short term and long term improvements should be considered based upon final design details.

- ▶ Other assumptions related to quantities are noted in the right column of the spreadsheet.
- ▶ Private utilities, unless placed in easement, generally relocate at the utility owner's cost. However, the undergrounding of Xcel is a cost above and beyond relocation above surface. The unit price for undergrounding, if noted, is therefore the difference in cost between relocation and burial. Confirmation of the unit price is subject to Xcel's design and should be validated.
- ▶ As a general rule, if a utility structure required relocation greater than 1 to 2 feet horizontally or vertically, this could have been noted as a remove and reset item. However, given the conceptual nature of design, an allocation (percent of construction bid items) was used as a placeholder for utility relocations.
- ▶ No physical improvements to private properties were assumed beyond those associated within the project rights-of-way and easements.
- ▶ Unit prices are based on CDOT Weighted Average Bid Prices, 2013 for construction, escalated where appropriate based upon 2014 values. (Note: the final 2014 Weighted Average Bid Prices will be released in 2015.)



### **Approach to Short-Term Road Quantities and Unit Costs**

- ▶ Short-term quantities and costs generally include removal of existing features noted in the Improvement Needs by Type table. Removals include existing pavement and features behind the road edge sufficient to reconstruct the new roadway including curb and gutter and detached sidewalks.
- ▶ No improvements to features behind the proposed sidewalks were assumed for the costing.
- ▶ No relocation of major utilities such as lighting, signals, or fire hydrants has been assumed unless noted in the cost spreadsheet.
- ▶ Removal and replacement of fence has been assumed for properties where existing fence is present and impacts are anticipated.

### **Approach to Long-Term Road Quantities and Unit Costs**

- ▶ Long-term quantities and costs generally include adding to short-term improvements. As noted previously, short-term improvements have been assumed as the base condition.
- ▶ Some removal of existing features as noted in the Improvement Needs by Type table will be required such as attached walks (changing to detached) and curb and gutter replacement where long-term widths were not achieved initially.
- ▶ No improvements to features behind the proposed sidewalks were assumed for the costing.
- ▶ No relocation of major utilities such as lighting, signals, or fire hydrants has been assumed unless noted in the cost spreadsheet.
- ▶ Removal of fence (only) has been assumed for properties where existing fence is present and impacts are anticipated. Replacement was not considered given the potential for redevelopment following (or coinciding with) long-term corridor improvements.

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## B. LONG-TERM CONCEPT

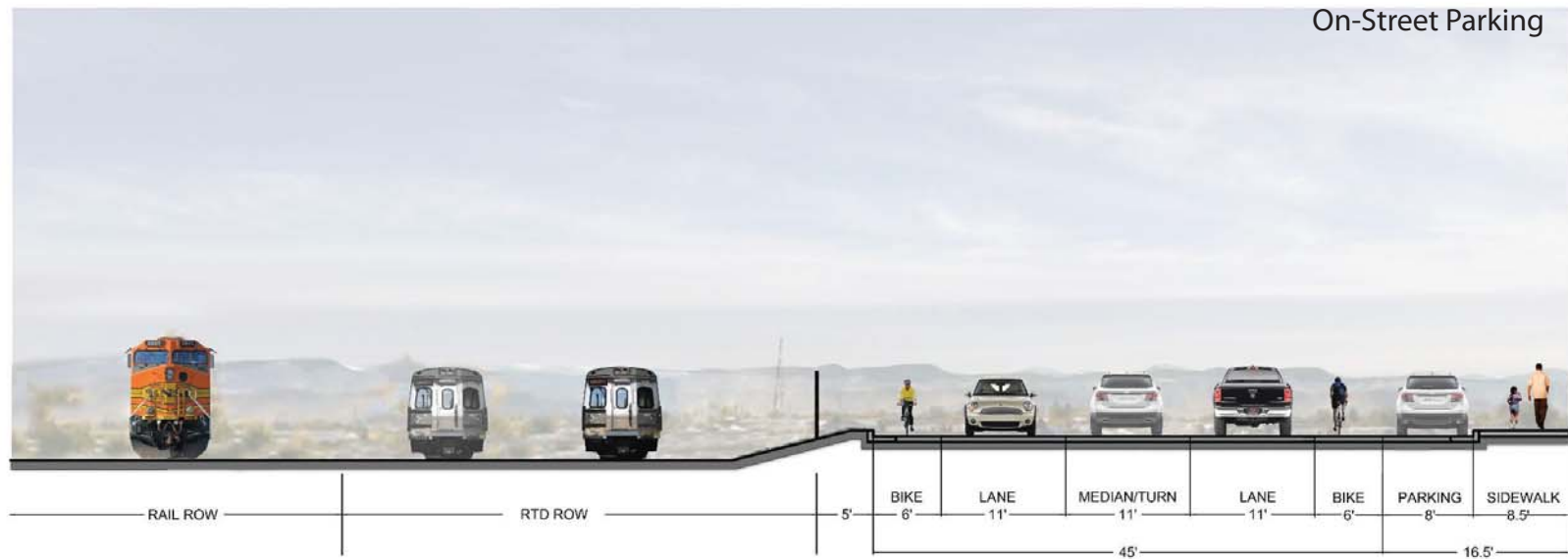
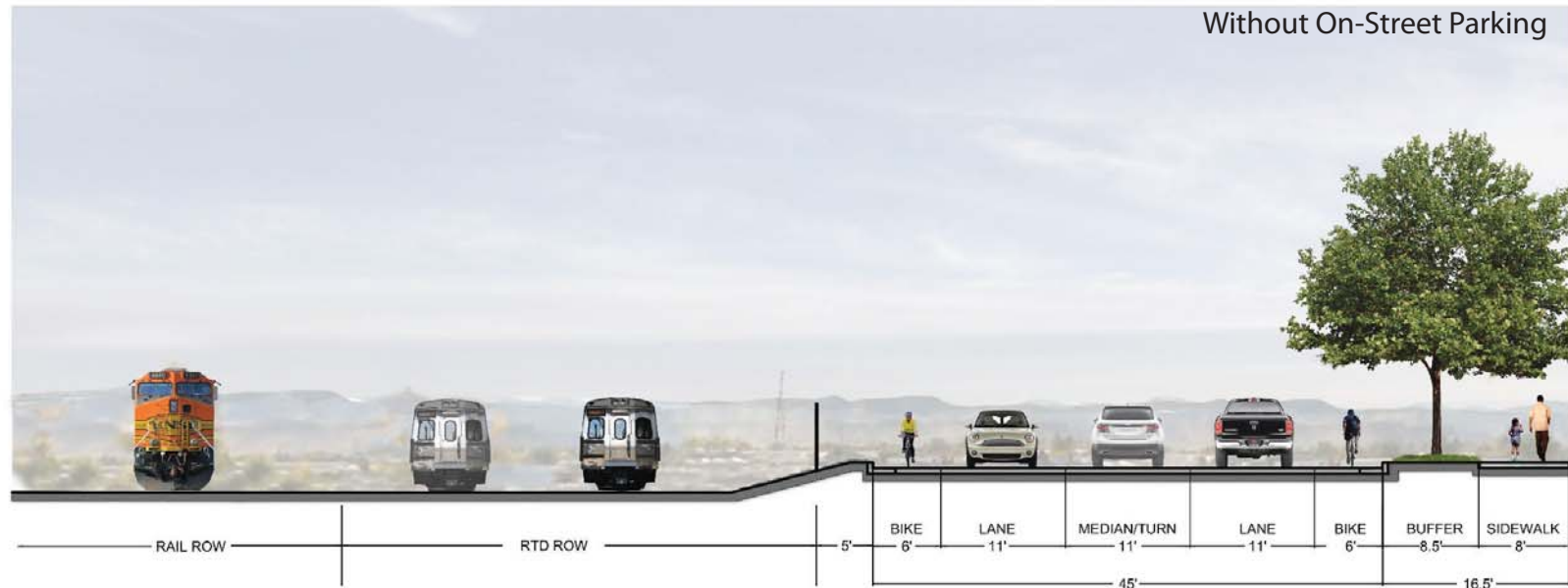
As the major connecting road between the Ward and Arvada Ridge Gold Line stations and as an important access road for both stations and their surrounding TOD, Ridge Road should be designed as a “complete street” with efficient and safe accommodations for motorists, bicyclists, and pedestrians. **Figure 19** shows two options for developing Ridge Road as a complete street that will accommodate all users over the long term. The two typical sections shown have the same total dimensions with a 45-foot street width and a 66.5-foot street right-of-way. As shown previously (**Figure 3**), the street width currently varies from 24 to 40 feet.

For both options, the street would consist of one travel lane in each direction, a center left-turn lane, and on-street bike lanes in each direction. In both cases there is a 5-foot space on the south side of the street as a buffer separating the street from the RTD Gold Line right-of-way.

The two options differ in the use of the 16.5-foot area north of the street. The top typical section shows an 8.5-foot landscape/streetscape buffer between the street and an 8-foot sidewalk. That buffer dimension was selected to allow for conversion to the second option shown below, where on-street parking is provided. The on-street parking option may be applicable with corridor redevelopment, particularly with the mixed use TOD planned in the western part of the street segment near the Ward Station.

**Figures 20-1 through 20-9** show the long-term concept plan from Tabor Street to Miller Street. Planning-level cost estimates were prepared based on assumptions described in Section A. The cost of constructing the long-term option assumes that the short-term options described in the next section have already been constructed. The cost is estimated at \$3.0 million.

**Figure 20-9** shows two different options at the Miller Street intersection. The primary concept shows Ridge Road tying into the City of Arvada’s design plans for Ridge Road east of Miller Street. This concept would stripe the west leg of the intersection to have only one lane in each direction, aligning with the design to the east. The inset Three Lane Alternative shows the desirable three lane Ridge Road section with an eastbound and westbound left-turn lane. This alternative would require widening of a section of Ridge Road east of Miller Street, estimated to cost an additional \$200,000 to \$250,000.



**Figure 19**  
Ridge Road Long Range Typical Sections





Figure 20-1  
Ridge Road Long Range Concept





Figure 20-2  
Ridge Road Long Range Concept



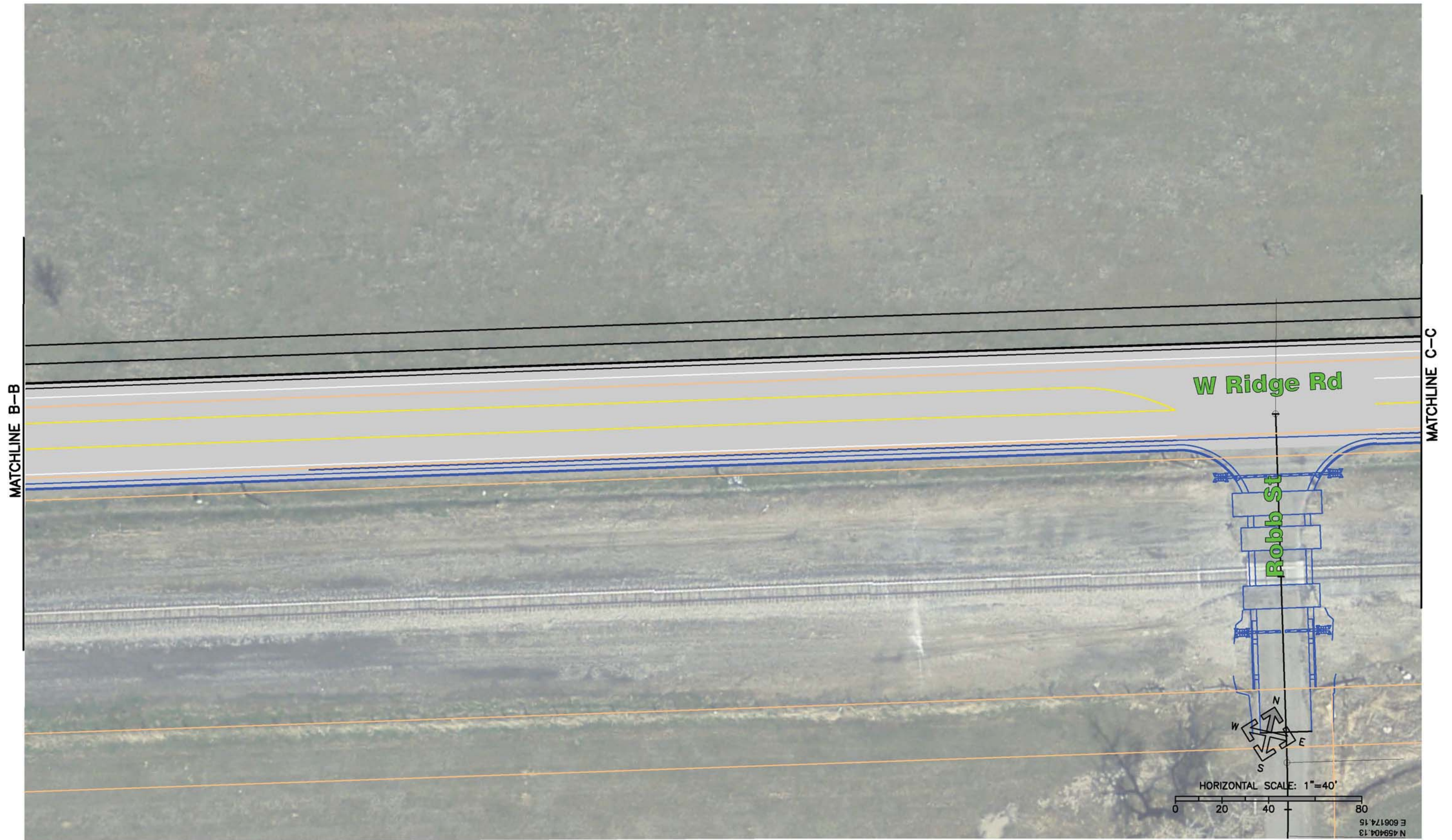


Figure 20-3  
Ridge Road Long Range Concept





Figure 20-4  
Ridge Road Long Range Concept





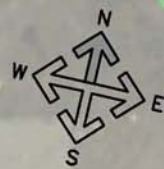
Figure 20-5  
Ridge Road Long Range Concept





MATCHLINE E-E

MATCHLINE F-F



HORIZONTAL SCALE: 1"=40'  
0 20 40 80

Figure 20-6  
Ridge Road Long Range Concept





Figure 20-7  
Ridge Road Long Range Concept





Figure 20-8  
Ridge Road Long Range Concept



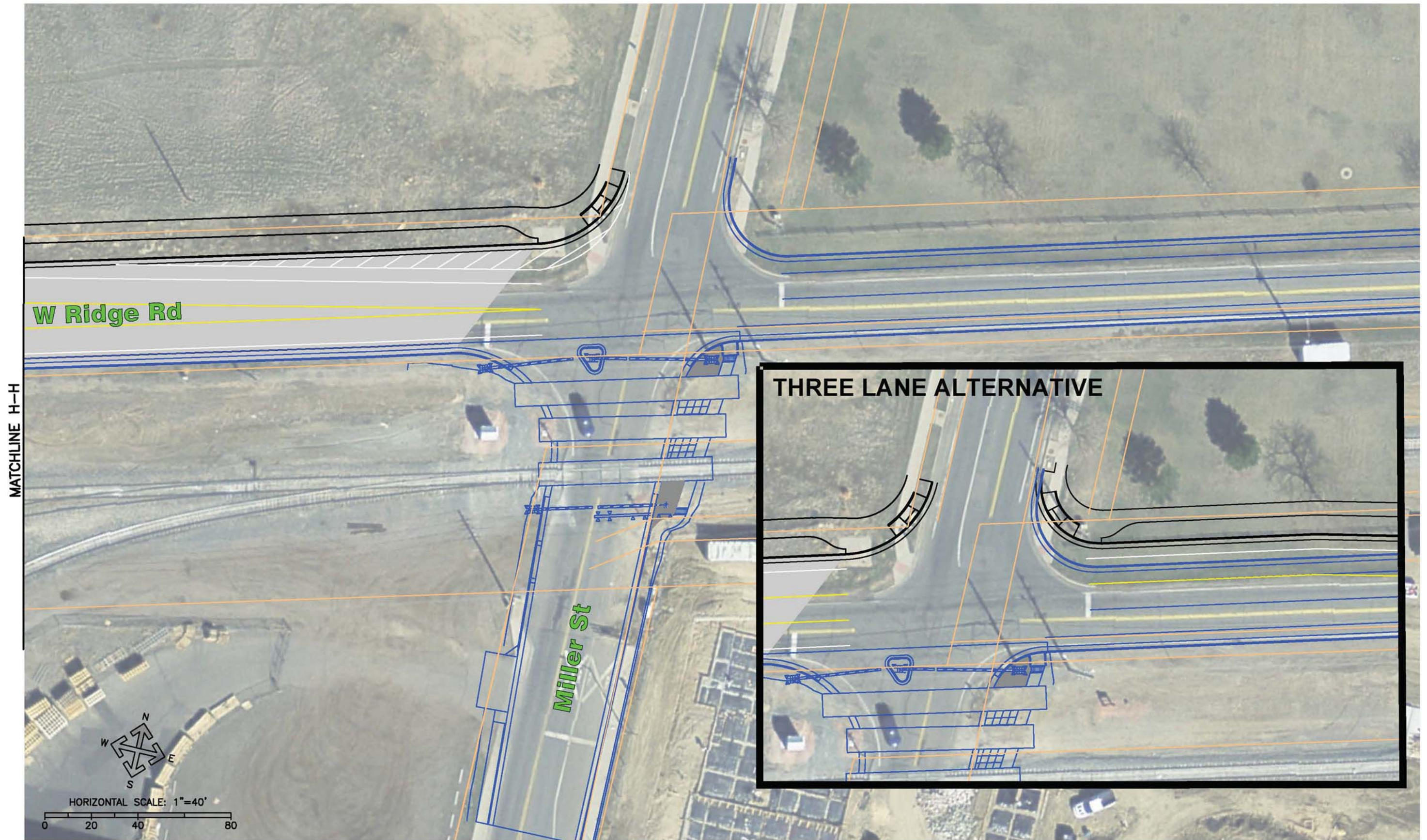


Figure 20-9  
Ridge Road Long Range Concept



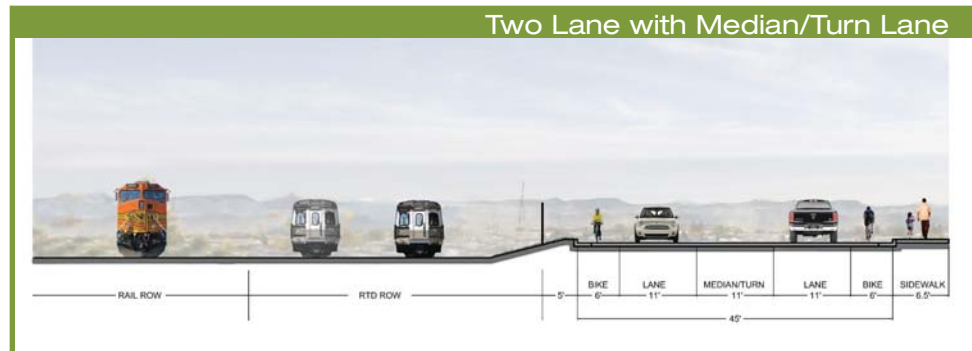
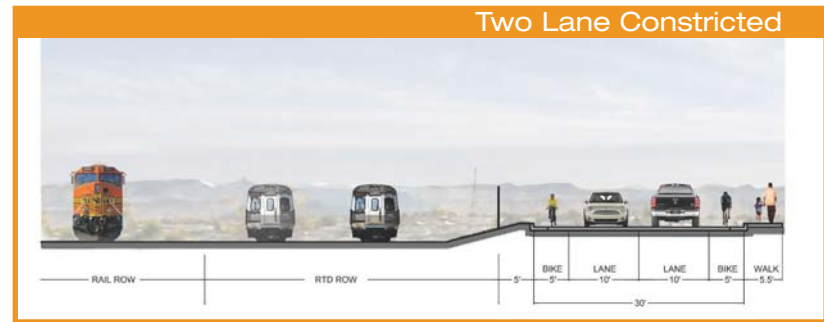
### C. SHORT-TERM CONCEPT

Implementation of the full long-term concept described above may not be feasible in the short-term future due to cost and right-of-way constraints. Additionally, the design details of the buffer area and sidewalk on the north side of the street should be coordinated with future development and redevelopment as it occurs along the corridor. In order to develop a functional street that could be implemented with or soon after the 2016 opening of the Gold Line, a short-term concept has been developed.

**Figure 21** shows three typical sections that could be appropriate short-term designs for different parts of the corridor. The two lane constricted section would be applicable to the most constrained parts of the corridor—the area surrounding the property north of Parfet Street. This area would have no left-turn lane and reduced drive and bike lane dimensions for a 30-foot street width.

The two lane typical section would be applied at both ends of the corridor: adjacent to the existing residential development east of Tabor Street and the segment tying to the planned design east of Miller Street.

**Figures 22-1 through 22-9** show the short-term concept plan from Tabor Street to Miller Street. The cost range is estimated at \$4.0 million.



**Figure 21**  
Ridge Road Short Range Typical Sections





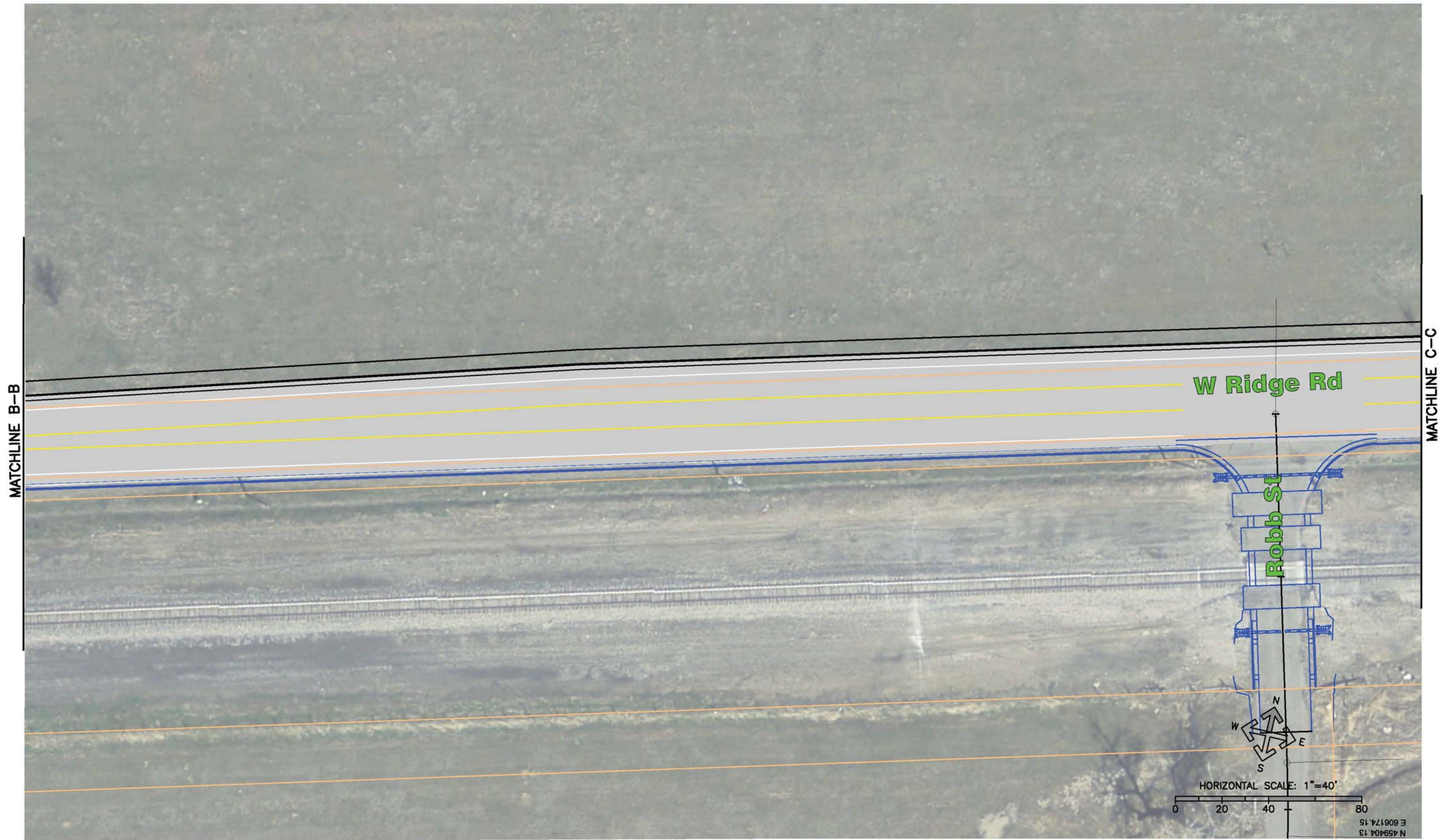
Figure 22-1  
Ridge Road Short Range Concept





Figure 22-2  
Ridge Road Short Range Concept





**Figure 22-3**  
Ridge Road Short Range Concept





Figure 22-4  
Ridge Road Short Range Concept





**Figure 22-5**  
Ridge Road Short Range Concept





Figure 22-6  
Ridge Road Short Range Concept





Figure 22-7  
Ridge Road Short Range Concept





Figure 22-8  
Ridge Road Short Range Concept



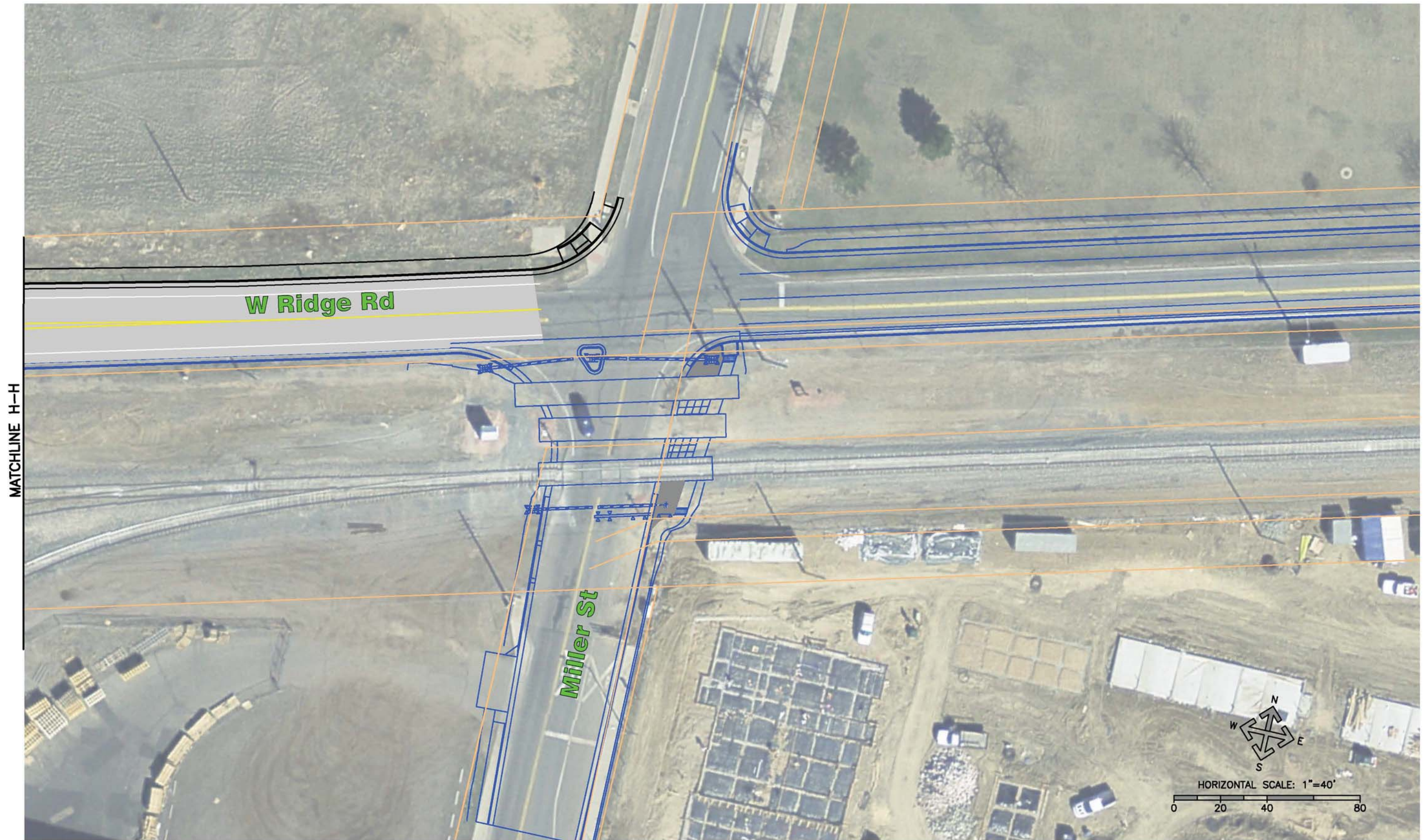


Figure 22-9  
Ridge Road Short Range Concept



**Appendix A. Public Meeting Summary**



November 4, 2014

## MEETING MINUTES

### WHEAT RIDGE WARD STATION/RIDGE ROAD CATALYTIC PROJECT FHU Reference No. 114094-01

Public Open House  
Tuesday, October 28, 2014  
Red Rocks Community College, Arvada Campus

#### Project Team in Attendance:

Wheat Ridge: Scott Brink, Steve Nguyen  
Arvada: Bill Honer  
DRCOG: Paul Aldretti  
FHU: Elliot Sulsky, Kurt Kellogg, Gabrielle Renner, John Dibble  
EPS: Matt Prosser  
RTD: Tara Miller, Mike Millage

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Approximately 35 members of the public attended the open house between 5:00 and 7:30. Sign-in sheets are attached. Many meeting attendees provided verbal comments and a few submitted written comments. Following is a summary of the comments received:

- Concerns were expressed about increased traffic on 52<sup>nd</sup> Avenue (between Tabor Street and Ward Road) with the opening of the Ward Station. People would like to see improvements in accommodating bicyclists and pedestrians on the street with increasing traffic, but individuals had different opinions about how the street should be improved and acknowledged that there is limited space available.
- A desire was expressed to keep most of the Ward Station traffic connecting to Ward Road on the new 50<sup>th</sup> Avenue connection. Several individuals supported a traffic light at 50<sup>th</sup> Avenue/Ward Road to make this connection more convenient and safe for cars, bicycles and pedestrians crossing Ward Road.
- There was concern about the lack of sidewalks on 52<sup>nd</sup> Avenue west of Ward Road, which is used by students walking to and from Drake Middle School. This area is in unincorporated Jefferson County.
- The walking route between the Arvada Ridge Station and Red Rocks Community College will be busy and should have good sidewalks, lighting and safe crossing of Ridge Road.
- RTD Route 100 that uses Kipling and Miller Streets should be added to the transit route map.



- It was noted that there have been many street closures in the area with the construction of the Gold Line and concerns were expressed about additional construction impacts with reconstruction of Ridge Road.
- There were questions about why the FasTracks project does not include street improvements like on those needed on Ridge Road.
- There was support expressed for better east-west bicycle connections through the area, including specific comments about the need for better bike accommodations across Kipling Street and Ward Road, and along Ridge Road, Ward Road and 52<sup>nd</sup> Avenue.
- People supported the idea of on-street bike lanes and improved sidewalks on Ridge Road and generally supported the short-range and long-range concepts shown of the road.
- There were questions about whether there would be enough parking at the Ward Station. One suggestion was to consider a parking garage if more parking is needed rather than having too much surface parking.

These meeting minutes were prepared by Elliot Sulsky (Felsburg Holt & Ullevig). Please contact me at [Elliot.sulsky@fhueng.com](mailto:Elliot.sulsky@fhueng.com) or 303-721-1440 for corrections or clarifications.

**Appendix B. Cost Estimation Worksheets**



**Ridge Road Corridor: Tabor Street to Miller Street - SHORT TERM**

**Conceptual Opinion of Probable Construction Cost**

November 2014

ITEM NO.	ITEM	UNIT	UNIT COST	QUANTITY BY ZONES*			TOTAL QTY	COST	NOTES
				1 T to P	2 P to N	3 N to M			
<b>1.0</b>	<b>REMOVALS / RELOCATIONS</b>								
	REMOVAL OF ASPHALT MAT	S.Y.	\$5.00	7,407	5,286	2,859	15,552	\$77,761	
	REMOVAL OF CURB AND GUTTER	L.F.	\$5.00	-	65	50	115	\$575	
	REMOVAL/RESET OF SHORT TERM DRAINAGE	L.F.	\$25.00	-	-	-	0	\$0	
	REMOVAL OF SIDEWALK (Includes Curb Ramps / Driveways)	S.Y.	\$14.00	20	12	125	157	\$2,198	
	REMOVAL OF TREE	Each	\$350.00	9	3	-	12	\$4,200	
	RESET FENCE	L.F.	\$8.00	1,900	-	-	1,900	\$15,200	
<b>2.0</b>	<b>EARTHWORK</b>								
	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	C.Y.	\$10.00	7,875	1,000	2,430	11,305	\$113,050	Assume 10 feet x 3 foot depth (north side only)
<b>3.0</b>	<b>ROADWAY/CIVIL</b>								
	AGGREGATE BASE COURSE	C.Y.	\$25.00	2,355	1,175	665	4,195	\$104,875	Assume 8 Inches
	HOT MIX ASPHALT PAVEMENT	TON	\$75.00	4,660	2,325	1,315	8,300	\$622,500	Assume 8 Inches
	CONCRETE PAVEMENT (Driveways and Bus Pads)	S.Y.	\$55.00	300	200	-	500	\$27,500	Assumed 10 Inch Thickness (2 x Sidewalk Width)
	CURB AND GUTTER (2-FT. PAN)	L.F.	\$20.00	2,800	125	675	3,600	\$72,000	
	SIDEWALK (6 INCH)	S.Y.	\$40.00	1,665	192	460	2,317	\$92,680	
<b>4.0</b>	<b>STRUCTURES - N/A</b>								
<b>5.0</b>	<b>LANDSCAPE ARCHITECTURE</b>								
	LANDSCAPE BUFFER ZONE	S.F.	\$5.00	4,536	1,760	1,400	7,696	\$38,480	Assume 20% of LT Area
<b>6.0</b>	<b>DRAINAGE/STORM SEWER</b>								
	DRAINAGE PIPE >24 INCH CONCRETE	LF	\$100.00	2,800	125	675	3,600	\$360,000	=Length of Curb and Gutter
	DRAINAGE STRUCTURE	Each	\$6,000.00	11	2	4	17	\$102,000	Assumed every 300 feet
<b>7.0</b>	<b>WATER/SANITARY - N/A</b>								
<b>8.0</b>	<b>LIGHTING/ELECTRICAL/TRAFFIC SIGNALS - N/A</b>								Not included in Short Term
<b>9.0</b>	<b>STORMWATER MANAGEMENT</b>								
	GRAVEL BAG (ROCK SOCK)	L.F.	\$7.00	100	100	100	300	\$2,100	Assume 5 feet per location, 20 locations per zone (100 LF per zone)
	STORM DRAIN INLET PROTECTION	Each	\$125.00	10	10	10	30	\$3,750	Assume 10 per zone
	CONCRETE WASHOUT AREA	Each	\$800.00	1	1	1	3	\$2,400	Assume 1 per zone
	VEHICLE TRACKING CONTROL	Each	\$1,000.00	2	2	2	6	\$6,000	Assume 2 per zone
	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	Hour	\$40.00	200	200	200	600	\$24,000	Assume 200 hours per zone
	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	Hour	\$80.00	200	200	200	600	\$48,000	Assume 200 hours per zone
	SILT FENCE	L.F.	\$1.25	2,835	1,100	875	4,810	\$6,013	Assume 1/2 Length of project (by zone)
	EROSION CONTROL SUPERVISOR	Day	\$80.00	60	60	60	180	\$14,400	Assume 180 Days
	FENCE (TEMPORARY)	L.F.	\$4.00	2,835	1,100	875	4,810	\$19,240	Equal to length of project (1 side)
	<b>SUBTOTAL (A)</b>							<b>\$1,758,922</b>	

**Ridge Road Corridor: Tabor Street to Miller Street - SHORT TERM**

**Conceptual Opinion of Probable Construction Cost**

November 2014

ITEM NO.	ITEM	UNIT	UNIT COST	QUANTITY BY ZONES*			TOTAL QTY	COST	NOTES
				1 T to P	2 P to N	3 N to M			
10.0	<b>SIGNING AND STRIPING</b>	2.00%	OF (A)				1	\$35,000	Assumed Unit Price - Confirm with Xcel
11.0	<b>CONSTRUCTION TRAFFIC CONTROL</b>	5.00%	OF (A)				1	\$88,000	
12.0	<b>UNDERGROUNDING (Overhead Electric)</b>	L.F.	\$200.00	-	-	-	0	\$0	
13.0	<b>UTILITY ADJUSTMENTS (WATER AND SAN)</b>	2.00%	OF (A)				1	\$35,000	
14.0	<b>UTILITY ADJUSTMENTS (ELECTRICAL)</b>	1.00%	OF (A)				1	\$18,000	
<b>TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)</b>								<b>\$1,934,900</b>	<b>USE \$2,000,000</b>
15.0	<b>MOBILIZATION</b>	7%	OF (CBI)				1	\$135,000	
16.0	<b>CONTINGENCIES &amp; OTHER COSTS</b> CONTINGENCIES	30%	OF (CBI)				1	\$580,000	
<b>TOTAL COST OF CONSTRUCTION ITEMS (CI)</b>								<b>\$2,649,900</b>	<b>USE \$2,700,000</b>
17.0	<b>PROPERTY ACQUISITION (Right-of-Way)</b> TO NEW BACK OF CURB BACK OF CURB TO BACK OF WALK (Easement)	S.F. S.F.	\$20.00 \$10.00	12,600 33,600	563 1,500	3,038 8,100	16,200 43,200	\$324,000 \$432,000	Assume 12 foot width
18.0	<b>ENGINEERING</b> ENGINEERING (DESIGN) CONSTRUCTION MANAGEMENT	8% 12%	OF (CI) OF (CI)				1 1	\$212,000 \$318,000	
<b>TOTAL PROJECT COST</b>								<b>\$3,936,000</b>	<b>USE \$4,000,000</b>

Zones \*

- 1 Tabor to Parfet - 2835 LF
- 2 Parfet to Nelson - 1100 LF
- 3 Nelson to Miller - 875 LF



**Ridge Road Corridor: Tabor Street to Miller Street - LONG TERM**

**Conceptual Opinion of Probable Construction Cost**

November 2014

ITEM NO.	ITEM	UNIT	UNIT COST	QUANTITY BY ZONES*				TOTAL QTY	COST	NOTES
				1 T to P	2 P to N	3 N to M				
<b>1.0</b>	<b>REMOVALS / RELOCATIONS</b>									
	REMOVAL OF ASPHALT MAT	S.Y.	\$5.00	315	122	97	534	\$2,670		
	REMOVAL OF CURB AND GUTTER	L.F.	\$5.00	2,065	122	675	2,862	\$14,310		
	REMOVAL/RESET OF SHORT TERM DRAINAGE	L.F.	\$25.00	2,800	150	905	3,855	\$96,375	Assume Length = LT Drainage Pipe with Structures ~\$25/LF	
	REMOVAL OF SIDEWALK (Includes Curb Ramps / Driveways)	S.Y.	\$14.00	1,665	720	560	2,945	\$41,230		
	REMOVAL OF TREE	Each	\$350.00	-	-	-	0	\$0		
	REMOVAL OF FENCE	L.F.	\$2.00	1,900	-	-	1,900	\$3,800		
<b>2.0</b>	<b>EARTHWORK</b>									
	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	C.Y.	\$10.00	3,150	1,222	972	5,344	\$53,440	Assume 10 feet x 3 foot depth (north side only)	
<b>3.0</b>	<b>ROADWAY/CIVIL</b>									
	AGGREGATE BASE COURSE	C.Y.	\$25.00	870	165	210	1,245	\$31,125	Assume 8 Inches	
	HOT MIX ASPHALT PAVEMENT	TON	\$75.00	1,720	325	410	2,455	\$184,125	Assume 8 Inches	
	CONCRETE PAVEMENT (Driveways and Bus Pads)	S.Y.	\$55.00	300	200	-	500	\$27,500	Assumed 10 Inch Thickness (2 x Sidewalk Width)	
	CURB AND GUTTER (2-FT. PAN)	L.F.	\$20.00	2,800	150	905	3,855	\$77,100		
	SIDEWALK (6 INCH)	S.Y.	\$40.00	2,000	700	600	3,300	\$132,000		
<b>4.0</b>	<b>STRUCTURES - N/A</b>									
<b>5.0</b>	<b>LANDSCAPE ARCHITECTURE</b>									
	LANDSCAPED BUFFER ZONE	S.F.	\$5.00	22,680	8,800	7,000	38,480	\$192,400	Equal to new R/W less concrete and paving	
<b>6.0</b>	<b>DRAINAGE/STORM SEWER</b>									
	DRAINAGE PIPE >24 INCH CONCRETE	LF	\$100.00	2,800	150	905	3,855	\$385,500	=Length of Curb and Gutter	
	DRAINAGE STRUCTURE	Each	\$6,000.00	11	2	5	18	\$108,000	Assumed every 300 feet	
<b>7.0</b>	<b>WATER/SANITARY - N/A</b>									
<b>8.0</b>	<b>LIGHTING/ELECTRICAL/TRAFFIC SIGNALS</b>									
	LIGHTING FIXTURE	Each	\$3,250.00	11	5	4	20	\$65,000	Assume every 300 feet on north side	
	LIGHTING POLE AND BASE	Each	\$1,350.00	11	5	4	20	\$27,000	One per lighting fixture	
	LIGHTING CONTROL CABINET	Each	\$10,000.00	1	1	1	3	\$30,000	Assume 1 per zone, 3 Total	
	2 INCH CONDUIT (PVC)	L.F.	\$9.00	2,835	1,100	875	4,810	\$43,290	Assume entire length of project (one sides)	
<b>9.0</b>	<b>STORMWATER MANAGEMENT</b>									
	GRAVEL BAG (ROCK SOCK)	L.F.	\$7.00	100	100	100	300	\$2,100	Assume 5 feet per location, 20 locations per zone (100 LF per zone)	
	STORM DRAIN INLET PROTECTION	Each	\$125.00	10	10	10	30	\$3,750	Assume 10 per zone	
	CONCRETE WASHOUT AREA	Each	\$800.00	1	1	1	3	\$2,400	Assume 1 per zone	
	VEHICLE TRACKING CONTROL	Each	\$1,000.00	2	2	2	6	\$6,000	Assume 2 per zone	
	REMOVAL AND DISPOSAL OF SEDIMENT (LABOR)	Hour	\$40.00	200	200	200	600	\$24,000	Assume 200 hours per zone	
	REMOVAL AND DISPOSAL OF SEDIMENT (EQUIPMENT)	Hour	\$80.00	200	200	200	600	\$48,000	Assume 200 hours per zone	
	SILT FENCE	L.F.	\$1.25	2,835	1,100	875	4,810	\$6,013	Assume 1/2 Length of project (by zone)	
	EROSION CONTROL SUPERVISOR	Day	\$80.00	60	60	60	180	\$14,400	Assume 180 Days	
	FENCE (TEMPORARY)	L.F.	\$4.00	2,835	1,100	875	4,810	\$19,240	Equal to length of project (1 side)	
<b>SUBTOTAL (A)</b>								<b>\$1,640,768</b>		

**Ridge Road Corridor: Tabor Street to Miller Street - LONG TERM**

**Conceptual Opinion of Probable Construction Cost**

November 2014

ITEM NO.	ITEM	UNIT	UNIT COST	QUANTITY BY ZONES*			TOTAL QTY	COST	NOTES
				1 T to P	2 P to N	3 N to M			
10.0	<b>SIGNING AND STRIPING</b>	2.00%	OF (A)				1	\$33,000	Assumed Unit Price - Confirm with Xcel
11.0	<b>CONSTRUCTION TRAFFIC CONTROL</b>	5.00%	OF (A)				1	\$82,000	
12.0	<b>UNDERGROUNDING (Overhead Electric)</b>	L.F.	\$200.00	-	-	-	0	\$0	
13.0	<b>UTILITY ADJUSTMENTS (WATER AND SAN)</b>	2.00%	OF (A)				1	\$33,000	
14.0	<b>UTILITY ADJUSTMENTS (ELECTRICAL)</b>	1.00%	OF (A)				1	\$16,000	
<b>TOTAL COST OF CONSTRUCTION BID ITEMS (CBI)</b>								<b>\$1,804,800</b>	<b>USE \$1,900,000</b>
15.0	<b>MOBILIZATION</b>	7%	OF (CBI)				1	\$126,000	
16.0	<b>CONTINGENCIES &amp; OTHER COSTS</b> CONTINGENCIES	30%	OF (CBI)				1	\$541,000	
<b>TOTAL COST OF CONSTRUCTION ITEMS (CI)</b>								<b>\$2,471,800</b>	<b>USE \$2,500,000</b>
17.0	<b>PROPERTY ACQUISITION (Right-of-Way)</b> TO NEW BACK OF CURB BACK OF CURB TO BACK OF WALK (Easement)	S.F. S.F.	\$0.00 \$0.00	12,600 33,600	675 1,800	4,073 10,860	17,348 46,260	\$0 \$0	Assume that any needed Right-of-Way or Easements to be provided at no cost as part of redevelopment.
18.0	<b>ENGINEERING</b> ENGINEERING (DESIGN) CONSTRUCTION MANAGEMENT	8% 12%	OF (CI) OF (CI)				1 1	\$198,000 \$297,000	
<b>TOTAL PROJECT COST</b>								<b>\$2,967,000</b>	<b>USE \$3,000,000</b>

Zones \*

- 1 Tabor to Parfet - 2835 LF
- 2 Parfet to Nelson - 1100 LF
- 3 Nelson to Miller - 875 LF