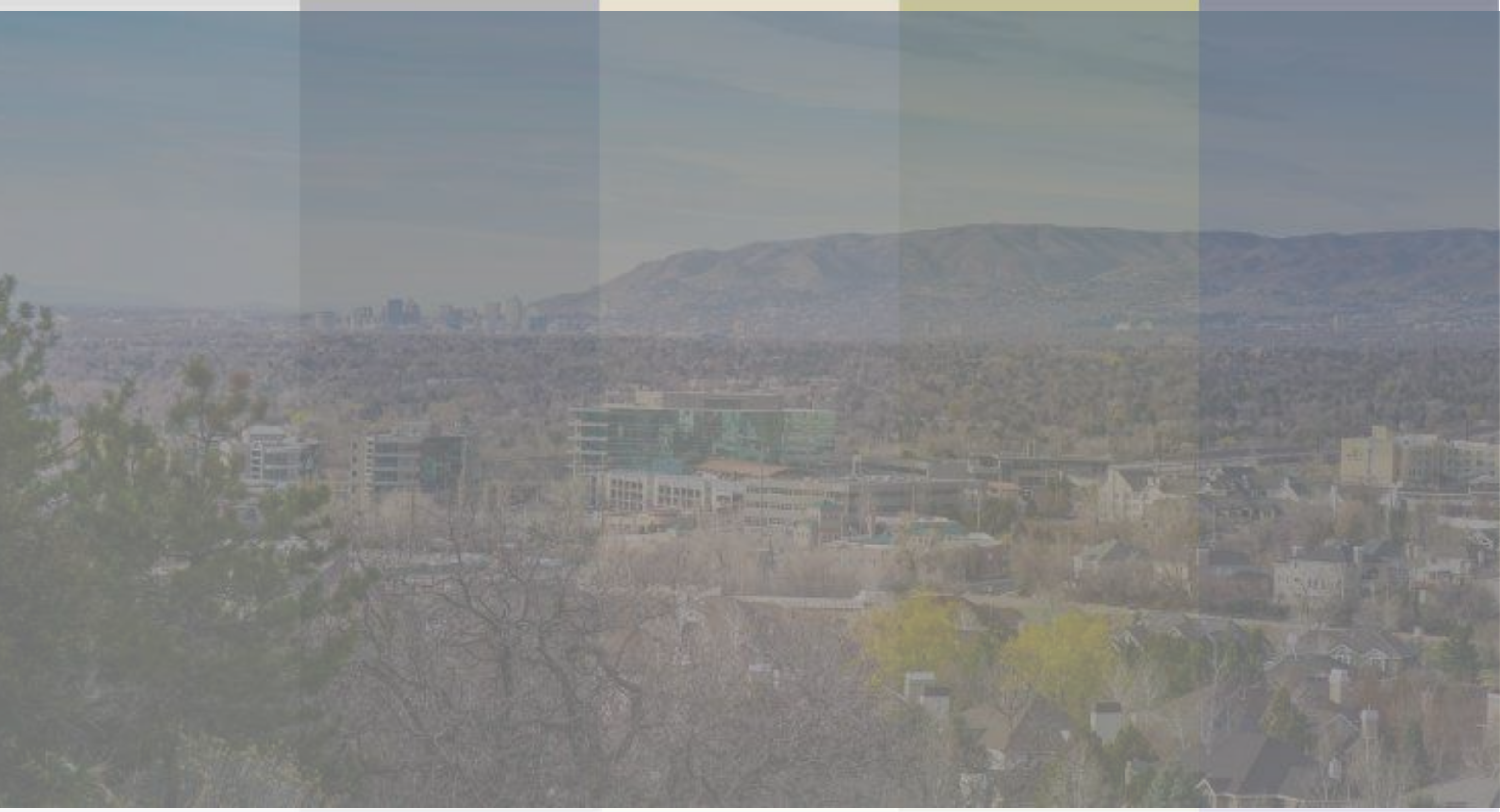
Cottonwood Heights
City between the canyons



COTTONWOOD HEIGHTS
TRANSPORTATION MASTER PLAN
MARCH 30, 2023

Horrocks.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
CFP	Capital Facilities Plan
GOPB	Governor's Office of Planning and Budget
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
MPO	Metropolitan Planning Organization
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
RTP	Regional Transportation Plan
TAZ	Traffic Analysis Zone
TDU	Transit District of Utah
TDM	Travel Demand Model
TIP	Transportation Improvement Program
TMP	Transportation Master Plan
TRB	Transportation Research Board
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
WFRC	Wasatch Front Regional Council

Executive Summary

A Transportation Master Plan (TMP) has been implemented so the transportation system can accommodate the projected growth in the city up to the year 2050. As part of the plan, the current roadway network was assessed using current traffic volumes. Current traffic volumes were projected through the year 2050 using the current roadway network to find the capacity improvements necessary for the roadway network to positively contribute to the economic and community development in Cottonwood Heights. The following sections are included in this Cottonwood Heights TMP.

- Existing Conditions Analysis
- Travel Demand Modeling
- Future Conditions Analysis
- Capital Facilities Plan

GOALS

To develop an efficient and comprehensive multi-modal transportation network for residents and integrates with the WFRC regional transportation plan.

OBJECTIVES

- Enhance neighborhood connectivity and pedestrian safety.
- Improve active transportation networks to promote use.
- Provide safe and efficient traffic movement.
- Support regional coordination and cooperation.

CAPITAL IMPROVEMENT PROJECTS

Included in this Transportation Master Plan (TMP) is the Capital Improvement Projects. All deficiencies were documented, and proposed improvements are included on the Capital Project List. **Table 1** shows the planned projects for Cottonwood Heights. Projects are separated into three phases with the time horizons of 2032, 2042, and 2050 for phase 1, phase 2, and phase 3 respectively, as shown in **Figure 1**.

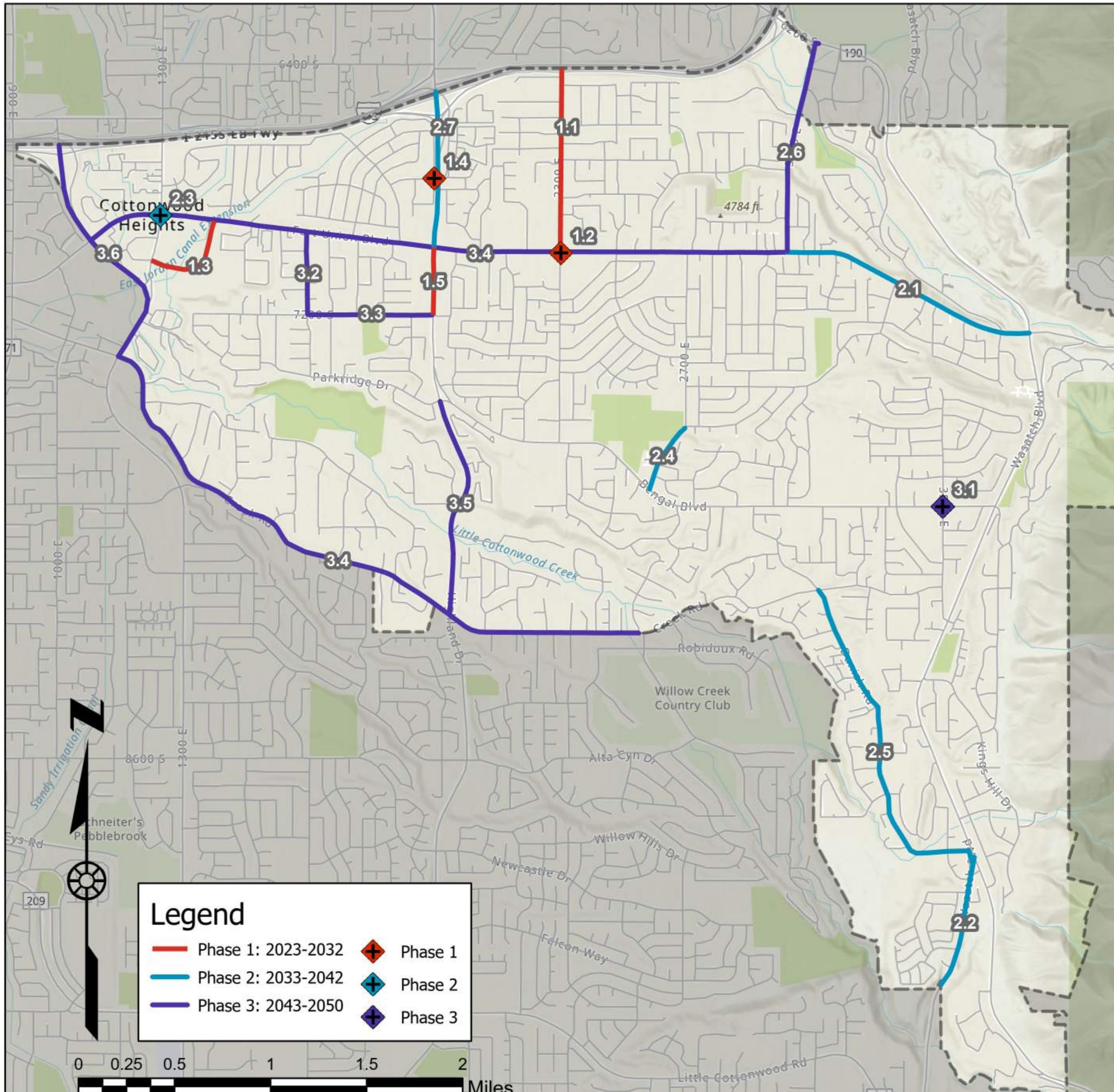
ACTIVE TRANSPORTATION PROJECTS

Included In this TMP is the Active Transportation Projects. All proposed improvements are included on the Active Transportation List. **Figure 11** and **Table 8** shows the planned projects for Cottonwood Heights.

Table 1: Projects by Phasing

Project	Location	Improvement Type	Projected Phase of Unacceptable LOS	Estimated Project Cost (Phased)
		Phase 1 (2023-2032)		
1.1	2300 East: Fort Union Blvd to north city boundary[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	Existing LOS E	$3,800,000
1.2	Fort Union Blvd & 2300 East (Intersection)	Auxiliary turn lanes to improve intersection delay and Improve Bicycle Safety through intersection	Phase 1[3]	$3,500,000
1.3	Park Center Drive: 1300 East to Fort Union Blvd[2]	Reconfigure roadway from 2 to 3 lanes**	Existing LOS E	$3,421,000
1.4	Highland Frontage & La Cresta Drive (Intersection)	Realign Intersection & Improve Pedestrian Safety with Construction of Highland Drive Pedestrian Trail	Phase 1[3]	$3,500,000
1.5	Highland Drive (2000 East) & Fort Union (Intersection)	Reconfigure roadway from 6 to 7 lanes from 7200 South to 6900 South	Phase 1[3]	$5,000,000
			Phase 1 Total	***$19,221,000***
		Phase 2 (2033-2042)		
2.1	Fort Union Blvd: 3000 East to Wasatch Blvd[1,2]	Roadway redesign to include Pedestrian Trail per approved cross-section	Phase 2	$5,730,000
2.2	Wasatch Boulevard: SR-210 to south city boundary[2]	Improve Pedestrian Safety & Walkability with multi-use trail, Reconfigure roadway from 2 to 3 lanes**	Phase 2	$12,739,000
2.3	Fort Union Blvd & 1300 East (Intersection)	Intersection Improvement to reduce delay and improve pedestrian safety and bicycle accommodations	Phase 2[3]	$4,500,000
2.4	2600 East: Bengal Blvd to Bridgewater Drive[2]	Reconfigure roadway from 2 to 3 lanes**	N/A	$2,329,000
2.5	Danish Road: Creek Road to Wasatch Blvd[2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	N/A	$16,473,000
2.6	3000 East: 6200 South to 7000 South[1,2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Phase 2	$7,180,000
2.7	Highland Dr (2000): Fort Union Blvd to North City Boundary[1]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Phase 2	$2,576,000
			Phase 2 Total	***$48,951,000***
		Phase 3 (2033-2050)		
3.1	3500 East & Bengal Blvd	Roundabout Intersection	N/A[3]	$2,500,000
3.2	1700 East: Fort Union Blvd to 7200 South[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	N/A	$5,726,000
3.3	7200 South: 1700 East to Highland Drive[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	N/A	$10,926,000
3.4	Fort Union Blvd: 1300 East to 3000 East[1,2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity with trail*	Phase 3	$13,630,000
3.5	Highland Drive (2000 East): Bengal Blvd to Creek Road[1]	Reconfigure roadway from 4/5 to 7 lanes	Phase 3	$31,518,000
3.6	Union Park Blvd: I-215 to Creek Road[1]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Phase 3	$6,304,000
3.7	Creek Road: Union Park Blvd to Oak Creek Drive	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity	Phase 3	$9,957,000
			Phase 3 Total	***$80,561,000***

[1]Project Identified the WFRC 2023-2050 Regional Transportation Plan
[2]Project Identified in the 2019 Transportation Capital Facilities Plan
[3]Anticipated Failure Based on Roadway Segment Volume
***Operational improvements include shoulder widening, intersection improvements, bus turnouts, turn pockets or center medians**
**** Add Center turn lane**



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** Add Center turn lane

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TMP PROJECT LIST

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/31/2023

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Figure 3

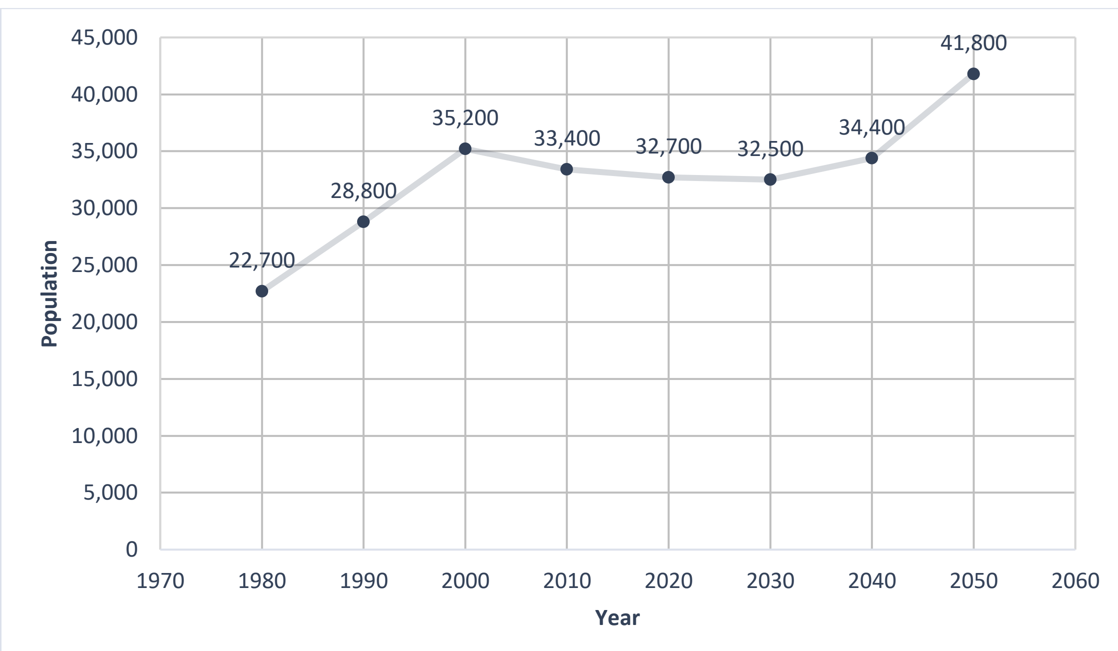
Introduction

Over the last 50 years, Cottonwood Heights and the surrounding communities have recently experienced rapid growth and development. The population of Cottonwood Heights is expected to continue to grow into the future, as the community develops the remaining undeveloped parcels. Table 2 shows the current population is approximately 33,800 and is projected to increase to around 41,800 (from WFRC Travel Demand Model) by the end of the year 2050. A major contributor to growth will be the redevelopment of the Wasatch Boulevard Gravel Pit.

In addition to the estimated population, the transportation model used in this study also considers the existing and future travel demand created by the employment opportunities within Cottonwood Heights. The model splits Cottonwood Heights into geographical sections called Traffic Analysis Zones (TAZ). Each TAZ contains socio-economic data that helps calculate the future travel demand on the entire transportation network.

To keep pace with projected growth, a comprehensive transportation plan must be developed and regularly maintained. This plan must incorporate the goals of Cottonwood Heights regarding the transportation systems within their jurisdiction as well as support the regional facilities maintained by UDOT, the Utah Transit Authority (UTA), Salt Lake County, and neighboring communities.

Table 2: Cottonwood Heights Population



Source: US Census and WFRC Travel Demand Model

Cottonwood Heights has seen minimal growth in recent years. Located in Salt Lake County along the east bench of Salt Lake Valley, Cottonwood Heights is bordered to the north by Murray and Holiday; to the south by Sandy; to the east by Big and Little Cottonwood Canyons, and on the west by Midvale. Within the city there is a mix of residential, commercial, as well as undeveloped land, particularly in the eastern portion of the city. A map of Cottonwood Heights and the surrounding area is shown in Figure 2.

This Transportation Master Plan (TMP) contains an analysis of the existing transportation network and conditions. Any major deficiencies are itemized, and possible improvement or mitigation alternatives are discussed. An analysis of the future transportation network is also included for the horizon year 2030 and 2050. Any deficiencies in the future transportation network that are expected to exist and would not be accommodated by projects that are currently planned will be discussed. A list of recommended improvements and projects will then be given to aid Cottonwood Heights in planning for future transportation projects. This Transportation Master Plan is intended to be a useful tool to aid Cottonwood Heights in taking a proactive effort in planning and maintaining the overall transportation network within their city.

A successful transportation network incorporates multiple modes to transportation including vehicle pedestrian, bicycle, and transit. Other plans developed by the city and other agencies have been considered during the process of identifying roadway improvements. These plans/programs include the following, and each are linked to their respective plan online:

- Fort Union Master Plan Adopted and Special Plans | Cottonwood Heights, UT (utah.gov)
- Wasatch Boulevard Gravel Pit Area Master Plan Adopted and Special Plans | Cottonwood Heights, UT (utah.gov)
- Cottonwood Heights Bicycle and Trails Master Plan Adopted and Special Plans | Cottonwood Heights, UT (utah.gov)
- Mid-Valley Active Transportation Network (being adopted) Cottonwood Heights | Mid-Valley Active Transportation Plan Public Feedback (arcgis.com)

A BRIEF HISTORY

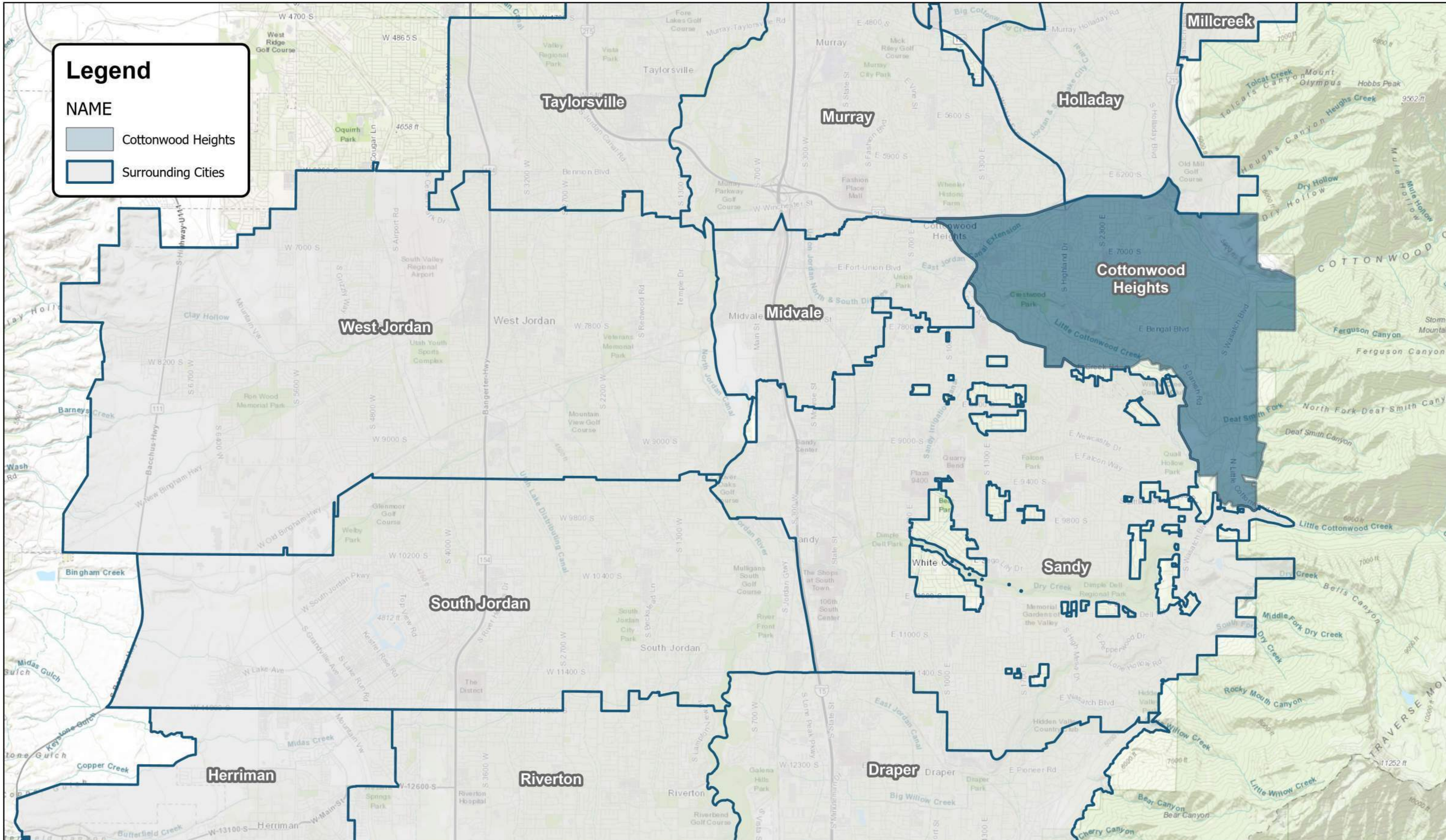
Eight families were to settle what would become Union in 1849. In a book titled A Union, Utah History by Stephen K. Madsen, "Jehu Cox, the first settler of Union, donated ten acres of his farmland for the establishment of a fort." "By 1854, a total of 23 homes had been built inside the fort – the population stood at 273," Madsen continued. According to the U.S. Census Bureau, the population grew from 484 in 1880 to 757 in 1900.

Union was divided and is now part Sandy, Midvale, and Cottonwood Heights. A basic form of county government (Butler and Union Precincts) was established in the Cottonwood Heights area in 1877. In the same year, Butler School District 57 and Union School District 23 were created. It wasn't until 1905 that the Unified Jordan School District would be created.

The demand for housing replaced farming and ranching in the area after World War II. The first subdivisions were built in Cottonwood Heights between 1953 and 1955. The population increased to 5,000. The area saw a population increase and more subdivisions were built for the next two decades.

The area was represented by the Cottonwood Heights Community Council since its formation in 1952. The citizens began petitions to become its own city in the late 1990s. This citizen driven committee helped get the city up and running by voting on the form of city government, name, and logo. Cottonwood Heights was incorporated on January 14, 2005, with Kelvyn Cullimore as the first mayor.

This information is located on the Cottonwood Heights city's website which can be found at https://www.cottonwoodheights.utah.gov/community/history.



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AREA MAP

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE	10/25/2022
DRAWN	SEE
	Figure 2

Existing Conditions

ROADWAY NETWORK ANALYSIS

Transportation planning in the region is a cooperative effort of state and local agencies. The Wasatch Front Regional Council (WFRC or Regional Council) is responsible for coordinating this transportation planning process in the Salt Lake County, Davis County, Weber County, and Salt Lake urbanized areas as the designated Metropolitan Planning Organization (MPO). Metropolitan Planning Organizations are agencies responsible for transportation planning in urbanized areas throughout the United States. The Governor designated the Wasatch Front Regional Council as the Metropolitan Planning Organization for the Salt Lake and Ogden Areas in 1973. This section includes a general discussion on the travel demand modeling process used for this TMP, functional classification of streets, and level of service of roads and intersections. Also included are the existing and future conditions for 2030 and 2050.

LAND USE PLANNING

Most of the socioeconomic data used in this study are based on the statewide data provided by the Kem C. Gardener Policy Institute at the University of Utah. This supplemented data was verified using the data provided by the city in the form of the current adopted general plan as of July 26, 2005 (found on Cottonwood Heights city's website located at https://www.cottonwoodheights.utah.gov/).

The information is the best available data for predicting travel demands. However, land use planning is a dynamic process, and the assumptions made in this report should be used as a guide and should not supersede other planning efforts when it comes to localized intersections and roadways.

SOCIOECONOMIC CONDITIONS

Cottonwood Heights' population is estimated to be about 34,000 residents, which includes 12,453 dwelling units. The city's median household income (2016) is $82,008, and the average family size is 3.3. The median age of Cottonwood Heights residents is 35.7 years. The 2010 to 2019 decade saw moderate growth in Cottonwood Heights, with a total increase in the population of 5.3 percent.

Based on the current land use, zoning, demographics, and growth patterns, Cottonwood Heights is expected to grow to approximately 41,800 residents by 2050. The forecasted growth within Cottonwood Heights and surrounding cities will place increased pressure on the City's infrastructure, including the street network. Cottonwood Heights is also committed to increasing commercial, office, and retail stores to provide greater opportunities for residents to live, work, and play in the city. This growth will therefore have a considerable impact on traffic volumes in the city.

TRAVEL DEMAND MODEL

As with the Travel Analysis Zone (TAZ) structure shown in **Figure 3**, the WFRC Travel Demand Model was adjusted to fit existing traffic conditions in Cottonwood Heights. The method used to adjust the model was to use traffic counts throughout the city, and adapt the existing volumes based on those counts. Traffic counts were collected from UDOT and include annual average daily traffic (AADT) volumes as defined in *Traffic on Utah Highways,* shown in Figure 8. On City owned roadways, traffic counts were either provided by Cottonwood Heights or were manually counted as part of this TMP.

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TAZ MAP

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 10/25/2022

DRAWN SEE

Figure 3

FUNCTIONAL CLASSIFICATION

All trips include two distinct functions: mobility and land access. Mobility and land access share an inverse relationship, meaning as mobility increases, land access decreases. Street facilities are classified by the relative amounts of through and land-access service they provide. There are four primary classifications: Freeway/Expressway, Urban Core Arterial, Urban Arterial, Urban Collector, and Local Streets. Each classification is explained in further detail in the following paragraphs and is also represented in **Figure 4**.

Freeways and Expressways – *Freeway and expressway facilities provide service for long distance trips between cities and states. No land access is provided by these facilities.*

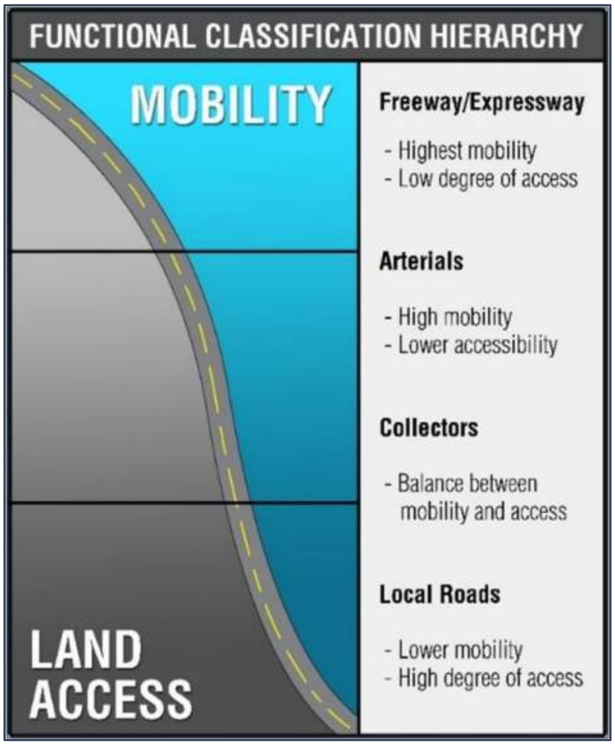
Urban Core Arterial – *Urban Core Arterial facilities provide service primarily through-traffic movements. It includes areas of the highest density and primarily found in the central business districts of the metropolitan area. All traffic controls and the facility design are intended to provide efficient through movement. There are limited access points to these facilities.*

Urban Arterial – *Arterial facilities with lower travel speeds and more land-access and provide service primarily through-traffic movements. All traffic controls and the facility design are intended to provide efficient through movement. There are limited access points to these facilities.*

Urban Collectors – *Urban Collector facilities are intended to provide both traffic circulation and land-access within residential neighborhoods, commercial and industrial areas. They are frequently used for shorter through movements associated with the distribution and collection portion of trips*.

Local Streets – *Local Street facilities primarily serve land-access functions. The design and control facilitate the movement of vehicles onto and off the street system from land parcels.*

Figure 4: Mobility vs. Access Chart



Each of the major classifications described above can be further subdivided. Currently in Cottonwood Heights, arterials and collectors are divided into urban core and urban classifications. For each classification, major movements have higher carried capacity and provide more through movements than the minor movements. For this TMP, the major and minor designations are determined based on the number of lanes on the roadway facility. Table 3 shows the number of lanes and the right of way for each functional class that currently exist in Cottonwood Heights. This designation helps in identifying the appropriate cross-section as well as the carrying capacity of the roadway. A more detailed description of the characteristics of the four primary functional classifications of streets are found in Table 4.

Table 3: Typical Cross-Sections

Functional Classification	Number of Lanes	Right of Way Width (ft.)	Design Speed (MPH)
Local	2	58	25
Urban Collector	2-3	66-78	30
Urban Arterial	3-5	84	35
Urban Core Arterial	3-7	83-109	30

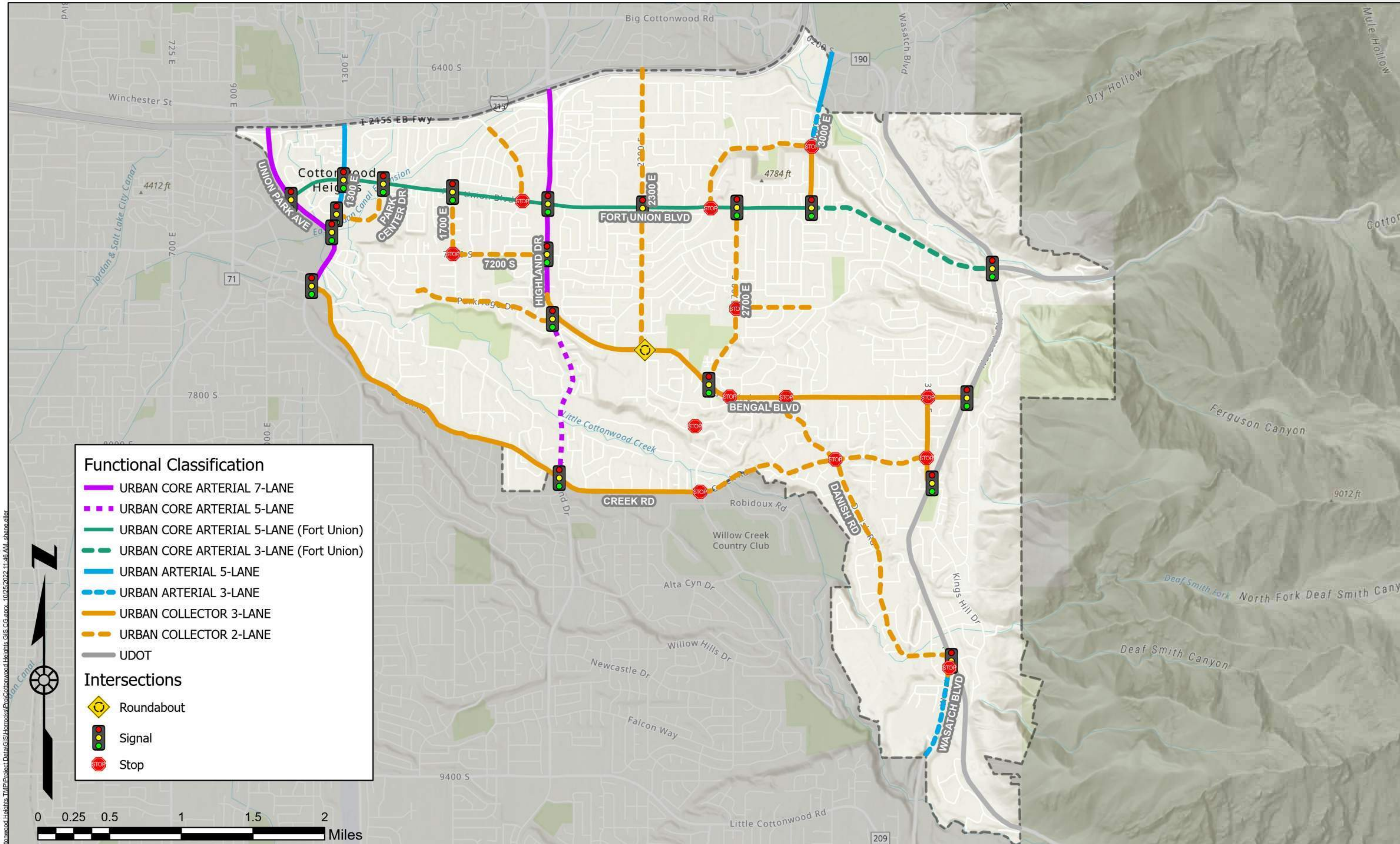
All information on design and development in Cottonwood Heights can be found on the Cottonwood Heights website at https://www.cottonwoodheights.utah.gov/city-services/engineering/engineering-standards

Table 4: Street Functional Classification

Characteristic	Functional Classification			
	Freeway and Expressway	Urban Arterial	Urban Collector	Local Street
Roadway Function	Traffic movement	Traffic movement, land access	Collect and distribute traffic between streets and arterials, land access	Land access
Typical % of Surface Street System Mileage	Not applicable	5-10%	10-20%	60-80 %
Continuity	Continuous	Continuous	Continuous	None
Recommended Spacing	4 miles	1-2 miles	½-1 mile	As needed
Typical % of Surface Street System Vehicle-Miles Carried	Not applicable	40-65%	10-20%	10-25 %
Direct Land Access	None	Limited: major generators only	Restricted: some movements prohibited; number and spacing of driveways controlled	Safety controls access
Minimum Roadway Intersection Spacing	1 mile	½ mile	300 feet-¼ mile	300 feet
Speed Limit	55-75 mph	30-35	30 mph	20-25 mph
Parking	Prohibited	Discouraged	Limited	Permitted
Comments	Supplements capacity of arterial street system & provides high-speed mobility	Backbone of street system		Through traffic should be discouraged

EXISTING FUNCTIONAL CLASSIFICATION AND LEVEL OF SERVICE

For this TMP, each functional classification is color-coded based on the number of lanes on each street. Many of the city streets were constructed prior to the adoption of the typical street sections and therefore do not comply with these standards. As such, designating the streets as arterials and collectors in the existing conditions analysis may be misleading. Roads that were not to a full typical street section will not be able to function to the same LOS as a full street built to the typical street cross section. The existing functional classifications for roadway network in Cottonwood Heights as shown in Figure 5.



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EXISTING ROADWAY NETWORK

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE	10/25/2022
DRAWN	SEE
	Figure 5

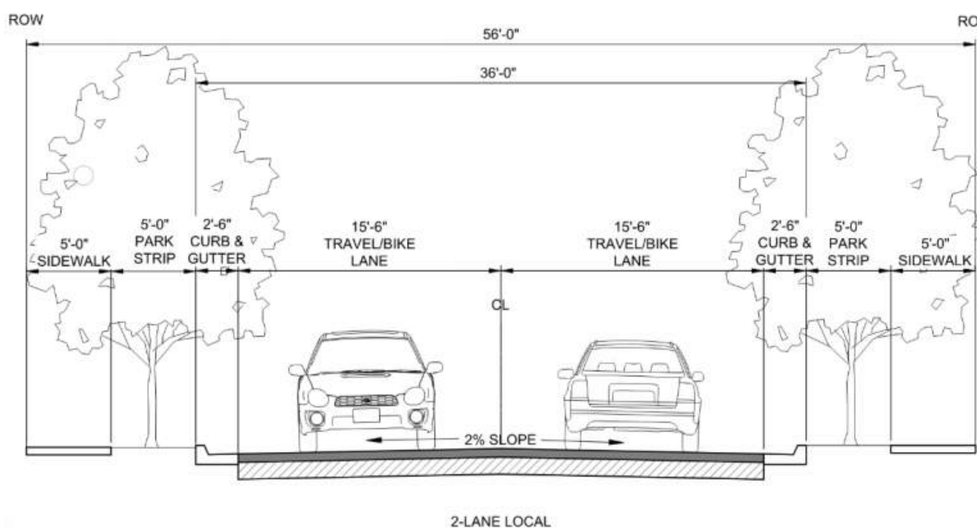
TYPICAL CROSS-SECTIONS

The typical cross-sections for each functional classification in Cottonwood Heights were updated with coordination from Cottonwood Heights City staff. The city has placed emphasis on connectivity and has therefore included shared bicycle lanes in all street designs besides local streets. Local streets are designed to offer access from residences to the roadway network. The updated cross-sections are shown in Figure 6.

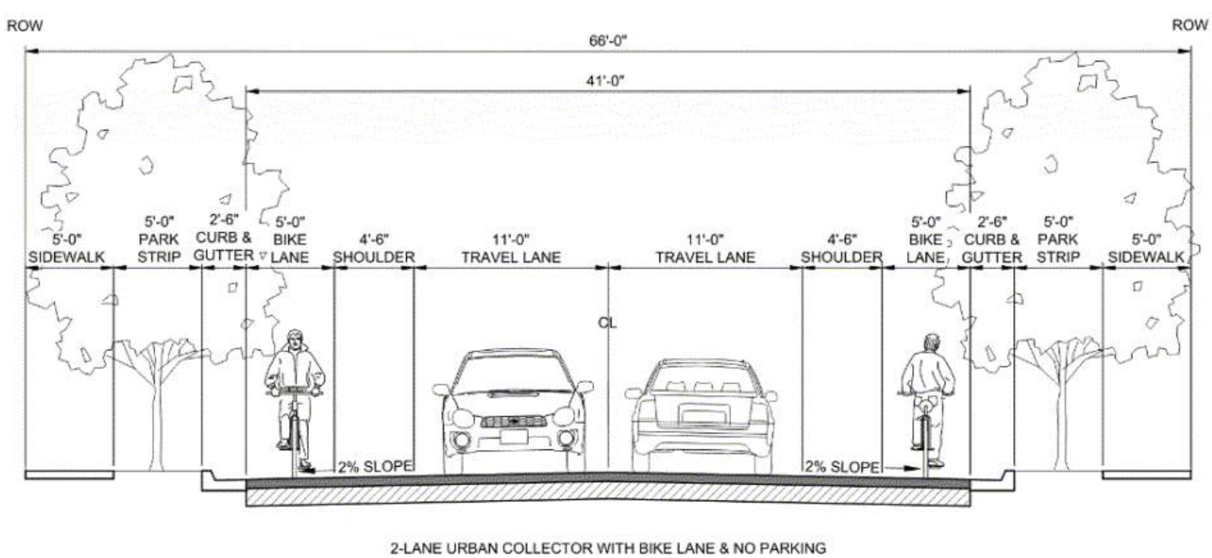
Also included were cross-sections for the intersections of Fort Union & 1300 East and Fort Union & Highland Drive intersections as the criteria for typical cross-sections. These figures are shown in the Appendix A.

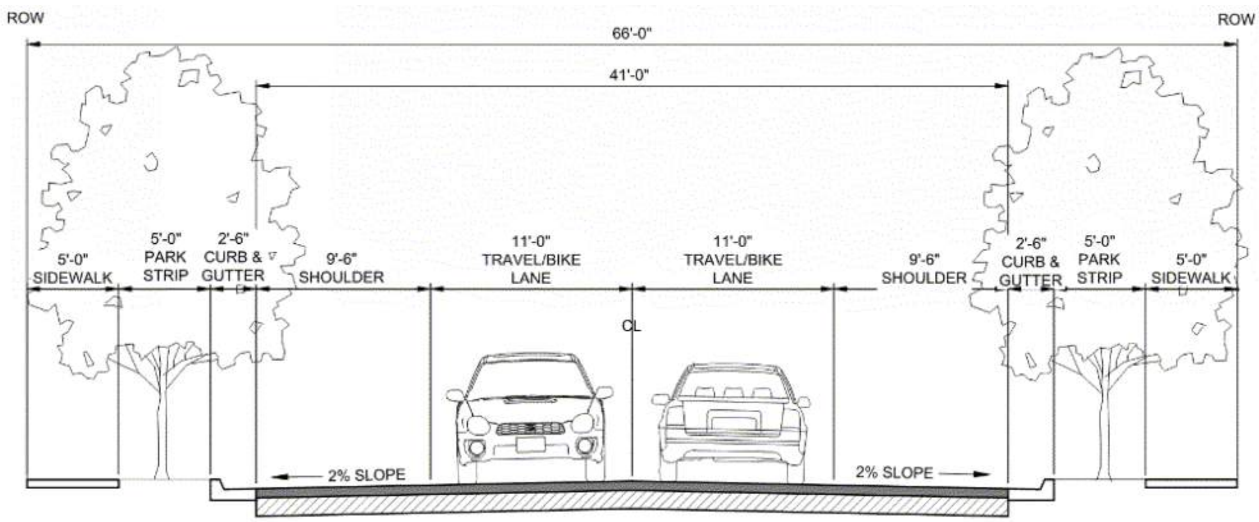
Figure 6: Typical Cross-Sections

2-Lane Local



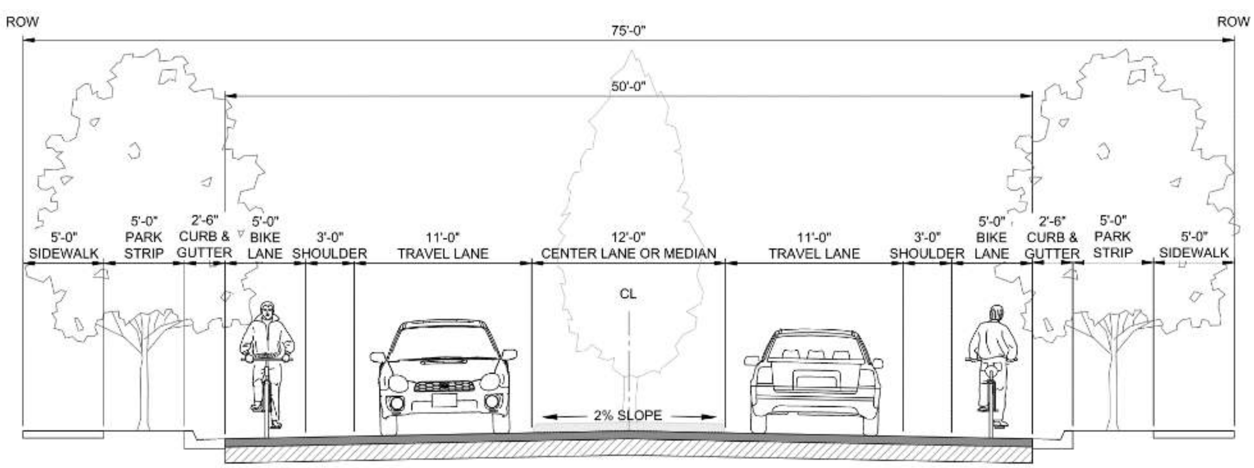
2-Lane Urban Collector



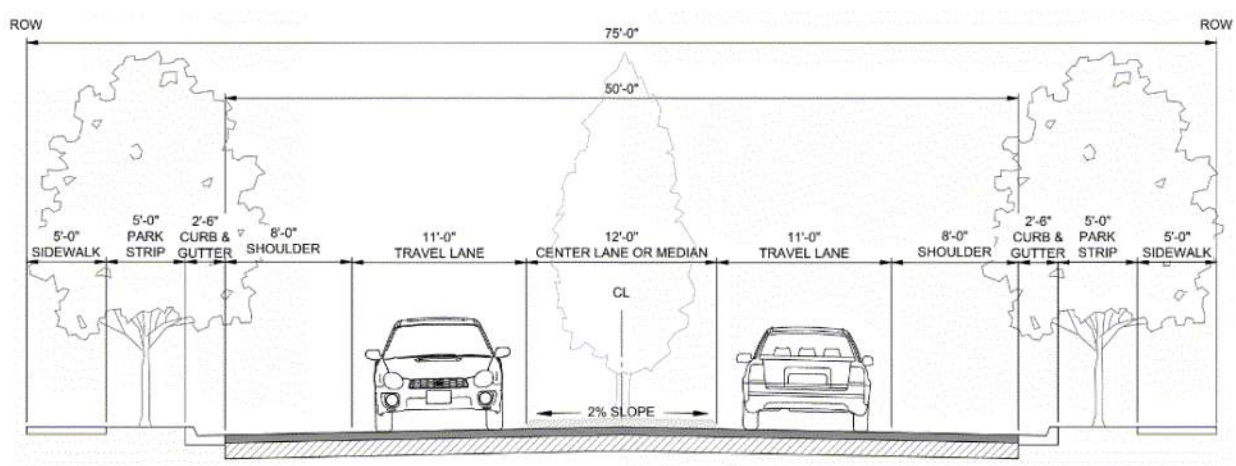


2-LANE URBAN COLLECTOR WITH PARKING

3-Lane Urban Collector

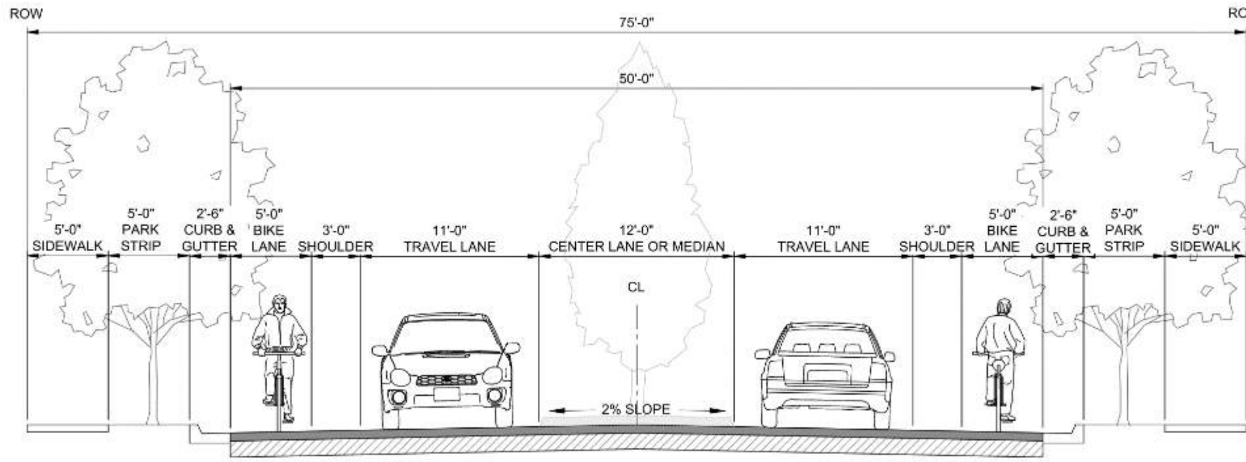


3-LANE URBAN COLLECTOR WITH BIKE LANE & NO PARKING

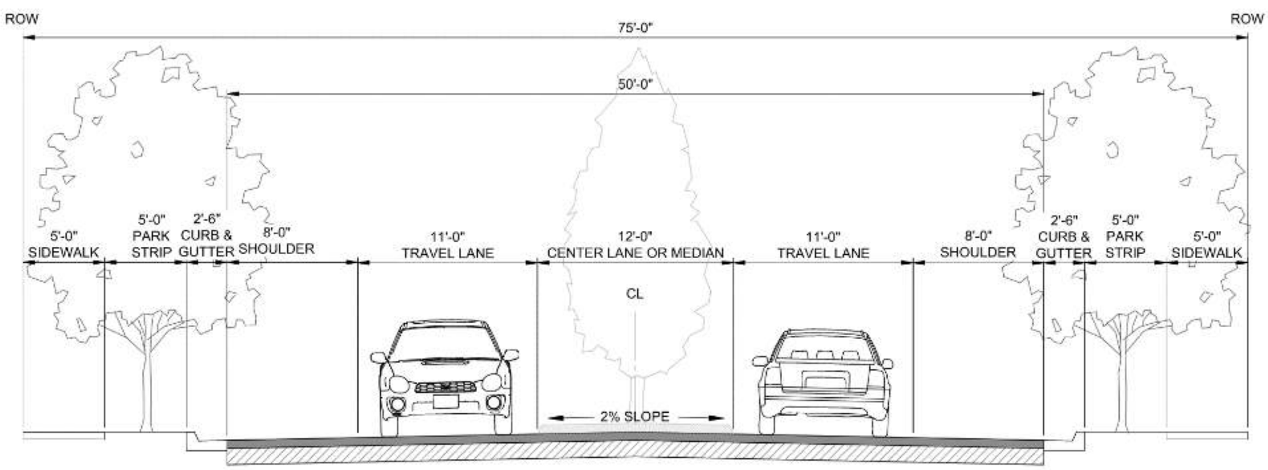


3-LANE URBAN COLLECTOR WITH PARKING

3-Lane Urban Arterial

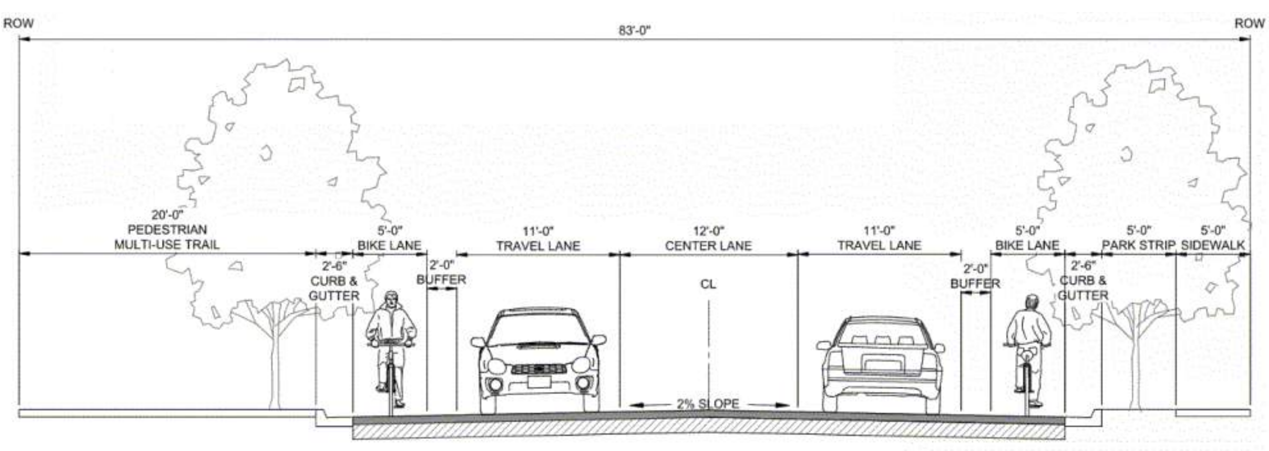


3-LANE URBAN ARTERIAL WITH BIKE LANE & NO PARKING



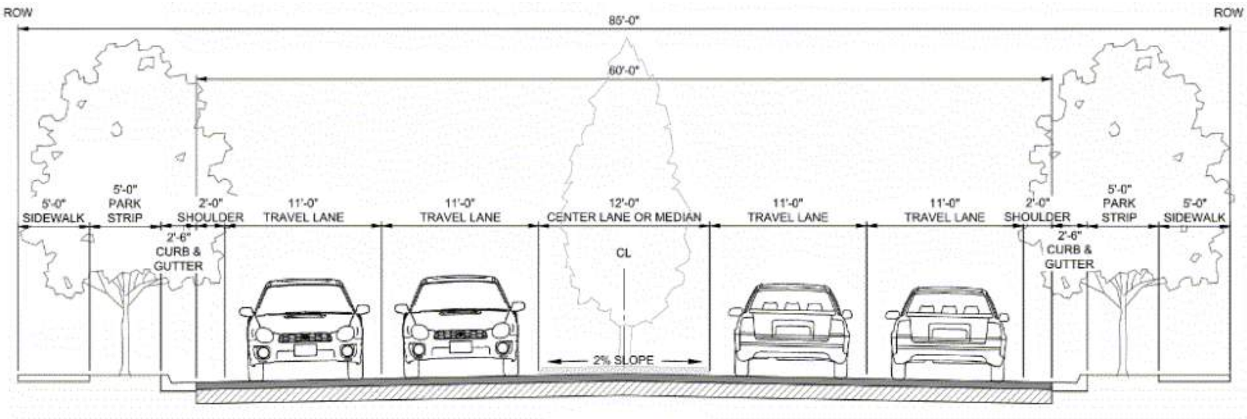
3-LANE URBAN ARTERIAL WITH PARKING

3-Lane Urban Core Arterial



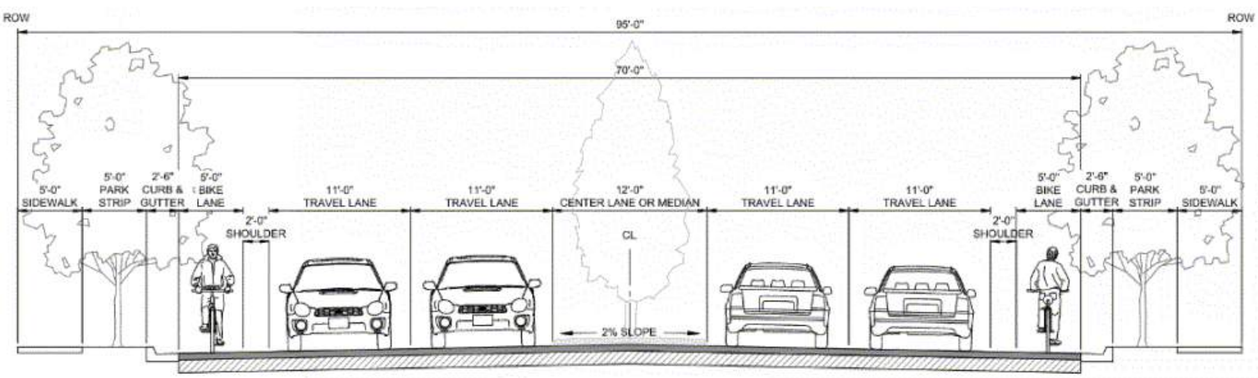
URBAN CORE ARTERIAL
FORT UNION 3 LANE

5-Lane Urban Arterial

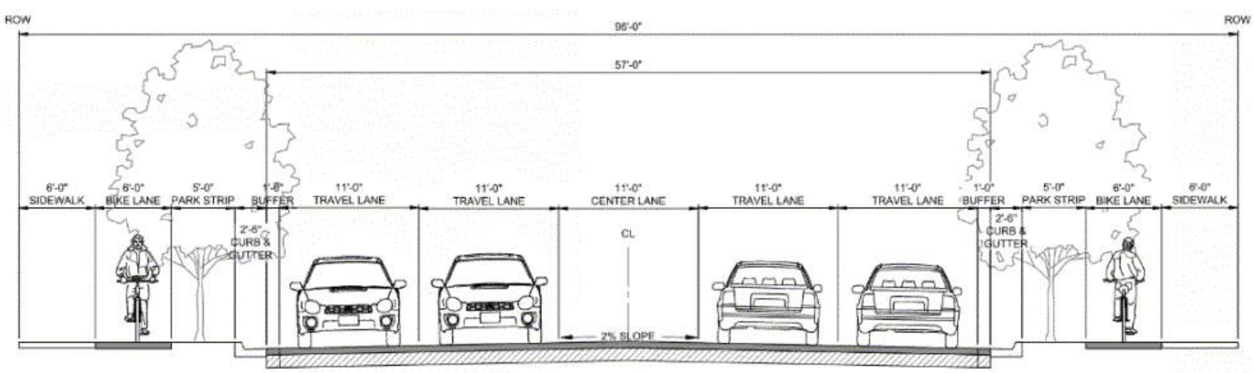


5-LANE URBAN ARTERIAL

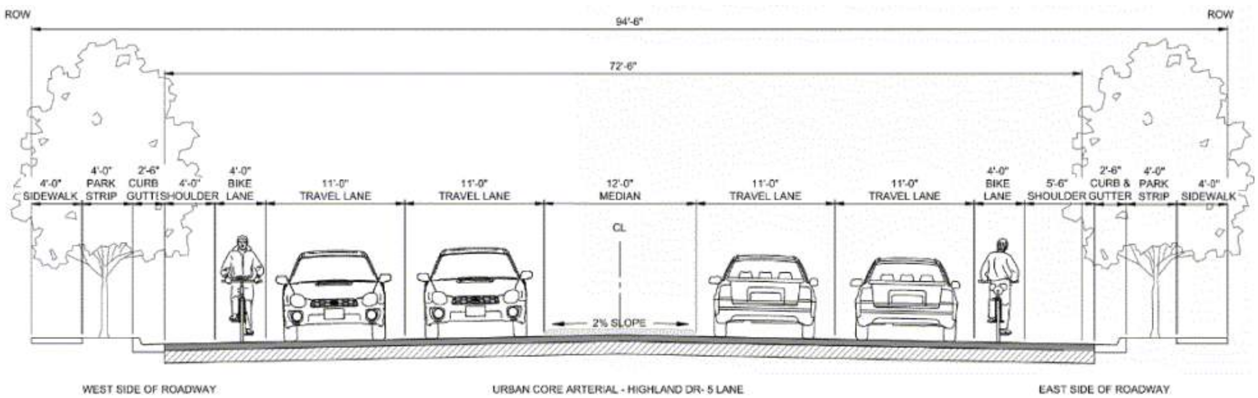
5-Lane Urban Core Arterial



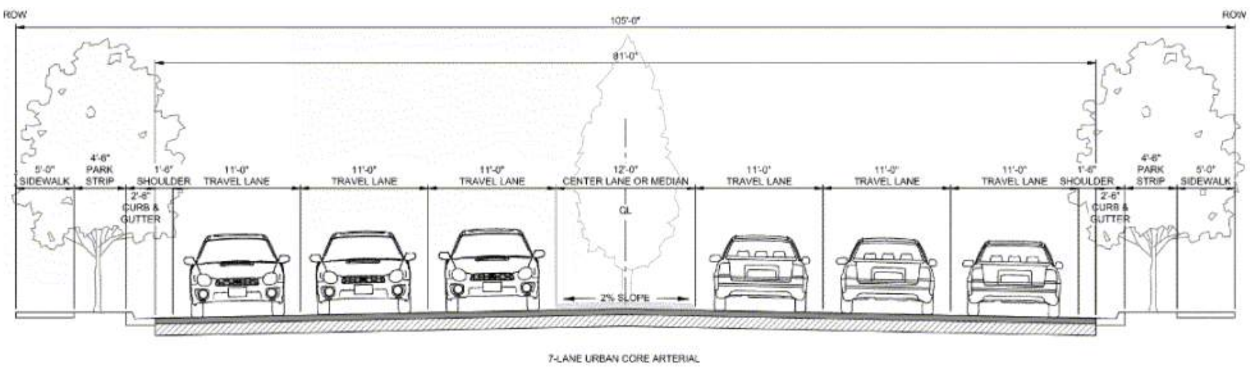
5-LANE URBAN CORE ARTERIAL WITH BIKE LANE

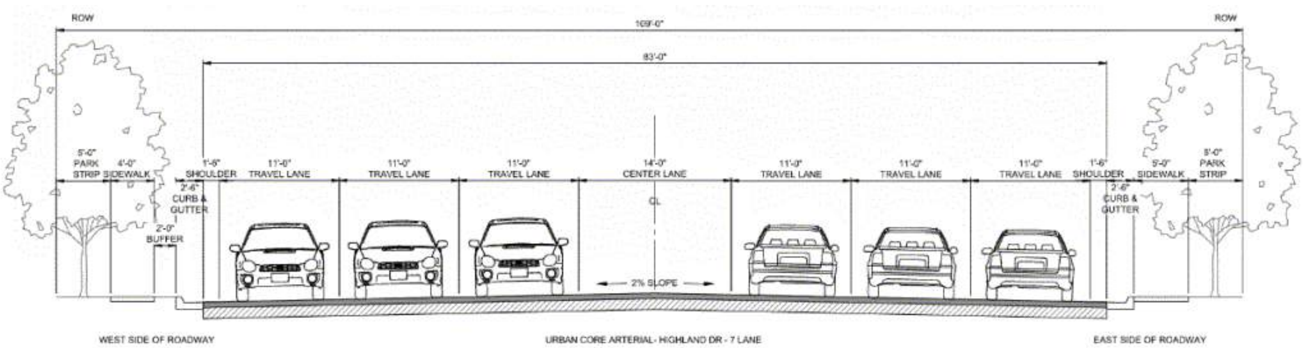


URBAN CORE ARTERIAL FORT UNION - 5 LANE



7-Lane Urban Core Arterial

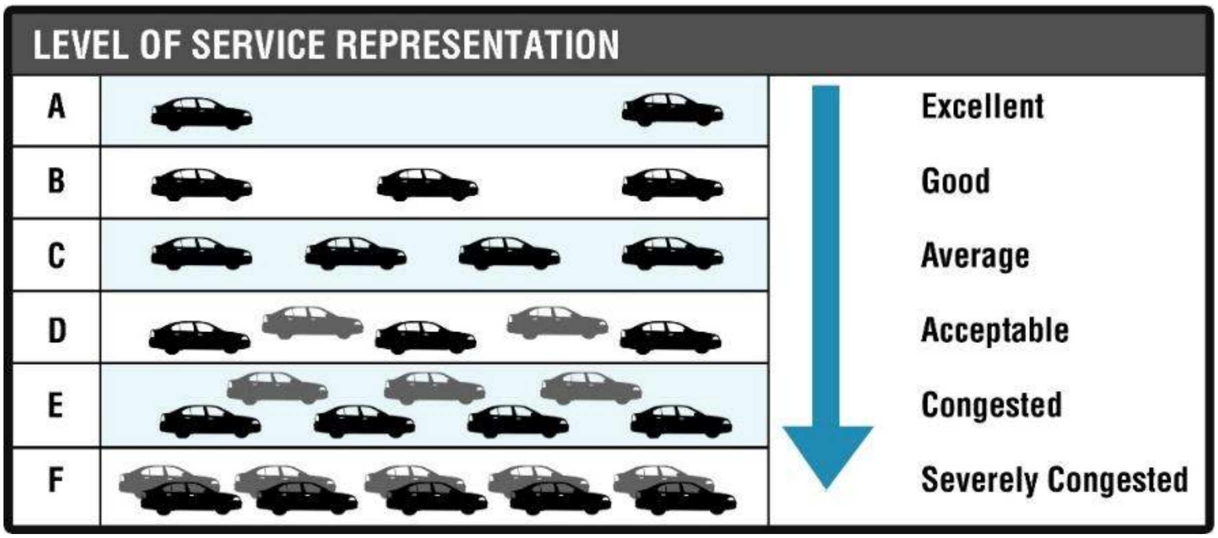




LEVEL OF SERVICE

The adequacy of an existing street system can be quantified by assigning Level of Service (LOS) to major roadways and intersections. As defined in the *Highway Capacity Manual (HCM),* a document published by the Transportation Research Board (TRB), LOS serves as the traditional form of measurement of a roadway's functionality. The TRB identifies LOS by reviewing elements, such as the number of lanes assigned to a roadway, the amount of traffic using the roadway and the time of delay per vehicle traveling on the roadway and at intersections. Level of Service ranges from A (free flow where users are virtually unimpeded by other traffic on the roadway) to F (traffic exceeds the operating capacity of the roadway) as shown in Figure 7.

Figure 7: Level of Service Representation



ROADWAY LEVEL OF SERVICE

Roadway LOS is used as a planning tool to quantitatively represent the ability of a particular roadway to accommodate the travel demand. Table 5 shows LOS traffic volume thresholds for each of the major roadways in the city. When the AADT of these roads exceed the thresholds in Table 5, the road will perform at an unacceptable Level of Service. These values are based on HCM principles and regional experience. Roadway segment LOS can be mitigated with geometry improvements, additional lanes, two-way-left turn lanes, and access management.

Table 5: Arterial and Collector LOS D Capacity Criteria in Vehicles per Day

Lanes	Arterial	Collector
2	13,400	12,100
3	15,100	13,400
4	31,200	24,200
5	32,800	26,900
6	43,500	NA
7	50,500	NA

LOS D is approximately two thirds of a roadway's capacity and is a common goal for smaller urban cities during peak hours. A standard of LOS D for system streets (collectors and arterials) is acceptable for future planning. Attaining LOS C or better on these streets would be potentially cost prohibitive and may present societal impacts, such as the need for additional lanes and wider street cross-sections. LOS D suggests that for most times of the day, the roadways will be operating well below capacity. The peak times of the day will likely experience moderate congestion characterized by a higher vehicle density and slower than free flow speed.

INTERSECTION LEVEL OF SERVICE

Whereas roadway LOS considers an overall picture of a roadway to estimate operating conditions, intersection LOS looks at each individual movement at an intersection and provides a much more precise method for quantifying operations. Since intersections are typically a source of bottlenecks in the transportation network, a detailed look into vehicle delay at each intersection should be performed on a regular basis. The methodology for calculating delay at an intersection is outlined in the *Highway Capacity Manual* (HCM) and the resulting criteria for assigning LOS to signalized and un-signalized intersections are outlined in Table 6. LOS D is considered the industry standard for intersections in an urbanized area. LOS D at an intersection corresponds to an average control delay of 35-55 seconds per vehicle for a signalized intersection and 25-35 seconds per vehicle for an un-signalized intersection.

Table 6: Intersection Level of Service

LOS*	Signalized Intersection Delay (sec/veh)	Stop-Controlled/ Roundabout Delay (sec/veh)
A	≤10	≤10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	≥80	≥50

*LOS F when traffic volumes exceed capacity

At a signalized intersection under LOS D conditions, the average vehicle will be stopped for less than 55 seconds. This is considered an acceptable amount of delay during the times of the day when roadways are most congested. As a rule, traffic signal cycle lengths (the length of time it takes for a traffic signal to cycle through each movement in turn) should be below 90 seconds. An average delay of less than 55 seconds suggests that in most cases, no vehicles will have to wait more than one cycle before proceeding through an intersection.

Un-signalized intersections are generally stop-controlled. These intersections allow major streets to flow freely, and minor intersecting streets to stop prior to entering the intersection. In cases where traffic volumes are more evenly distributed or where sight distances may be limited, four-way stop-controlled intersections are common. LOS for an un-signalized intersection is assigned based on the average control of the worst approach (always a stop approach) at the intersection. An un-signalized intersection operating at LOS D means the average vehicle waiting at one of the stop-controlled approaches will wait no longer than 35 seconds before proceeding through the intersection. This delay may be caused by large volumes of traffic on the major street resulting in fewer gaps in traffic for a vehicle to turn, or for queued vehicles waiting at the stop sign. Roundabout LOS is also measured using the stopped controlled LOS parameters. Intersection problems may be mitigated by adding turn lanes, improving signal timing, and improving corridor signal coordination.

Identifying Intersection LOS and Mitigations

Intersection and roadway segment LOS problems must be solved independently of each other, as the treatment required to mitigate the congestion is different in each case. There are many factors that determine intersection delay:

- Turning movement volumes
  - Thru vehicle volume
  - Turning vehicle conflicts
- Total volume on each leg of intersection
- Signal timing
- Geometric Characteristics
  - Lane configuration
  - Turn pocket lengths.

To determine specific intersection LOS and treatments requires very detailed traffic models for each intersection as small tweaks to these characteristics (population, land use, volume, etc.) will impact the functionality of the intersection. With such variability in how intersections function, identifying very specific intersection improvements can become mis-leading for planning purposes. Therefore, this TMP will identify intersections where improvements are likely needed based on the future projected roadway traffic volumes with the understanding that micro analysis will be completed to determine the specific improvements required to provide acceptable LOS.

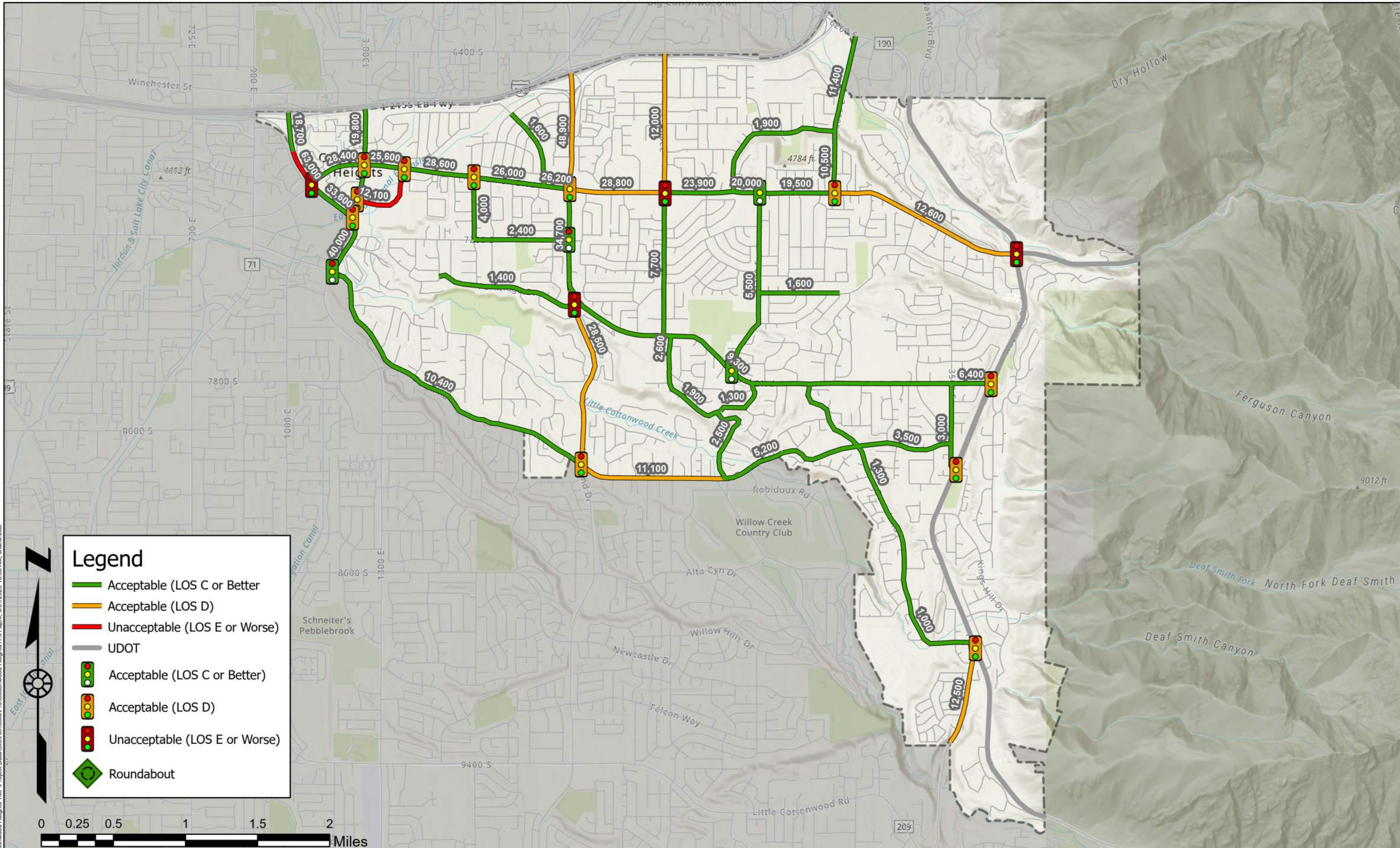
MITIGATIONS TO EXISTING CAPACITY DEFICIENCIES

Using LOS D as the LOS threshold, Figure 8 identifies the roadways and intersections (shown in RED) that have existing capacity deficiencies:

Roadway and Intersection Segments Performing at Unacceptable LOS:

- **Fort Union Blvd & 2300 East Intersection**
- **Park Center Drive –** 1300 East to Fort Union Blvd
- **Highland Drive & Fort Union Blvd Intersection**

In most cases, roadway capacity improvements are achieved by adding travel lanes. In some cases, additional capacity can be gained by striping additional lanes where the existing pavement width will accommodate it. This can be accomplished by eliminating on street parking, creating narrower travel lanes, and adding two-way left turn lanes where they don’t currently exist. For all roadway capacity improvements, it is recommended to investigate other mitigation methods before widening the roadway.



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EXISTING LEVEL OF SERVICE

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

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Figure 8

ACTIVE TRANSPORTATION

Active transportation is a key component of a functional transportation network. Active transportation includes walking, jogging, bicycling, and other forms of non-motorized transportation. Active transportation provides transportation choice, physical and mental health benefits, improves connectivity throughout the city by providing more access to neighborhoods, parks, schools, shopping centers, etc., without needing a vehicle, and improves the environment by reducing noise and air pollution. Pedestrian and bicycle safety is important to any transportation master plan. People will be more inclined to walk or ride their bicycle when the experience is pleasant, they feel safe, and their distances are reasonable. High-density housing near high-traffic generators or main street type areas encourages people to use alternative travel options from the automobile.

EXISTING FACILITIES

Cottonwood Heights separates their active transportation facilities into three categories:

- Level 1 Protection: offers the most protection. These facilities are separated by grade, physical barriers such as bollards and parked vehicles, and other elements that separate the bicyclists and vehicles.
- Level 2 Protection: a road with striping that designates a bike lane. This can sometimes take the form of a typical bike lane, shoulder space for bicyclists, or a buffered bike lane with increased space between bicyclists and vehicles.
- Level 3 Protection: roads that are shared between bicyclists and vehicles. These roads are sometimes marked with road striping or a sign.

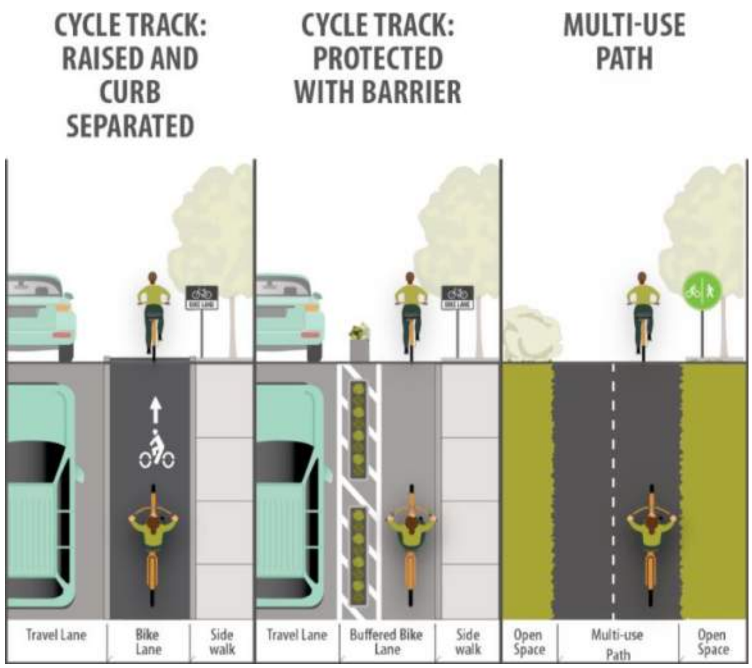
The active transportation projects are intended to give Cottonwood Heights a list of improvements that are needed to form the Backbone Network. Prioritizing the development of the Backbone network will benefit regional connectivity. The Backbone Network will create a multi-jurisdictionally connected active transportation system.

Figure 9 shows the categories of bikeways. More information can be found in the Bicycle and Trails Master Plan (adopted April 2016) and on the City's website, Adopted and Special Plans | Cottonwood Heights, UT (utah.gov). **Figure 10** shows the existing active transportation backbone network. **Table 7** shows the project list for the active transportation backbone network. **Figure 11** shows the proposed active transportation backbone projects. **Figure 12** shows the existing bicycle and trail network in Cottonwood Heights **Table 8** shows the proposed active transportation list. **Figure 13** shows the location of the proposed projects. More information on the Mid-Valley Active Transportation Plan (Adopted 2022) can be found on the Cottonwood Heights website, Adopted and Special Plans | Cottonwood Heights, UT (utah.gov).

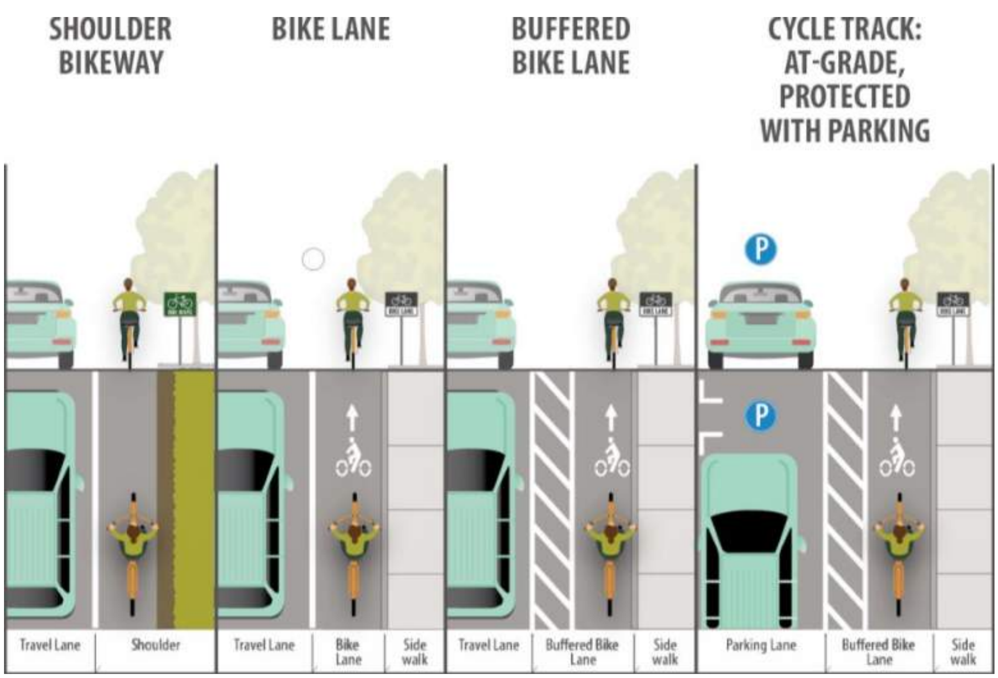
Horrocks recommends that during the design of the transportation projects identified in this TMP, staff refer to these active transportation plans and ensure the inclusion of all active transportation components in the design. This allows cohesiveness between both the transportation and active transportation plans.

Figure 9: Active Transportation Facility Type

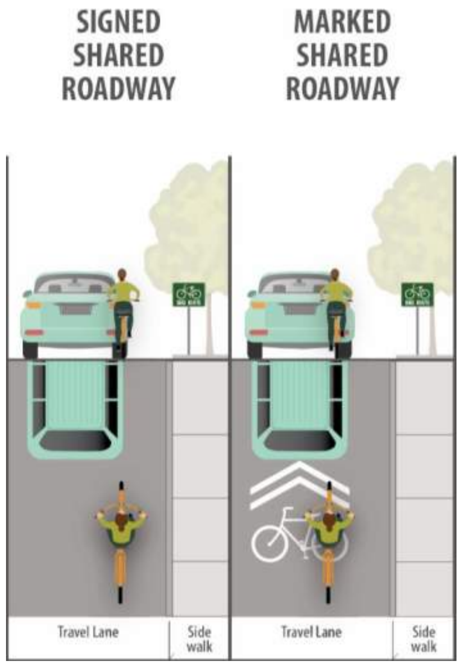
Level 1 Protection



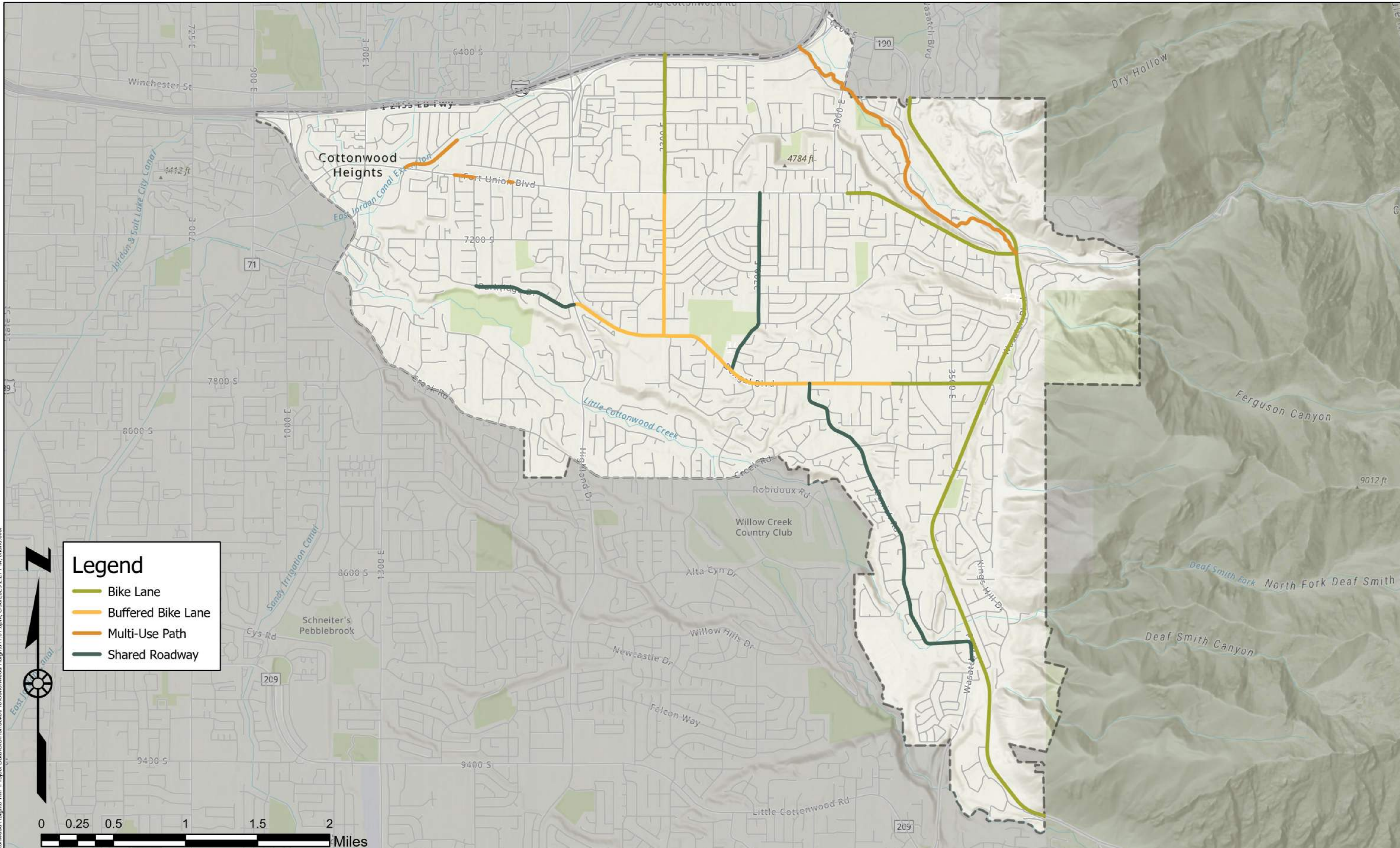
Level 2 Protection



Level 3 Protection



Source: Mid-Valley Active Transportation Plan



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EXISTING ACTIVE TRANSPORTATION BACKBONE NETWORK

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Figure 10

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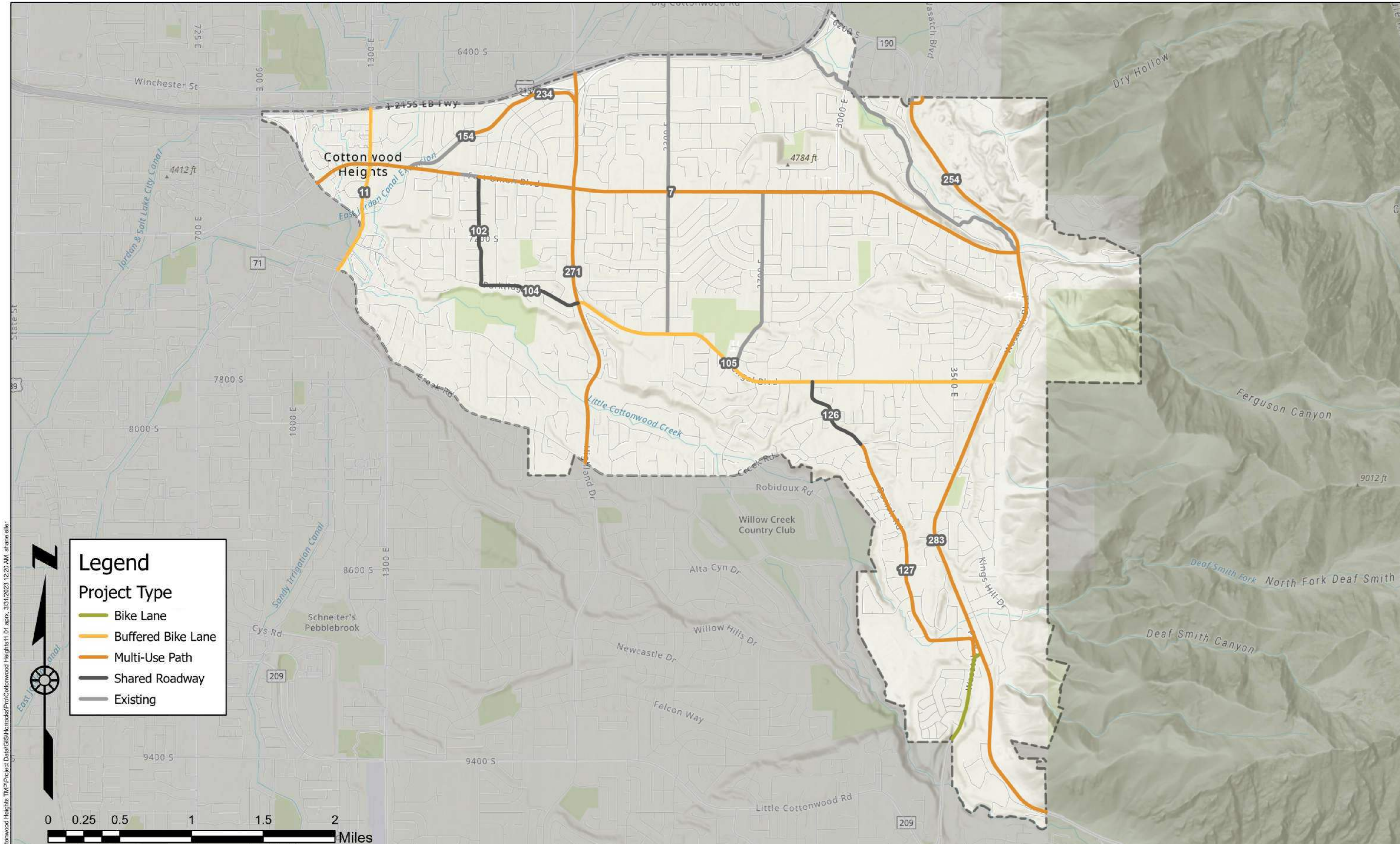

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PROPOSED ACTIVE TRANSPORTATION PROJECTS/BACKBONE NETWORK

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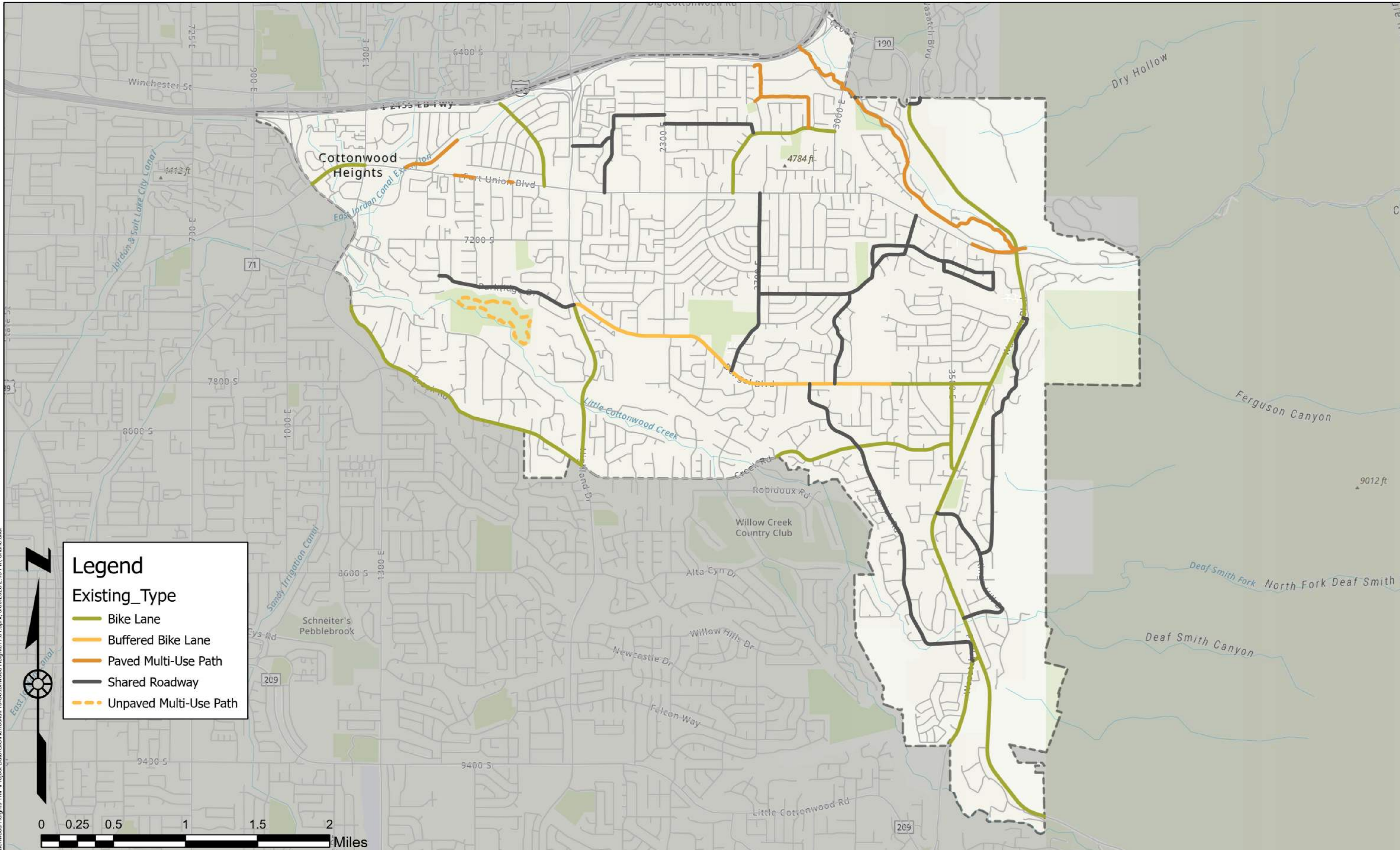
Figure 11

Table 7: Active Transportation Backbone Project List with Costs

Project Number	Project	Type	Cottonwood Heights Cost	Total Cost
7	Fort Union Blvd: 1300 E to Wasatch Blvd	Multi-Use Path	$2,955,000	$2,955,000
11	Richmond St: Approx. Elgin Ave to South Union Ave	Buffered Bike Lane	$33,000	$231,000
102	1700 E/1710 E: Fort Union Blvd to Parkridge Dr	Shoulder Bikeway	$4,000	$4,000
104	Camino Way/Ponderosa Dr/7200 S/1330 E/McCormick Way	Shoulder Bikeway	$15,000	$15,000
105	Bengal Blvd: Highland Dr to Wasatch Blvd	Buffered Bike Lane	$53,000	$87,000
125	Creek Rd: Highland Dr to 3500 E	Shoulder Bikeway	$6,000	$11,000
126	Danish Rd: Bengal Blvd to Creek Rd	Shoulder Bikeway	$3,000	$3,000
127	Danish Rd/Wasatch Blvd: Creek Rd to South boundary	Bike Lane	$27,000	$41,000
128	North Little Cottonwood Rd: Wasatch Blvd to Cottonwood Heights East boundary	Bike Lane	$22,000	$22,000
154	East Jordan Canal Trail: 1495 E to Greenfield Way	Multi-Use Path	$484,000	$484,000
234	6670 S to Highland Dr	Multi-Use Path	$306,000	$306,000
254	Wasatch Blvd: 3900 S to Big Cottonwood Canyon Rd	Multi-Use Path	$910,000	$4,344,000
280	Fort Union Blvd: 700 E to 1300 E	Protected Cycle Track	$1,488,300	$4,961,000
283	Wasatch Blvd: City Boundary to Fort Union Blvd	Multi-Use Path	$2,732,000	$2,732,000

Source: Mid-Valley Active Transportation Plan



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EXISTING ACTIVE TRANSPORTATION NETWORK

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

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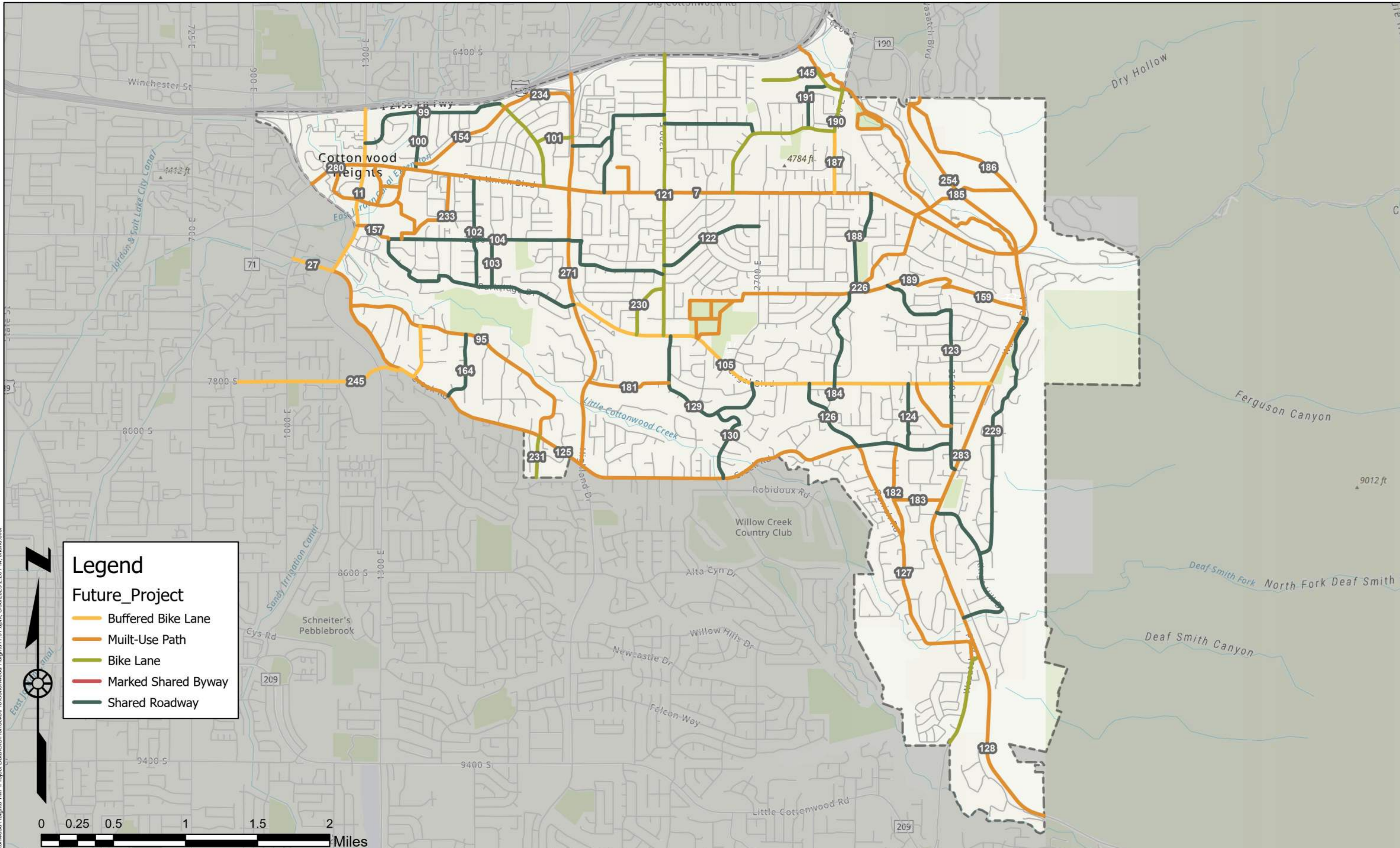
Figure 12

Table 8: Proposed Active Transportation Project List

Project Number	Project	Type	Cottonwood Heights Cost	Total Cost
7	Fort Union Blvd: 1300 E to Wasatch Blvd	Multi-Use Path	$2,955,000	$2,955,000
11	Richmond St: Approx. Elgin Ave to South Union Ave	Buffered Bike Lane	$33,000	$231,000
27	South Union Ave/Creek Rd: 1020 E to Siesta Dr	Buffered Bike Lane	$9,000	$17,000
95	Siesta Dr: Creek Rd to Creek Rd	Shoulder Bikeway	$8,000	$8,000
99	Hollow Dale Dr/6670 S/Greenfield Way: 1300 E	Shoulder Bikeway	$5,000	$5,000
100	1495 E: 6670 S to Fort Union Blvd	Shoulder Bikeway	$2,000	$2,000
101	La Cresta Dr: Greenfield Way to Highland Dr	Bike Lane	$5,000	$5,000
102	1700 E/1710 E: Fort Union Blvd to Parkridge Dr	Shoulder Bikeway	$4,000	$4,000
103	Chris Ln: 7200 S to Parkridge Dr	Shoulder Bikeway	$2,000	$2,000
104	Camino Way/Ponderosa Dr/7200 S/1330 E/McCormick Way	Shoulder Bikeway	$15,000	$15,000
105	Bengal Blvd: Highland Dr to Wasatch Blvd	Buffered Bike Lane	$53,000	$87,000
121	2300 E: Big Cottonwood Rd to Bengal Blvd	Bike Lane	$16,000	$38,000
122	Cavalier Dr: 2300 E to 2700 E	Shoulder Bikeway	$3,000	$3,000
123	3500 E/Enchanted Hills: Trail to Wasatch Blvd	Shoulder Bikeway	$7,000	$7,000
124	Oak Ledge Rd: Bengal Blvd to Creek Rd	Shoulder Bikeway	$2,000	$2,000
125	Creek Rd: Highland Dr to 3500 E	Shoulder Bikeway	$6,000	$11,000
126	Danish Rd: Bengal Blvd to Creek Rd	Shoulder Bikeway	$3,000	$3,000
127	Danish Rd/Wasatch Blvd: Creek Rd to South boundary	Bike Lane	$27,000	$41,000
128	North Little Cottonwood Rd: Wasatch Blvd to Cottonwood Heights East boundary	Bike Lane	$22,000	$22,000
129	2325 E/Nantucket Dr: Bengal Blvd to Bengal Blvd	Shoulder Bikeway	$5,000	$5,000
130	Portsmouth Ave/Oak Creek Dr: Nantucket Dr to East Creek Rd	Shoulder Bikeway	$3,000	$3,000
145	Cottonwood Pkwy: 3000 E to end of Cottonwood Pkwy	Bike Lane	$11,000	$11,000
154	East Jordan Canal Trail: 1495 E to Greenfield Way	Multi-Use Path	$484,000	$484,000
157	Trail Connection: 1300 E to 1330 E	Multi-Use Path	$153,000	$153,000
159	Trail Connection: Magic View to Wasatch Blvd	Multi-Use Path	$373,000	$373,000
164	Keswick Rd: Siesta Dr to Creek Rd	Shoulder Bikeway	$3,000	$3,000
181	Highland Dr to 2325 E	Multi-Use Path	$369,000	$369,000
182	Deer Creek Rd: Creek Rd to Danish Rd	Multi-Use Path	$408,000	$408,000
183	Trail Connection to Wasatch Blvd	Multi-Use Path	$210,000	$210,000
184	Danish Downs Ct to Bengal Blvd	Neighborhood Byway	$2,000	$2,000
185	Fort Union Blvd to West of Wasatch Blvd	Multi-Use Path	$595,000	$595,000
186	Big Cottonwood Canyon Rd to 6200 S	Bike Lane	$24,000	$24,000
187	3000 E: Hollow Mill Dr: to Fort Union Blvd	Buffered Bike Lane	$12,000	$12,000
188	Sagebrush Way/7180 S: Fort Union Blvd to Banbury Rd	Neighborhood Byway	$3,000	$3,000
189	Banbury Rd to Magic View Drive Trail connection	Multi-Use Path	$490,000	$490,000
190	3000 E/Hollow Mill Dr: Cottonwood Pkwy to Anne Marie Dr	Bike Lane	$8,000	$8,000
191	Cottonwood Pkwy to Hollow Mill Dr	Neighborhood Byway	$2,000	$2,000
226	Banbury Rd: 2700 E to Brighton Way	Bike Lane	$11,000	$11,000
229	Top of the World Dr: Honeywood Cove to Top of the World Cir	Bike Lane	$16,000	$16,000
230	2300 S to Bengal Blvd	Bike Lane	$4,000	$4,000
231	School Entrance: Creek Rd to Boundary	Bike Lane	$5,000	$5,000
233	Fort Union Blvd to 7200 S	Multi-Use Path	$554,000	$554,000
234	6670 S to Highland Dr	Multi-Use Path	$306,000	$306,000
245	Riverwood Dr/7800 S: Siesta Dr to Devin Pl	Buffered Bike Lane	$12,000	$63,000
254	Wasatch Blvd: 3900 S to Big Cottonwood Canyon Rd	Multi-Use Path	$910,000	$4,344,000
271	Highland Dr/Van Winkle: Canyon Creek to 900 E	Bike Lane	$27,000	$149,000
280	Fort Union Blvd: 700 E to 1300 E	Protected Cycle Track	$1,488,300	$4,961,000
283	Wasatch Blvd: City Boundary to Fort Union Blvd	Multi-Use Path	$2,732,000	$2,732,000

Source: Mid-Valley Active Transportation Plan



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ALL PROPOSED PROJECTS

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/30/2023

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Figure 13

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NEIGHBORHOOD CONNECTIVITY

Another component analyzed as part of this TMP is the connectivity between neighborhoods. Neighborhood connectivity promotes a more inviting bicycle and pedestrian infrastructure while also increasing safety for users. It creates a safe connected network where pedestrians and bicyclists have a comfortable and intuitive option as their first choice.

Neighborhood connectivity issues can be resolved by installing HAWK signals or Rectangular Rapid Flash Beacons (RRFB), Mid-block crosswalks, new crosswalks, pedestrian bridges, and completing sidewalks. Examples of these are shown in Figure 14. To help improve safety, Cottonwood Heights will explore additional safety measures for crosswalks and continue to monitor sidewalk conditions. With the help from city staff, Horrocks has identified some possible neighborhood connectivity project locations, these are shown in Figure 15.

Horrocks performed an inventory of the sidewalks and crosswalks throughout Cottonwood Heights and recommends sidewalk connectivity throughout the city. Figure 16 and Figure 17 shows the existing sidewalks and crosswalks throughout the city, and whether there are no sidewalks, sidewalks on one side of the road, or full sidewalks installed.

Safe Routes to School (SRTS) is program that promotes walking and bicycling to school through infrastructure improvements, enforcement, tools, safety education. SRTS improves safety for students. The department of transportation, MPO, local government, school district, or schools can implement SRTS programs. Figure 18 shows the safe routes for the schools in Cottonwood Heights. This should be updated and maintained so the city can identify future pedestrian projects if necessary. A detailed map for each school is in Appendix D.

Figure 14: Pedestrian Safety

HAWK Signal

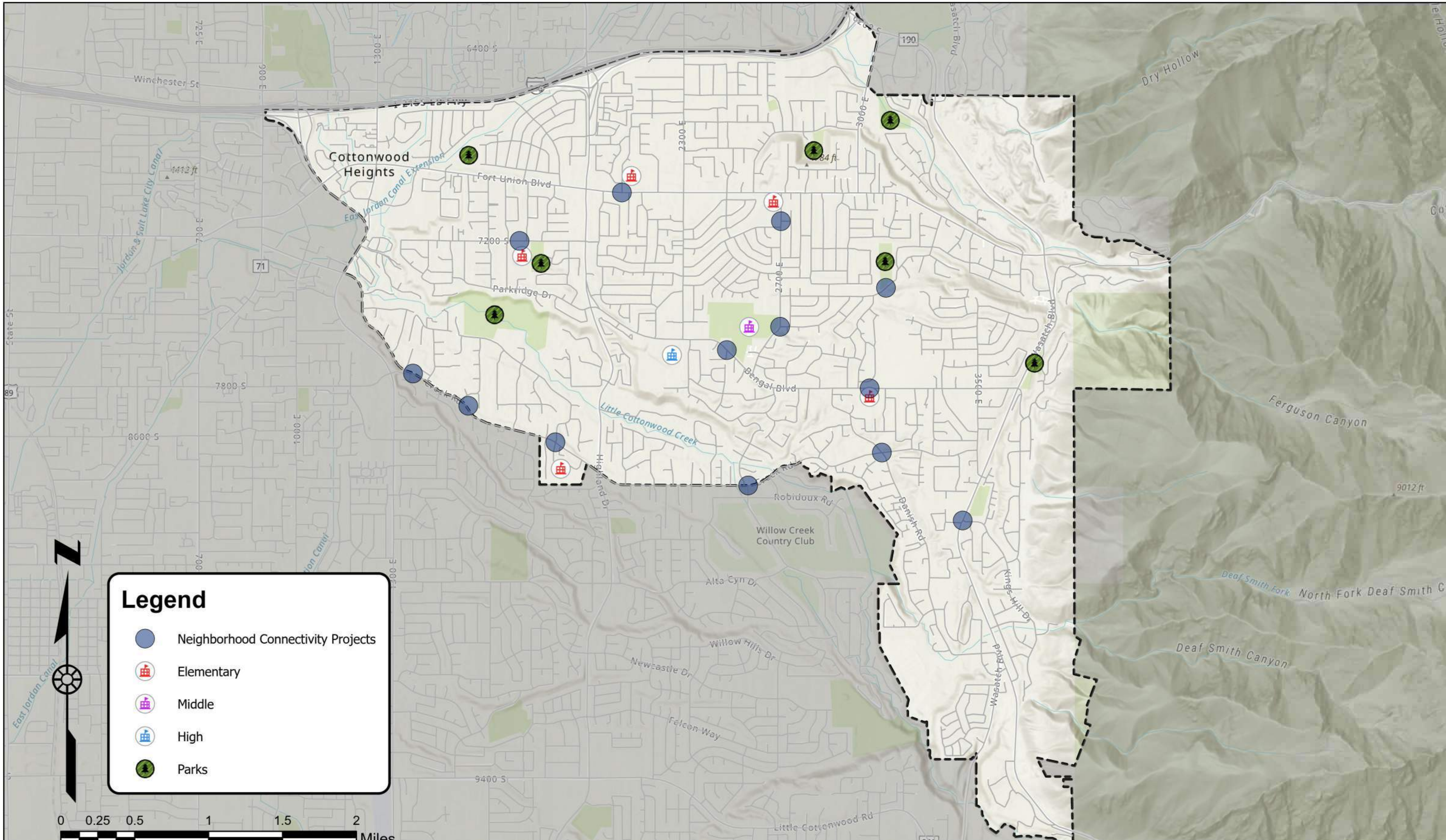
Source: docslib.org

Rectangular Rapid Flash Beacon (RRFB)

Mid-Block Crossing

Source: nacto.org

Pedestrian Bridge



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NEIGHBORHOOD CONNECTIVITY PROJECTS

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

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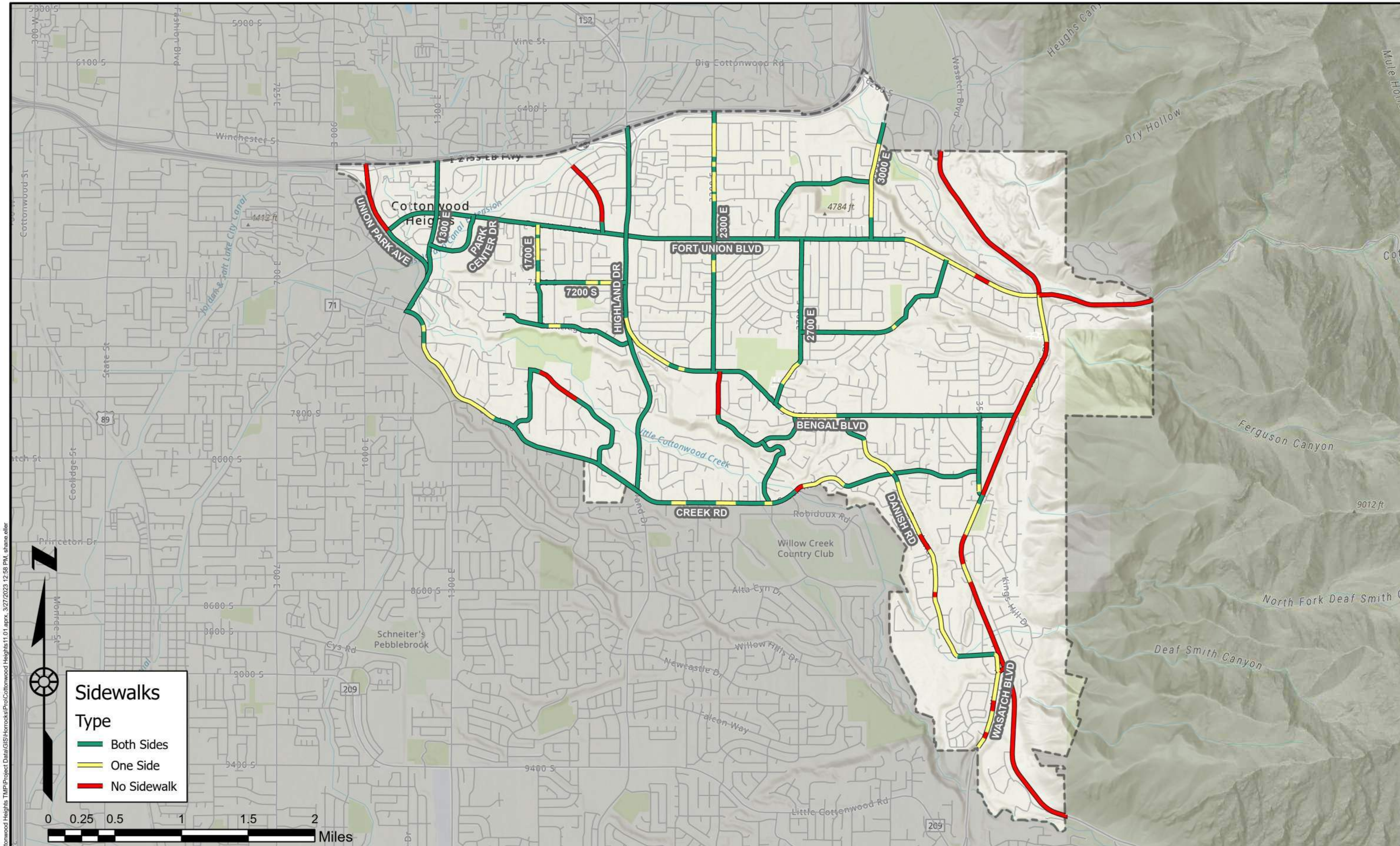
	Figure 15



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SIDEWALK MAP

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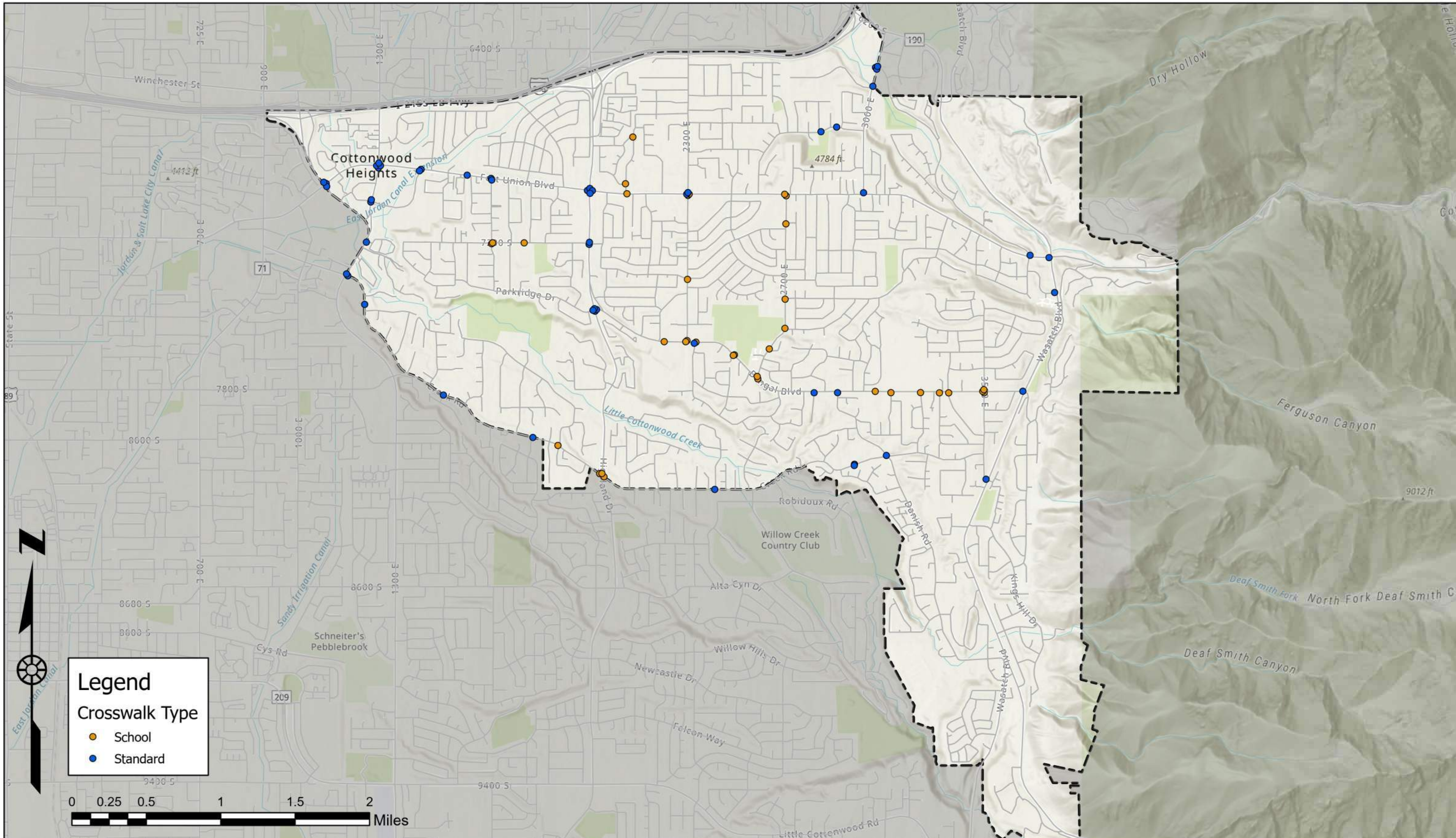
Figure 16



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CROSSWALKS

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

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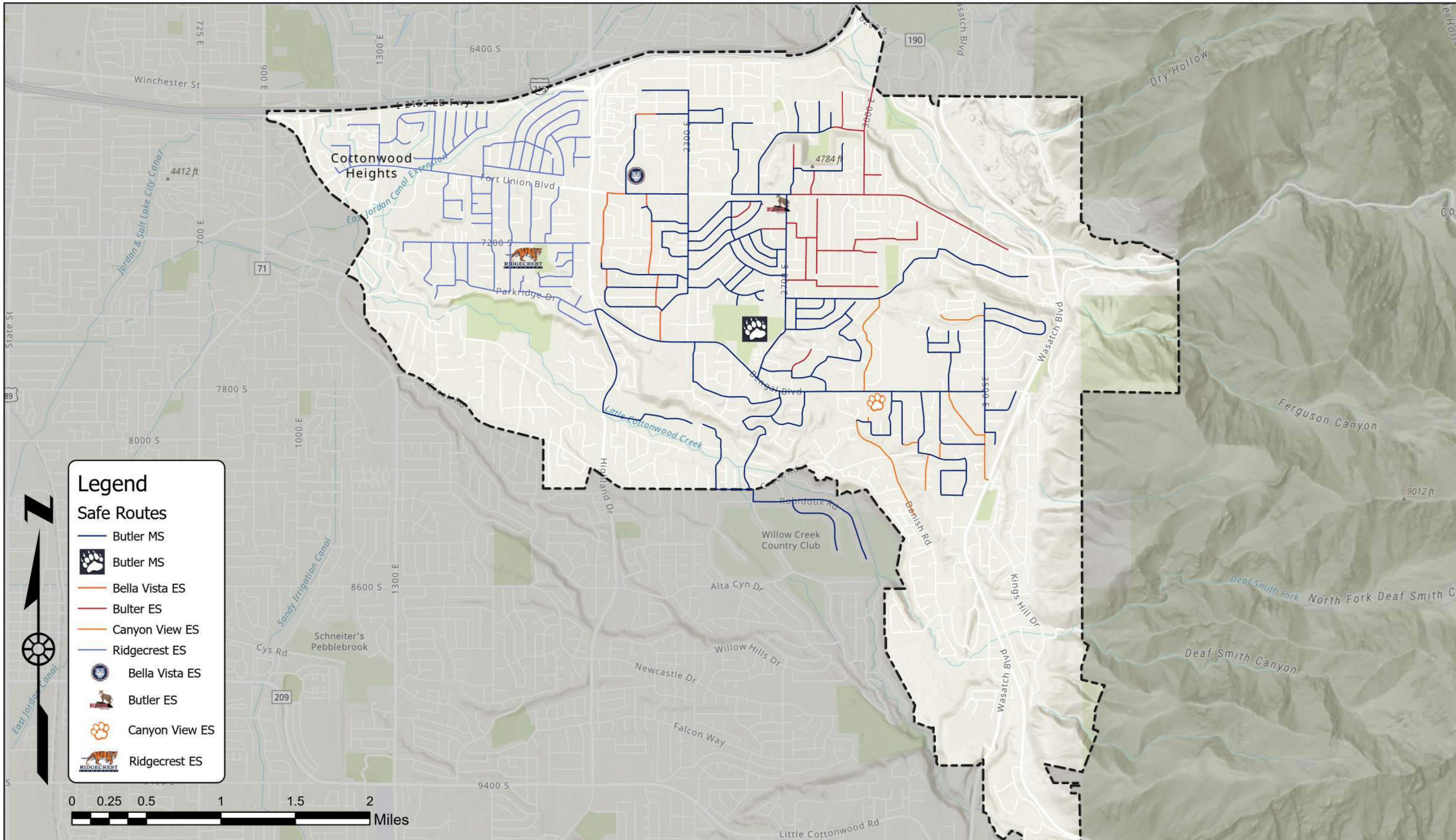
Figure 17



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SAFE ROUTES MAP

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

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Figure 18

SAFE STREETS FOR ALL (SS4A)

Cottonwood Heights places a high priority on identifying current roadway safety conditions based on historic data sources and is committed to developing a safety action plan to address crash rates and fatalities. In January 2023, the Wasatch Front Regional Council (WFRC) was awarded federal funds from the Safe Streets for All (SS4A) initiative under the Federal Highways Administration (FHWA) to develop a Safety Action Plan in conjunction with the communities in WFRC's planning jurisdiction, which includes Cottonwood Heights. As an MPO, WFRC is a federally mandated decision-making body to ensure regional cooperation in transportation planning and the use of federal funds. WFRC will oversee the Safety Action Plan process, with strong collaboration and transparency from local governments including Cottonwood Heights.

The city will become eligible for SS4A Implementation Plan funds (also distributed by FHWA) upon completion of the WFRC SS4A Safety Action Plan and begin applying for funds to construct priority projects identified during the planning effort. The **SS4A Safety Action Plan** effort will include:

- Strong commitments from local governing bodies to adopt a zero fatalities and serious injuries policy: with clear timelines and-or milestones for achieving those results.
- Robust, equitable, and inclusive public engagement.
- Crash and injury data collection and analysis to develop a High Injury Network.
- An assessment of current policies and recommendations to update as needed.
- An overall equitable process from engagement to project identification.
- The development of projects and strategies to address roadway safety.
- Evaluation criteria to measure progress and improvements over time.

Cottonwood Heights is committed to developing safety recommendations and implementing projects and policies on city-owned roadways to address affected areas within the city's jurisdictional boundaries as outlined by SS4A. The city is committed to maintaining infrastructure and regularly monitoring safety data, reporting yearly at a minimum.

SS4A Implementation Plan Grant funds can be used for a variety of infrastructure, behavioral, and operational safety activities as defined in the Safety Action Plan. Some examples include, but are not limited to:

- Low-cost roadway safety treatments like rumble strips, high-friction surface treatments, and road diets
- Improving pedestrian crosswalks with high-visibility treatments, lighting, and signage
- Transforming roadway identified in the High Injury Network into Complete Streets
- Supporting the development of bikeway networks
- Implementing speed management strategies through traffic-calming infrastructure
- Adopting innovative technologies to protect vulnerable road users.

SS4A Implementation Plan Grants are available annually on a rolling basis to make improvements, and applications have historically been due in September and are available at the City, County, and MPO levels. It is assumed that Cottonwood Heights will likely be ready and eligible to apply for funds in 2024 and beyond.

Future Conditions

Projecting Cottonwood Height's future roadway conditions helps pinpoint potential areas that will need improvements or mitigations. These projects are illustrated through future scenarios, which were created using existing conditions and deficiencies along with anticipated population growth. This TMP investigates two future conditions that identify short-term and long-term improvements. To align with WFRC's project phasing, the following identifies the two future conditions analyzed and the relationship with the WFRC project phasing:

- Short-Term Conditions – WFRC Phase 1 (2023-2032)
- Long-Term Conditions – WFRC Phase 2 (2033-2042) & WFRC Phase 3 (2043-2050)

Each timeframe has a corresponding no-build scenario, which demonstrates the possible impact that could arise if no improvements or mitigations are made to the city's roadway system. Following the no-build scenario are potential mitigations Cottonwood Heights could utilize for roadway improvements and a list of proposed projects. These recommended projects are prioritized to be completed based whether it should be completed as part of Phase 1 or Phase 2 and Phase 3.

TRAVEL DEMAND MODEL

The WFRC Travel Demand Model was used to project existing traffic conditions into the future. Cottonwood Heights's land use plan, socioeconomic data as well as additional data obtained from the city serve as valuable input into the travel demand model. This section discusses the socioeconomic data, land use, vehicle trip generation as well as the precautions of using the Travel Demand Model.

TRIP GENERATION

Horrocks used the socio-economic data provided in the WFRC travel demand model to generate vehicle trips. Cottonwood Heights was split into geographical sections called Traffic Analysis Zones (TAZ). Each TAZ contains socio-economic data. This data includes the number of households with the number of people per household, employment opportunities, and average income levels. This data is used to generate vehicle trips that originate in the TAZ. All trips generated in the TAZ are assigned to other TAZs based on the data within the zones. Since the WFRC travel demand model predicts regional travel patterns, Horrocks updated the TAZ structure to obtain more detailed travel demand data for Cottonwood Heights. Horrocks completed this by splitting larger TAZs and assigning the generated trips from the planned gravel pit development into the corresponding TAZ of the travel demand model.

TRIP DISTRIBUTION

Because of the upcoming projects in Cottonwood Heights, the trip distribution will change significantly. This is due to the Wasatch Boulevard Gravel Pit development. This will generate many unknown variables that make accurately predicting future trip distribution difficult. The development will likely increase traffic at the north-east and south-east ends of Cottonwood Heights towards I-215 and Sandy. These have been included in the analysis. Once implemented, it is recommended to re-evaluate traffic flow throughout the city.

TRAVEL DEMAND MODEL PRECAUTIONS

Cottonwood Heights aims to plan for and encourage responsible and sustainable growth in the city. Part of the commitment to provide a sustainable system includes reducing vehicle trips by balancing roads, trails, bikeways, and public transit facilities. Today's transportation system should not only accommodate existing travel demands. The city should consider some precautions with the socioeconomic data used in this report and the anticipated growth in the city. First, the TAZ-specific socioeconomic data only approximates the boundary conditions of Cottonwood Heights and is based on data provided by the city's planning documents. Second, actual values may vary somewhat because of the size of the study area of the regional travel demand model, which includes the unincorporated areas around Cottonwood Heights. Therefore, the recommendations in this report represent a planning-level analysis, and the city should not use it for project construction without review and further analysis. This document should also be considered a living document, and the city should update it as development plans, zoning plans, and traffic patterns and trends change.

FUTURE CONDITIONS

This section analyzes the future anticipated roadway conditions for the short-term and long-term conditions. This allows the city to determine future projects that need to be implemented by 2030 and 2050 that will accommodate existing deficiencies as well as the anticipated population growth, land use, and zoning for Cottonwood Heights and the surrounding areas. Short-term planning allows the city to ensure proper budgeting and resources are allocated to the improvements that have the greatest influence on the roadway network. An advantage to Long-Term planning is to begin preparing and conserving ROW for future corridors as development occurs. This allows development to occur today while minimizing future risk of major issues since the proper ROW is preserved for future corridors to be built.

NO-BUILD LEVEL OF SERVICE

A no-build scenario is intended to show what the roadway network would be like in the future if no action is taken by the city to improve the roadway network. The travel demand model was again used to predict this condition by applying the future growth and travel demand to the existing roadway network. All regionally significant projects included in WFRC's Regional Transportation Plan (RTP) are assumed to be built as part of this scenario projects. As shown in Figure 19 and Figure 20 the following roadways would perform at LOS E or worse if no action were taken to improve the roadway network within Cottonwood Heights City limits:

Short-term (2023-2032)

- **2300 East** – *Fort Union Blvd to north city boundary*: Collector Street for connectivity between Fort Union Blvd and south city boundary. Reconfigure roadway to 3 lanes**.
- **Union Park Ave** – *I-215 eastbound on/off-ramps to Creek Road*: Arterial Street for connectivity between I-215 eastbound on/off ramps and Creek Road. WFRC operational upgrades
- **Park Centre Drive -** *1300 East to Fort Union Blvd*: Collector Street for connectivity between 1300 East and Fort Union Blvd. Reconfigure roadway with two-way left turn lane**.

Long Term (2033-2050)

- **Highland Drive** – *Fort Union Blvd to north city boundary*: Arterial Street for connectivity between Fort Union Blvd and north city boundary. WFRC operational upgrades.
- **Fort Union Blvd –** *Highland Drive to 2300 East*: Arterial Street for connectivity between Highland Drive and 2300 East. WFRC operational upgrades.
- **Fort Union Blvd –** *Bengal Blvd to Creek Road*: Arterial Street for connectivity between Bengal Blvd and Creek Road. Reconfigure roadway to 7 lanes.
- **Highland Drive** – *Fort Union Blvd to north city boundary*: Arterial Street for connectivity between Fort Union Blvd and north city boundary. WFRC operational upgrades.
- **3000 East –** *Fort Union Blvd to north city boundary*: Arterial Street for connectivity between Fort Union Blvd and north city boundary. Reconfigure roadway to 5 lanes.
- **Creek Road** – *Union Park Ave to Oak Creek Drive*: Collector Street for connectivity between Union Park Ave and Oak Creek Drive. Operational upgrades

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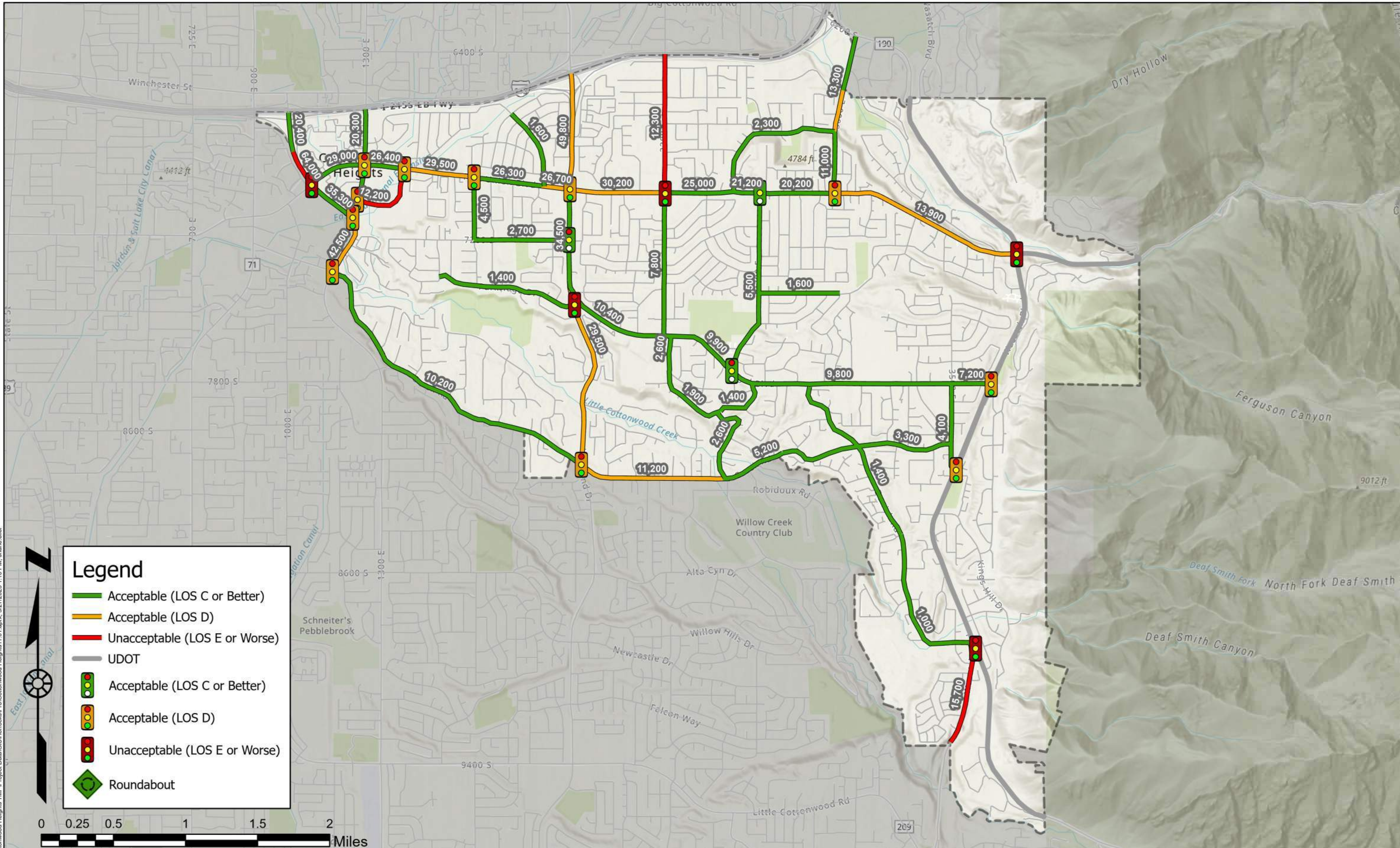
*No mitigations, delay will be used as a traffic calming measure
** Add Center Turn Lane



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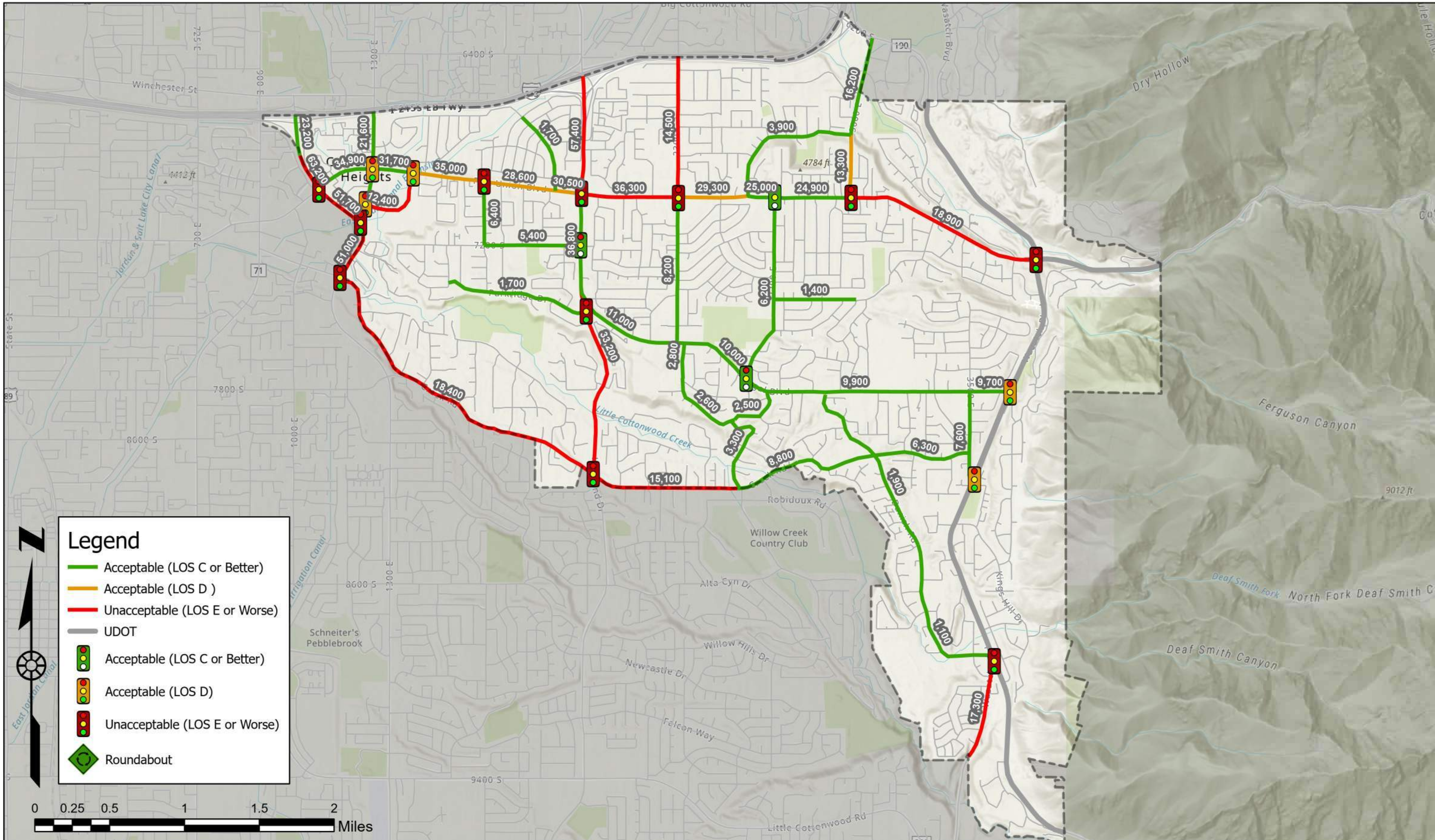
SHORT TERM NO BUILD LEVEL OF SERVICE MAP

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/27/2023

DRAWN SEE

Figure 19



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LONG TERM NO BUILD LEVEL OF SERVICE

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/27/2023
DRAWN SEE
Figure 20

PROPOSED PROJECTS

Improvements will need to be made as growth occurs to preserve the quality of life for Cottonwood Heights residents and to maintain an acceptable LOS on city streets and intersections. These improvements will also provide a sound street system that will support the City's growing economic base.

Short Term (2023-2032)

The No Build Level of Service as well as the WFRC long range plan form the basis for improving the Cottonwood Heights roadway network for 2032. The 2032 Master Plan Solution Model network was developed through a series of iterations with input from City staff. The final recommended roadway network seeks to balance accommodating demand through the year 2032 with fiscal responsibility, while also considering the planning efforts of neighboring cities. The following lists the projects to meet the demand through 2032 and are identified in Table 9.

Short Term Improvements

- **2300 East –** *Fort Union Blvd to north city boundary*: Collector Street for connectivity between Fort Union Blvd and north city boundary. Improve pedestrian safety & walkability, reconfigure roadway from 2 to 3 lanes (add center turn lane).
- **Fort Union Blvd & 2300 East –** *Intersection Improvement*: Auxiliary turn lanes to improve intersection delay and improve bicycle safety through intersection.
- **Park Center Drive**-*1300 East to Fort Union Blvd*: Collector Street for connectivity between 1300 South and Fort Union Blvd. Reconfigure roadway from 2 to 3 lanes (add center turn lane).
- **Highland Frontage Road & La Cresta Drive –** *Intersection improvement*: Realign intersection and improve pedestrian safety with construction of Highland Drive pedestrian trail.
- **Highland Drive (2000 East) & Fort Union Blvd –** *Intersection improvement*: Reconfigure roadway from 6 to 7 lanes from 7200 South to 6900 South

Long-Term (2033-2050)

Improvements will be needed as growth occurs to preserve the quality of life for Cottonwood Heights residents and to maintain an acceptable LOS on city roads and intersections. Improvements to the roadway network should include widening existing transportation corridors, making intersection improvements, and other operational upgrades to provide future residents with an adequate transportation system. These improvements will also provide a sound street system that will support the city's growing economic base. Using the Short-Term proposed projects, this no-build analysis as well as coordination with city staff, the following additional roadway improvements will meet the 2050 roadway demands:

- **Fort Union Blvd –** 3000 East to Wasatch Blvd: Roadway redesign to include pedestrian trail per approved cross-section.
- **Wasatch Boulevard –** *SR-92 to south city boundary*: Improve pedestrian safety and walkability with multi-use trail, reconfigure roadway from 2 to 3 lanes (add center turn lane).
- **Fort Union Blvd & 1300 East –** Intersection improvement to reduce delay and improve pedestrian safety and bicycle accommodations.
- **2600 East –** Bengal Blvd to Bridgewater Drive: Reconfigure roadway from 2 to 3 lanes (add center turn lane).

- **Danish Road –** Creek Road to Wasatch Blvd: Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.
- **3000 East:** 6200 South to 7000 South: Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.
- **Highland Drive (2000 East) –** *Fort Union Blvd to North City Boundary*: Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.
- **3500 East &Bengal Blvd –** *Intersection improvement*: Upgrade to a roundabout intersection.
- **1700 East –** Fort Union Blvd to 7200 South: Collector Street for connectivity between Fort Union Blvd and 7200 South. Improve pedestrian safety and walkability, reconfigure roadway from 2 to 3 lanes (add center turn lane).
- **7200 South –** 1700 East to Highland Drive: Improve pedestrian safety and walkability, reconfigure roadway from 2 to 3 lanes (add center turn lane).
- **Fort Union Blvd –** 1300 East to 3000 East: Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.
- **Highland Drive (2000 East) –** *Bengal Blvd to Creek Road*: Reconfigure roadway from 4/5 to 7 lanes.
- **Union Park Blvd –** *I-215 to Creek Road*: Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.
- **Creek Road –** *1300 East to Oak Creek Drive*: Arterial Street for connectivity between Oak Creek Drive and 1300 East. Operational project to improve pedestrian safety, walkability, and traffic flow without adding lane capacity.

The specific roadway network improvements resulting from future growth throughout Cottonwood Heights are identified in Figure 21. As things change in Cottonwood Heights, it is recommended to reevaluate projects and the impacts they have in the overall traffic network. This will require reevaluating new projects lists as developments grow and change. All projects necessary to improve the roadway network were identified and compiled into tables to produce a Transportation Improvement Plan (TIP). The costs in Table 9 were generated using 2023 costs. Project timing should be determined by development and transportation needs. It is expected that the total cost of roadway improvements for 2050 will be approximately **$148,733,000**.

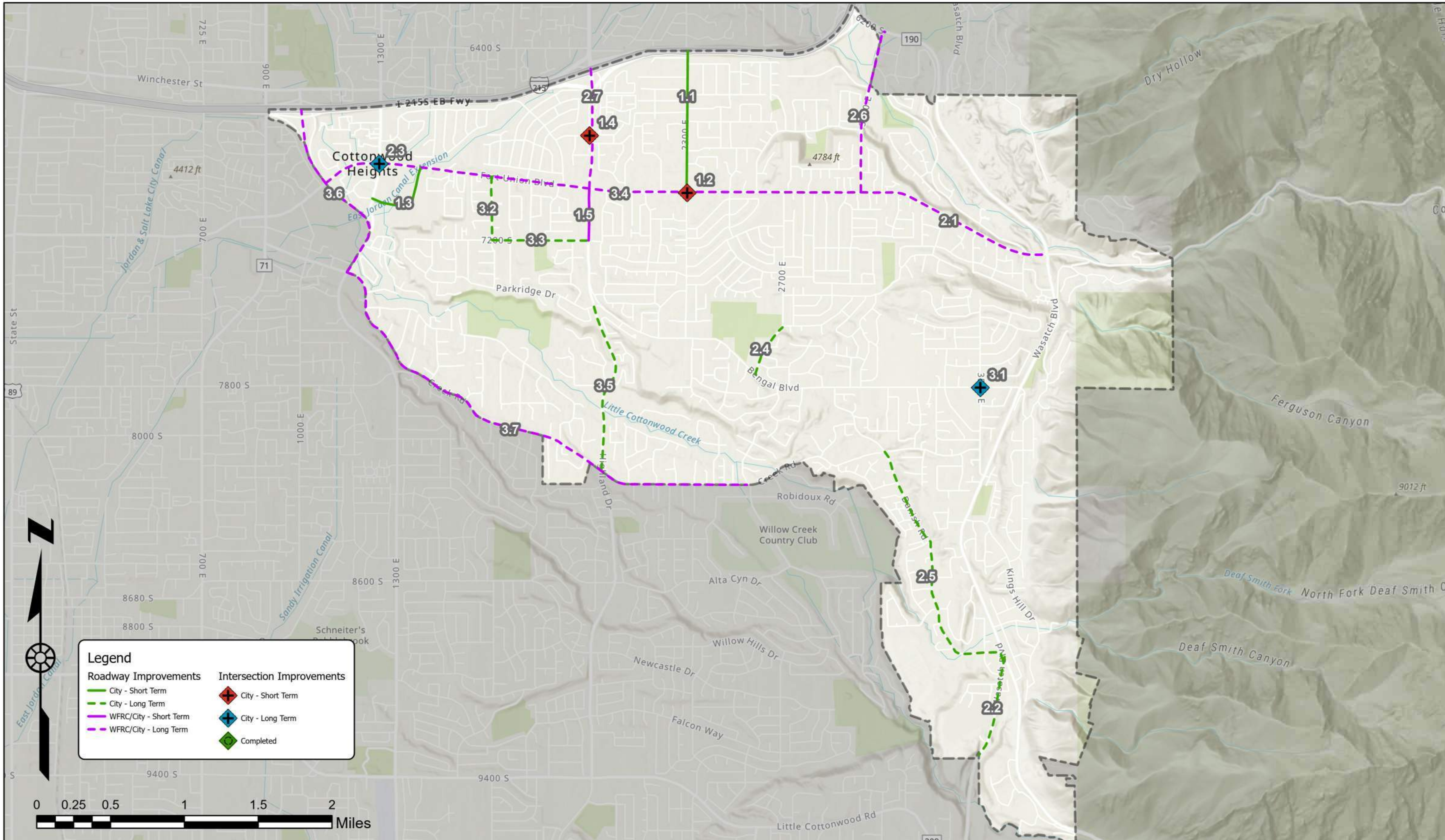
Table 9: Project List with Cost

Project	Location	Improvement Type	Funding	Estimated Project Cost (2023)	Estimated Project Cost (Phased)
		Phase 1 (2023-2032)			
1.1	2300 East: Fort Union Blvd to north city boundary[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$3,800,000	$3,800,000
1.2	Fort Union Blvd & 2300 East (Intersection)	Auxiliary turn lanes to improve intersection delay and Improve Bicycle Safety through intersection	Cottonwood Heights	$3,500,000	$3,500,000
1.3	Park Center Drive: 1300 East to Fort Union Blvd[2]	Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$3,421,000	$3,421,000
1.4	Highland Frontage & La Cresta Drive (Intersection)	Realign Intersection & Improve Pedestrian Safety with Construction of Highland Drive Pedestrian Trail	Cottonwood Heights	$3,500,000	$3,500,000
1.5	Highland Drive (2000 East): 6900 South to 7200 South	Reconfigure roadway from 6 to 7 lanes from 7200 South to 6900 South	Cottonwood Heights	$5,000,000	$5,000,000
			Phase 1 Total	***$19,221,000***	***$19,221,000***
		Phase 2 (2033-2042)			
2.1	Fort Union Blvd: 3000 East to Wasatch Blvd[1,2]	Roadway redesign to include Pedestrian Trail per approved cross-section	Cottonwood Heights/WFRC	$4,158,000	$5,730,000
2.2	Wasatch Boulevard: SR-210 to south city boundary[2]	Improve Pedestrian Safety & Walkability with multi-use trail, Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$9,407,000	$12,739,000
2.3	Fort Union Blvd & 1300 East (Intersection)	Intersection Improvement to reduce delay and improve pedestrian safety and bicycle accommodations	Cottonwood Heights	$3,085,000	$4,500,000
2.4	2600 East: Bengal Blvd to Bridgewater Drive[2]	Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$1,243,000	$2,329,000
2.5	Danish Road: Creek Road to Wasatch Blvd[2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Cottonwood Heights	$13,102,000	$16,473,000
2.6	3000 East: 6200 South to 7000 South[1,2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Cottonwood Heights/WFRC	$6,254,000	$7,180,000
2.7	Highland Dr (2000): Fort Union Blvd to North City Boundary[1]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Cottonwood Heights/WFRC	$1,869,000	$2,576,000
			Phase 2 Total	***$39,118,000***	***$48,951,000***
		Phase 3 (2043-2050)			
3.1	3500 East & Bengal Blvd	Roundabout Intersection	Cottonwood Heights	$1,215,000	$2,500,000
3.2	1700 East: Fort Union Blvd to 7200 South[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$2,783,000	$5,726,000
3.3	7200 South: 1700 East to Highland Drive[2]	Improve Pedestrian Safety & Walkability, Reconfigure roadway from 2 to 3 lanes**	Cottonwood Heights	$5,310,000	$10,926,000
3.4	Fort Union Blvd: 1300 East to 3000 East[1,2]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity with trail*	Cottonwood Heights/WFRC	$6,624,000	$13,630,000
3.5	Highland Drive (2000 East): Bengal Blvd to Creek Road[1]	Reconfigure roadway from 4/5 to 7 lanes	Cottonwood Heights/WFRC	$15,317,000	$31,518,000
3.6	Union Park Blvd: I-215 to Creek Road[1]	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity*	Cottonwood Heights/WFRC	$3,064,000	$6,304,000
3.7	Creek Road: Union Park Blvd to Oak Creek Drive	Operational Project to Improve Pedestrian Safety, Walkability, and Traffic Flow Without Adding Lane Capacity	Cottonwood Heights	$4,839,000	$9,957,000
			Phase 3 Total	***$39,152,000***	***$80,561,000***

[1]Project Identified the WFRC 2023-2050 Regional Transportation Plan
[2]Project Identified in the 2019 Transportation Capital Facilities Plan
[3]Anticipated Failure Based on Roadway Segment Volume
***Operational improvements include shoulder widening, intersection improvements, bus turnouts, turn pockets or center medians**
**** Add Center turn lane**

FUTURE ROADWAY NETWORK

Applying all improvements from **Figure 21** and **Table 9**, **Figure 22** shows the proposed future functional classifications for Cottonwood Heights. This is the culmination of all planning efforts to provide a safe, efficient, acceptable transportation roadway network for all residents and visitors of Cottonwood Heights. The LOS for the future roadway network shown in **Figure 23**.



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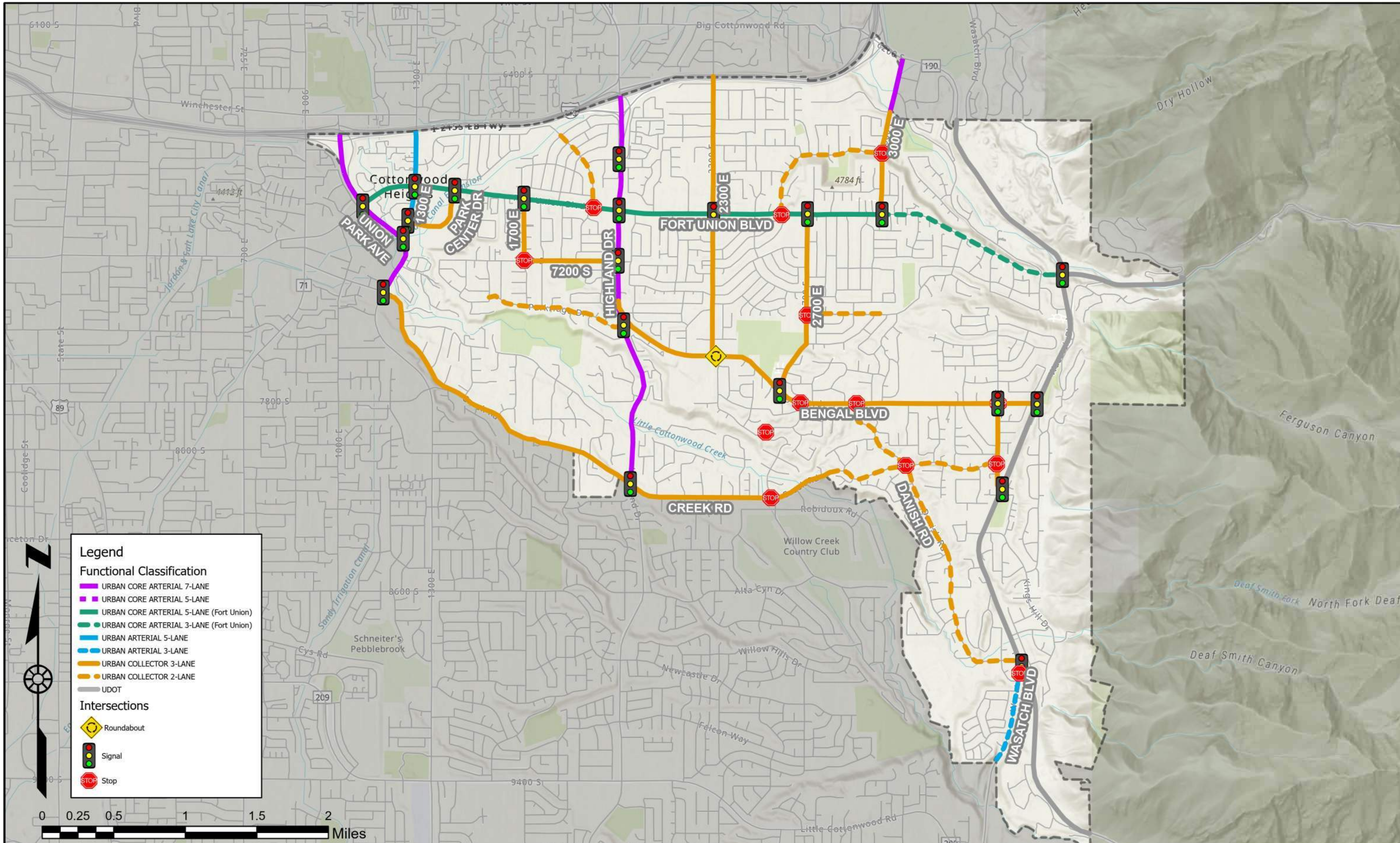
FUTURE ROADWAY PROJECT LIST

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/27/2023

DRAWN SEE

Figure 21



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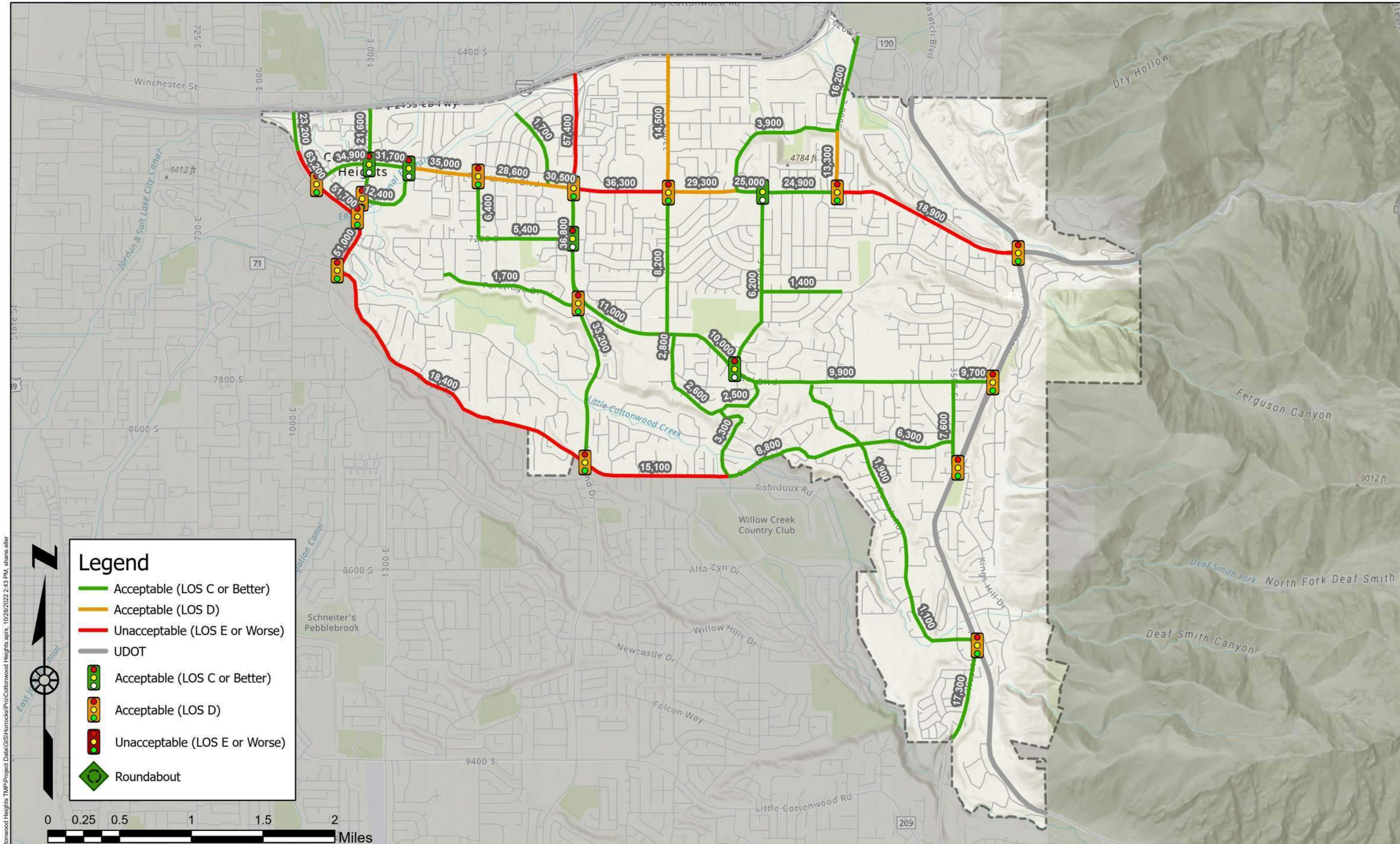
LONG TERM ROADWAY NETWORK MAP

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 3/27/2023

DRAWN SEE

Figure 22



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LONG TERM ROADWAY BUILD LEVEL OF SERVICE

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 10/28/2022
DRAWN SEE

Figure 23

Traffic Impact Studies

As growth occurs throughout the City, the impacts of proposed developments on the surrounding transportation networks will need to be evaluated prior to giving approval to build. This is accomplished by requiring that a Traffic Impact Study (TIS) be performed for any proposed development in the city based on City staff recommendations. A TIS will allow the City to determine the site-specific impacts of a development including internal site circulation, access issues, and adjacent roadway and intersection impacts. In addition, a TIS assists in defining possible impacts to the overall transportation system in the vicinity of the development. The area and items to be evaluated in a TIS include key intersections and roads as determined by the City Engineer on a case-by-case basis.

Cottonwood Heights has provided general requirements to perform a Traffic Impact Study (TIS). The first requirement is to verify or obtain the Wasatch Front Regional Council (WFRC) travel demand model for future traffic growth. The WFRC travel demand model is required because to future traffic growth in Cottonwood Heights is different. Included below are qualifications for the group performing the TIS. Each TIS will be conducted by an engineer chosen by the developer with the following qualifications:

- **Have a current Utah PE License**
- **Firm Specializing in Traffic Engineering**
- **Use of Software utilizing most recent Highway Capacity Manual (HCM) Methodologies**

A scoping meeting will be required by the developer/Traffic Engineer with the City Engineer to determine the scope of each TIS. Included in this meeting are the following discussion items:

- **Scope (Submitted to Cottonwood Heights and Developer)**
- **Establish Study Area**
- **Establish Trip Generation**
- **Establish Trip Distribution**
- **Study Intersections**
- **AM/PM Peak Hours and/or Weekend Peak Hours**

TIS requirements are separated into four permit levels based on ADT. The basic requirements for all TIS's are included in Level I with additional requirements necessary for each level (additional ADT). For all TIS's that require Level III or IV requirements (Greater than 3000 trips generated), access to the MAG travel demand model is required. Cottonwood Heights Traffic Impact Study Requirements are included in the Appendix B of this report. The City Engineer will review the TIS or assign someone to do so and will respond in writing to the TIS report within 30 days. Included In Appendix B are guidelines for developers to completing a TIS and submitting it to the city. The requirements include when a TIS will be required and what level of effort must be established in the study, who may or may not perform a TIS, and when certain elements must be included. The TIS guidelines presented follow closely the guidelines outlined by UDOT. It is important that these guidelines be fluid and that each development be treated individually, as special cases may require information than the standard requires. The City reserves the right to waive all TIS requirements as well as requiring extra information at the discretion of the City Engineer.

Traffic Calming

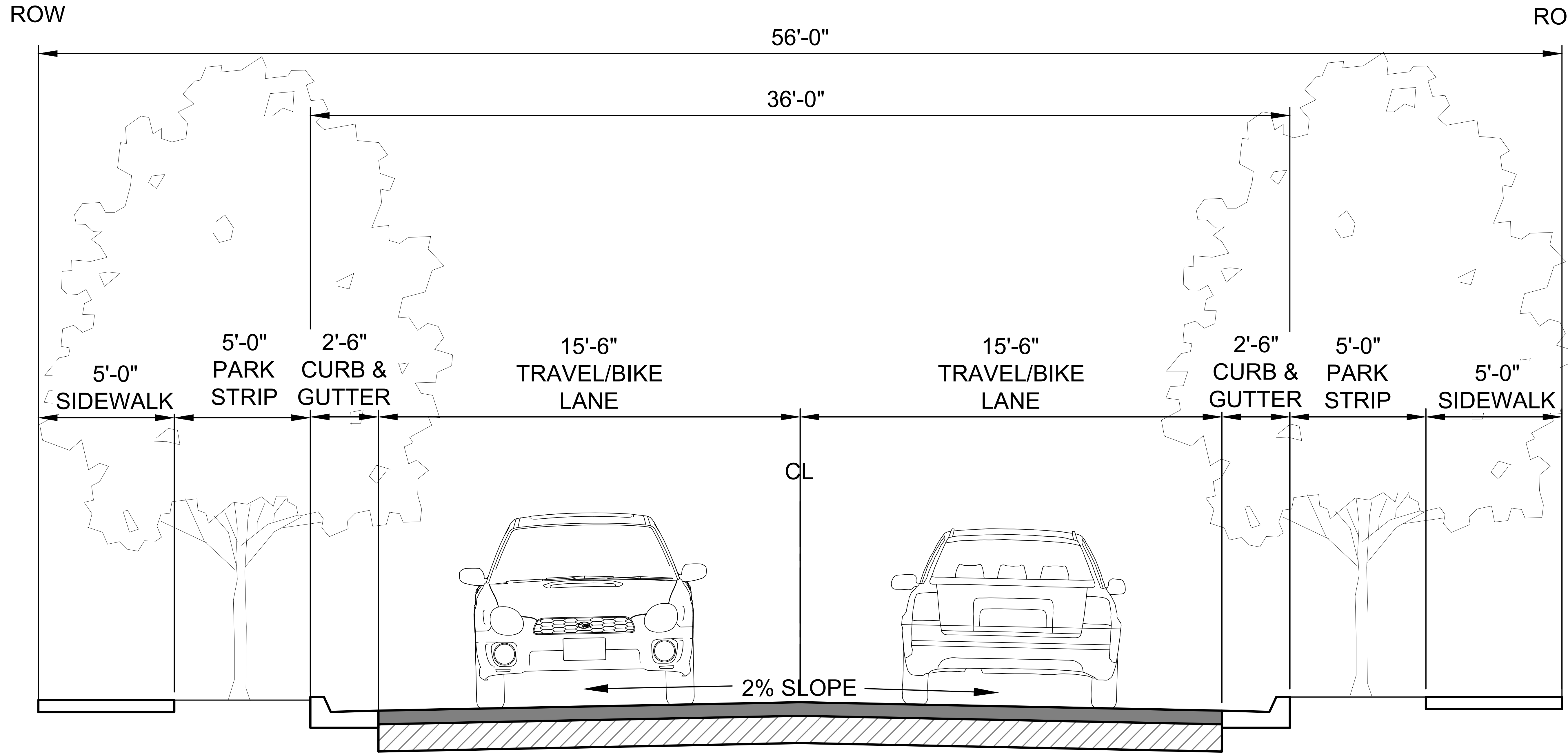
The development of street patterns is typically at the time of construction. In Utah, the history of using a grid system for planning and development purposes started with the first settlers and has proven efficient for moving people and goods throughout a network of surface streets. However, the nature of a grid system with wide and often long straight roads can result in excessive speeds. For that reason, traffic calming measures (TCM) can be implemented to reduce traffic speeds on residential roadways. Traffic calming is, however, still applicable to many neighborhood or local streets and should be at least considered on a case-by-case basis for the City's local and residential.

The Institute of Transportation Engineers (ITE) has established a definition for traffic calming. "*Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users*." Altering driver behavior includes lowering speeds, reducing aggressive driving, and increasing respect for non-motorized street users. Cottonwood Heights has adopted a Traffic-Calming program that addresses the desire of residents and City leaders to organize a method for addressing high speeds through residential neighborhoods. Refer to Cottonwood Heights adopted traffic-calming program when considering the installation of traffic calming devices.

Truck Routes

Trucks are an important component of the transportation system of any economy and are vital to the movement of goods throughout the region. However, trucks also have some negative characteristics in terms of traffic flow, safety, and noise. To reduce these impacts, the recommendation that trucks travel along arterial and 3-lane collectors as opposed to 2-lane collectors or local streets. To accomplish this goal, several recommended truck routes through the city have been identified and a map showing these is given in the Appendix C. Cottonwood Heights will work with industrial or large commercial businesses that have a large amount of truck traffic to encourage their trucks to use these routes within Cottonwood Heights.

Appendix A: Typical Cross-Sections



2-LANE LOCAL

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE	WARNING	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS	DESIGNED TC	DATE 2/28/22	PROJECT NO. UT-2966-2102
	HORIZONTAL N/A	0 1/2 1				DRAWN TC	DATE 2/28/22	SHEET NO. 1 OF 14
	VERTICAL N/A	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE			RESIDENTIAL ROAD TYPICAL CROSS-SECTION	CHECKED KC	DATE 2/28/22	DRAWING NO. TYP-01

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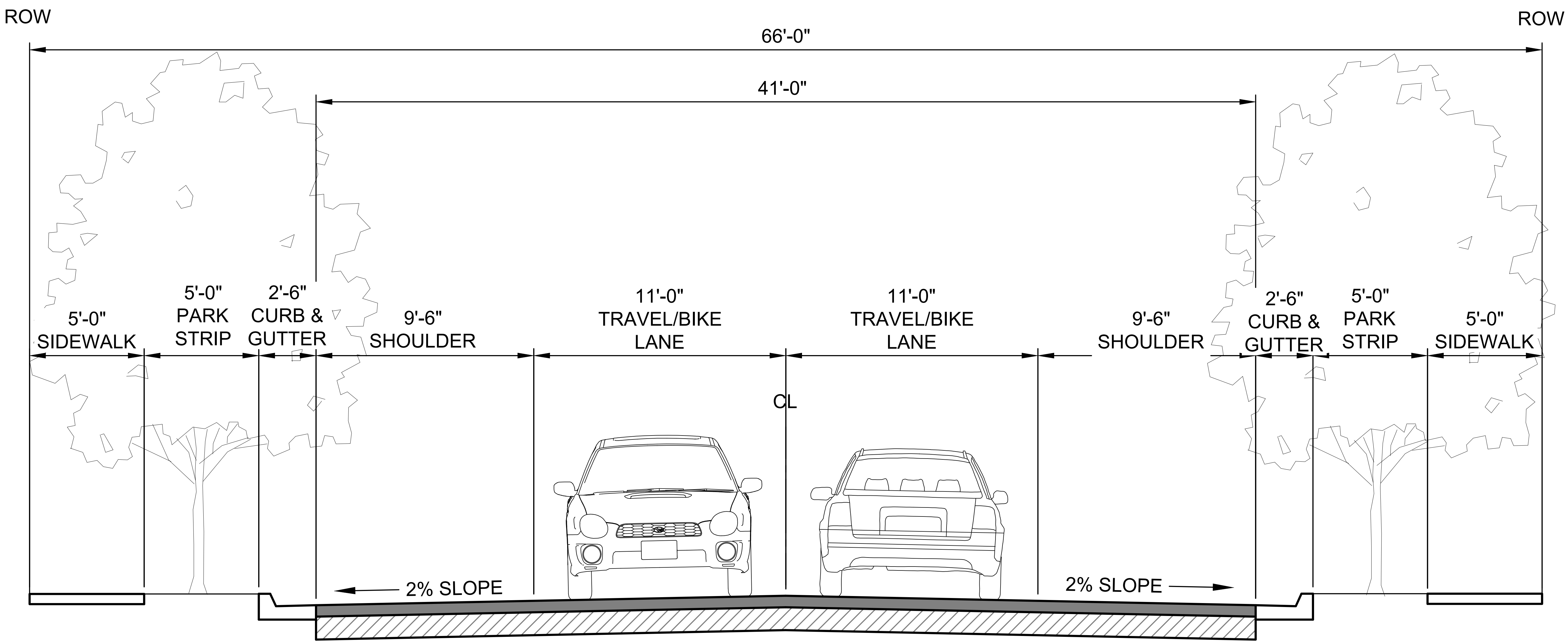

2-LANE URBAN COLLECTOR WITH PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN COLLECTOR - 2 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22	PROJECT NO. UT-2966-2102 SHEET NO. 2 OF 14 DRAWING NO. TYP-02

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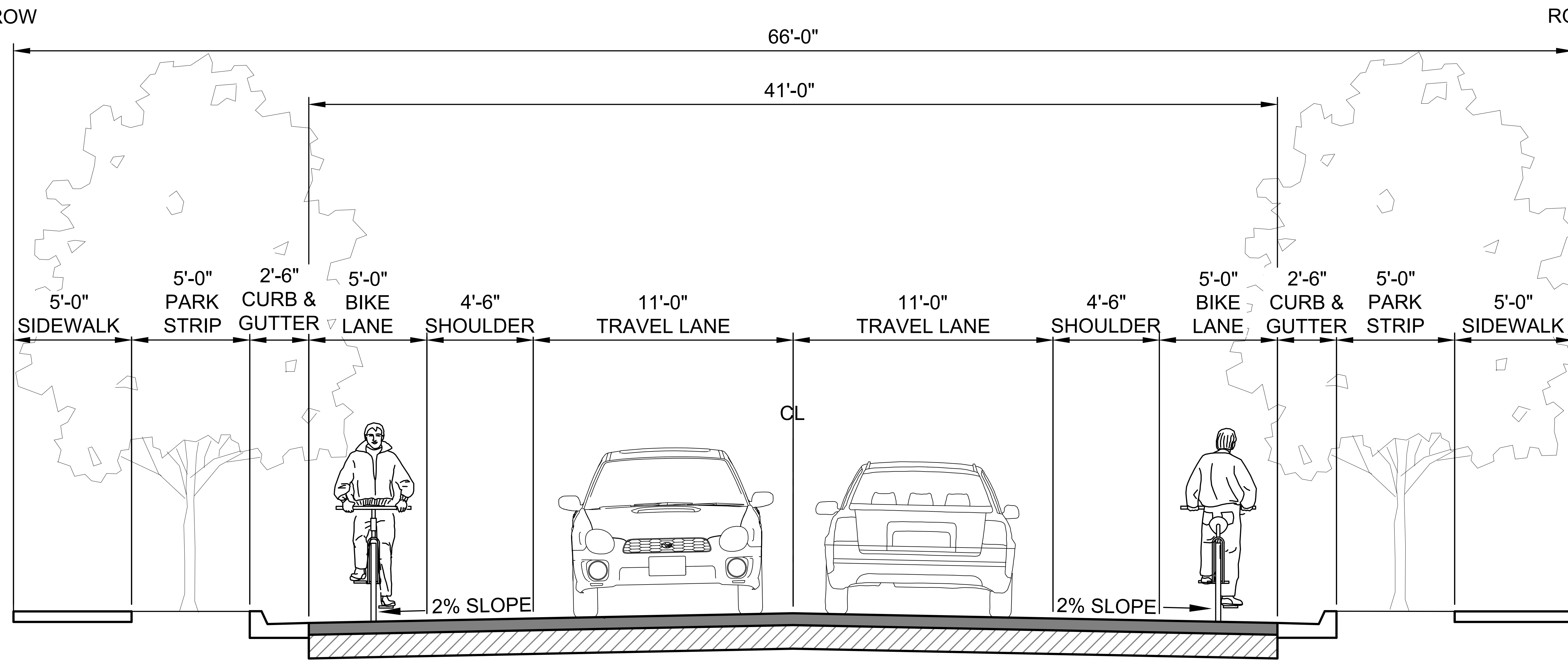

2-LANE URBAN COLLECTOR WITH BIKE LANE & NO PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN COLLECTOR - 2 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22

PROJECT NO.	UT-2966-2102
SHEET NO.	3 OF 14
DRAWING NO.	TYP-03

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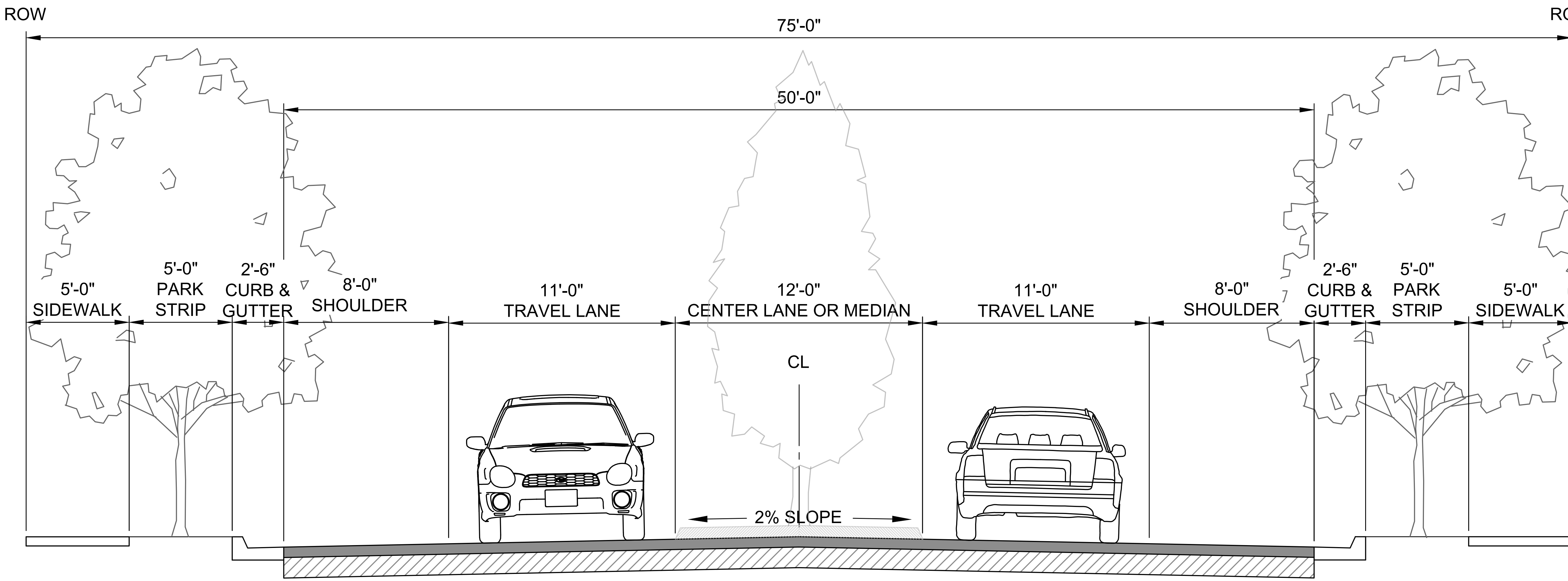

3-LANE URBAN COLLECTOR WITH PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN COLLECTOR - 3 LANE TYPICAL CROSS-SECTION	DESIGNED TC, DATE 2/28/22, PROJECT NO. UT-2966-2102 DRAWN TC, DATE 2/28/22, SHEET NO. 4 OF 14 CHECKED KC, DATE 2/28/22, DRAWING NO. TYP-04

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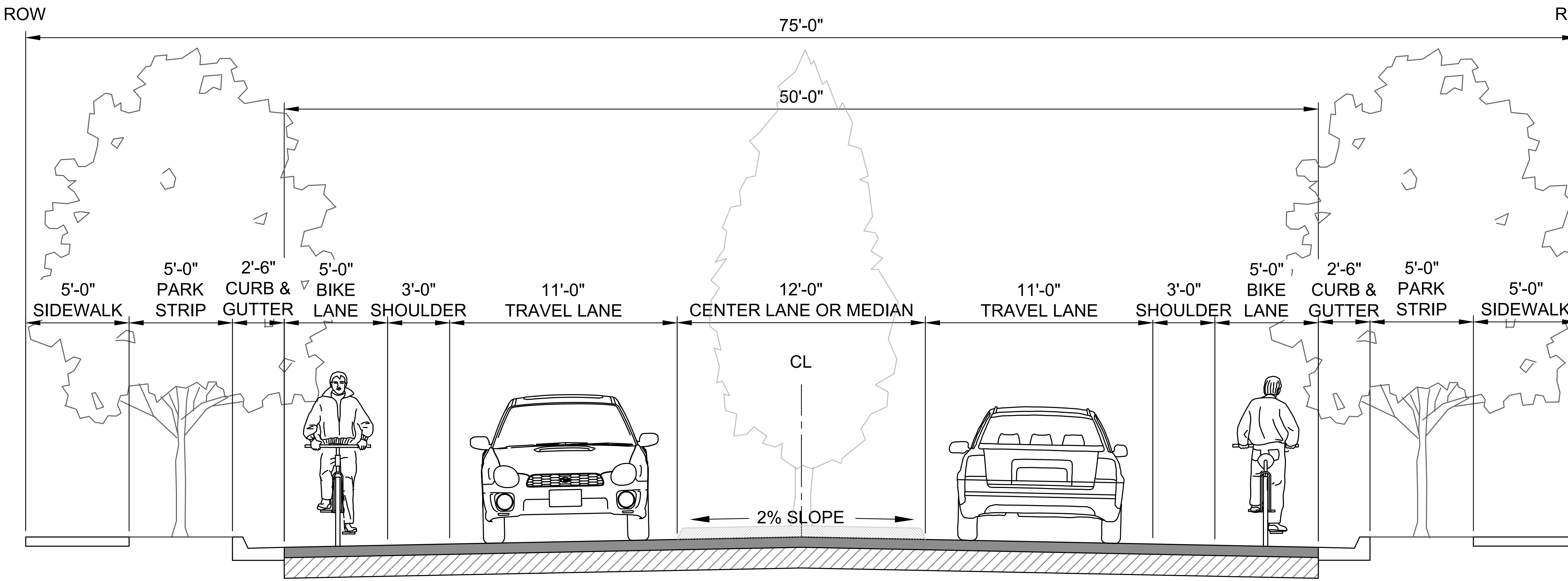

3-LANE URBAN COLLECTOR WITH BIKE LANE & NO PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN COLLECTOR - 3 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22	PROJECT NO. UT-2966-2102 SHEET NO. 5 OF 14 DRAWING NO. TYP-05

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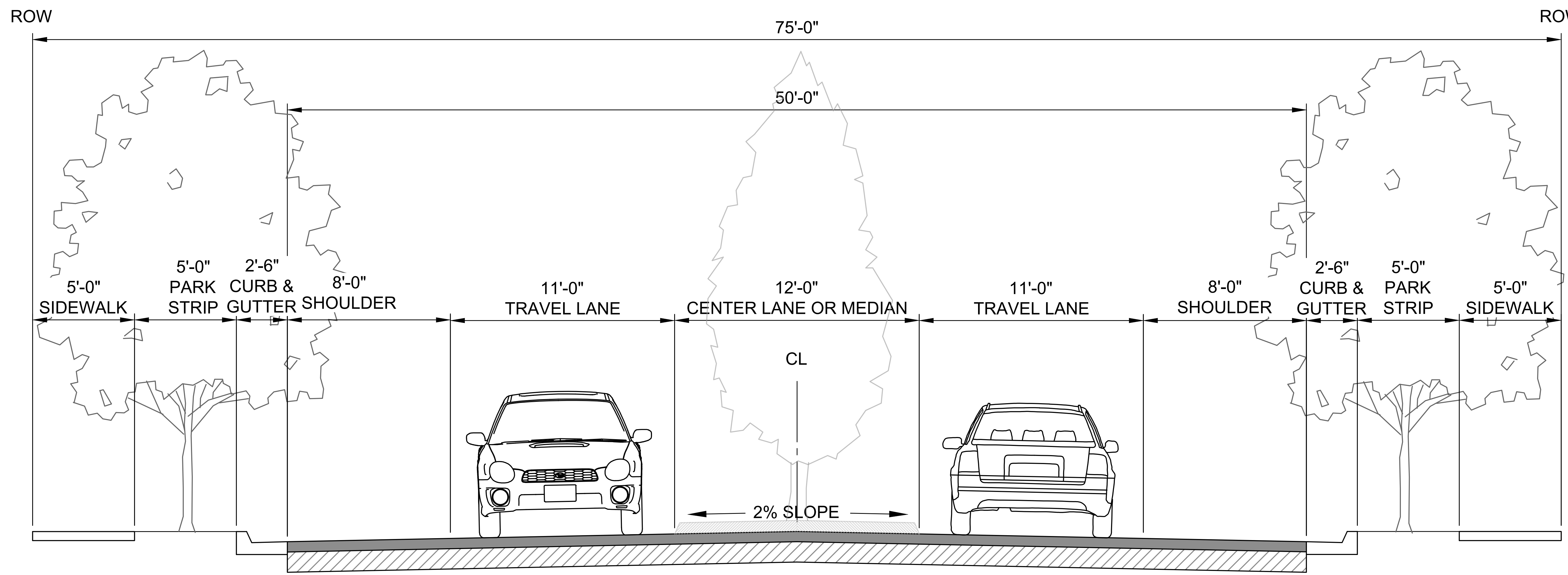
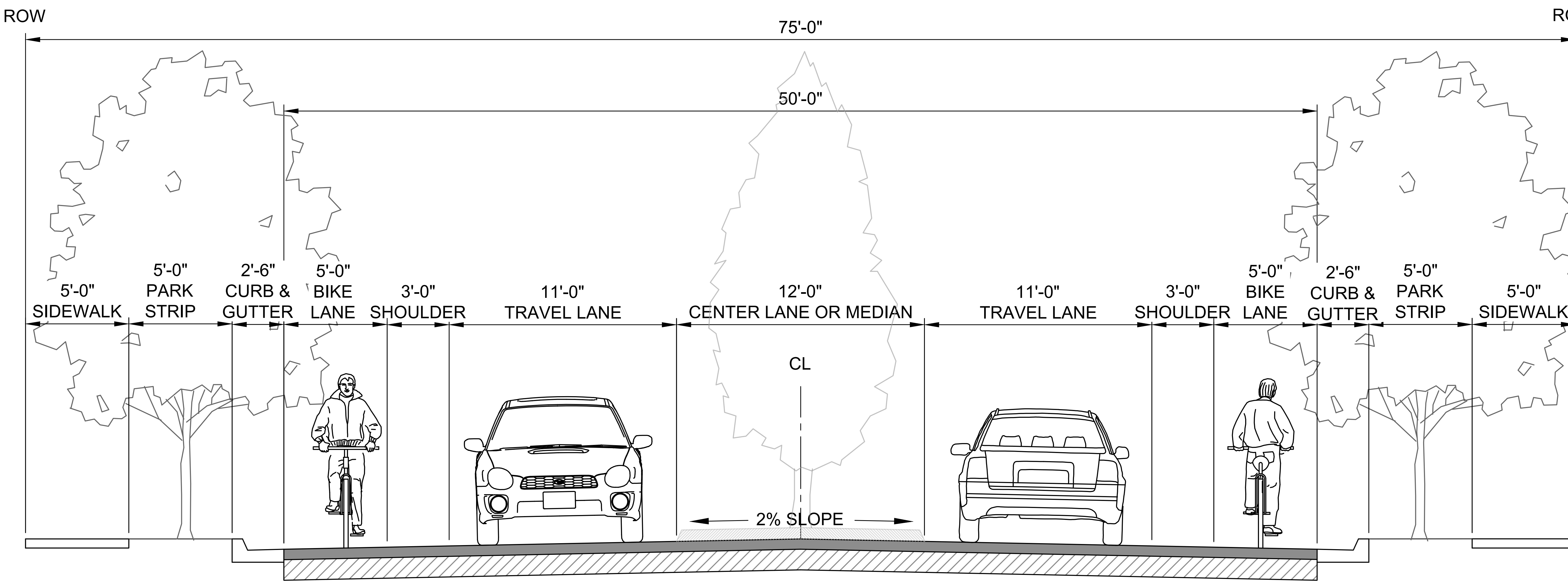


3-LANE URBAN ARTERIAL WITH PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN ARTERIAL - 3 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22	PROJECT NO. UT-2966-2102 SHEET NO. 6 OF 14 DRAWING NO. TYP-06



3-LANE URBAN ARTERIAL WITH BIKE LANE & NO PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS

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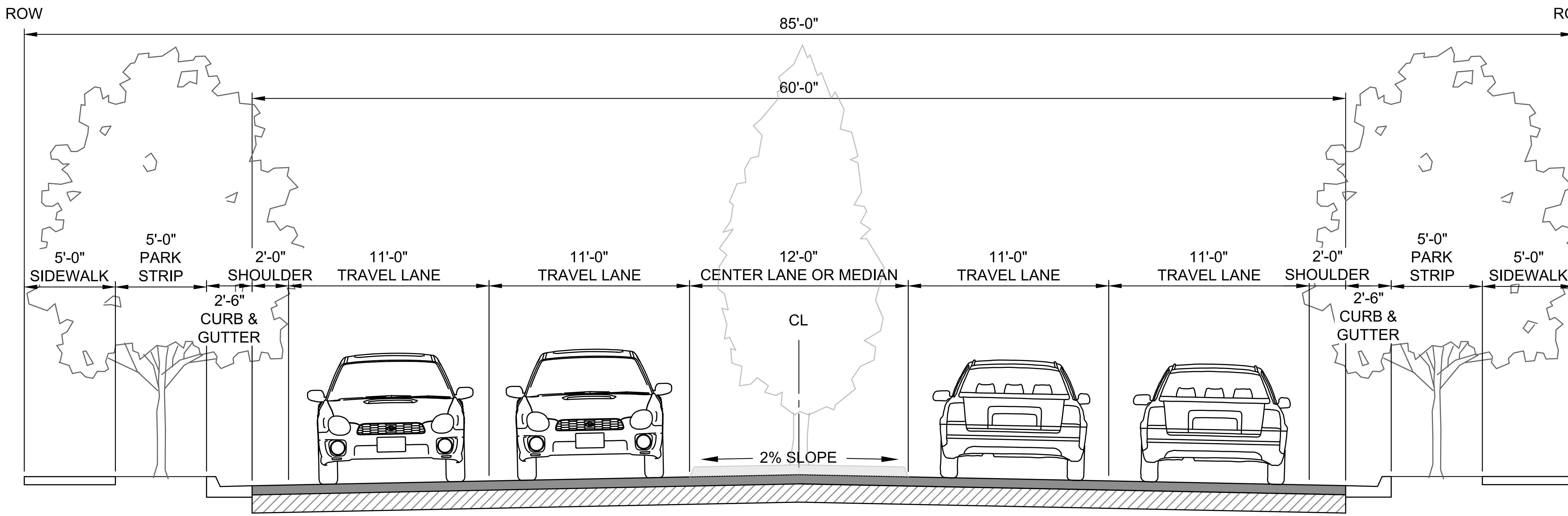
Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

COTTONWOOD HEIGHTS

URBAN ARTERIAL - 3 LANE TYPICAL CROSS-SECTION

DESIGNED	DATE	PROJECT NO.
TC	2/28/22	UT-2966-2102
DRAWN	DATE	SHEET NO.
TC	2/28/22	7 OF 14
CHECKED	DATE	DRAWING NO.
KC	2/28/22	TYP-07

4-LANE MINOR ARTERIAL WITH BIKE LANE



5-LANE URBAN ARTERIAL

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE
HORIZONTAL N/A
VERTICAL N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS

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Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

COTTONWOOD HEIGHTS

URBAN ARTERIAL - 5 LANE TYPICAL CROSS-SECTION

DESIGNED	DATE	PROJECT NO.
TC	2/28/22	UT-2966-2102
DRAWN	DATE	SHEET NO.
TC	2/28/22	8 OF 14
CHECKED	DATE	DRAWING NO.
KC	2/28/22	TYP-08

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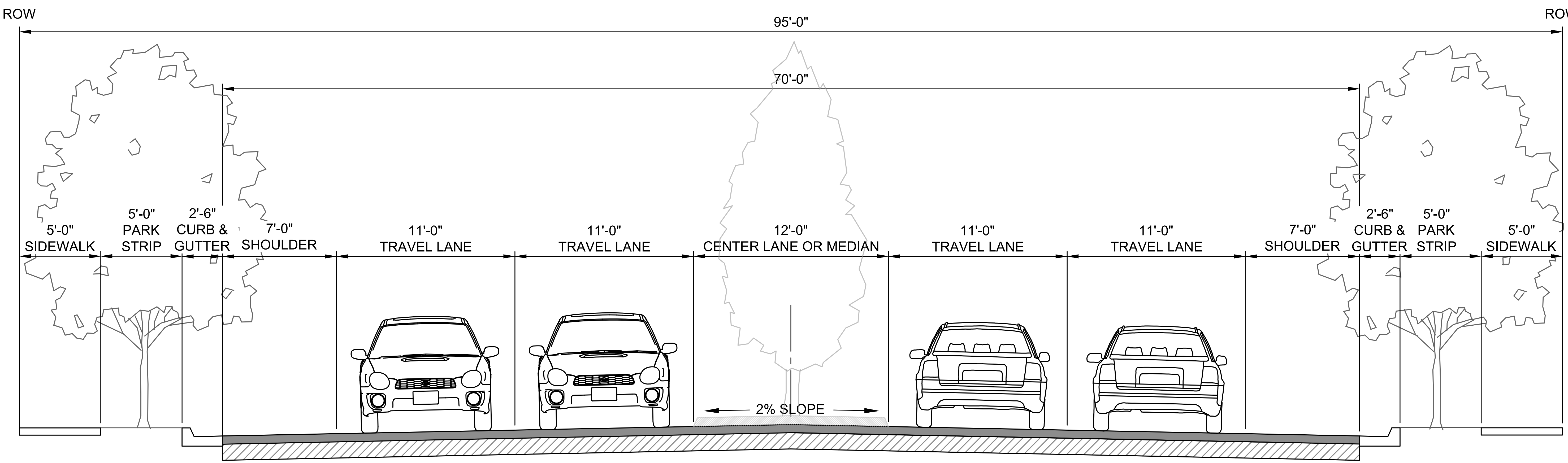
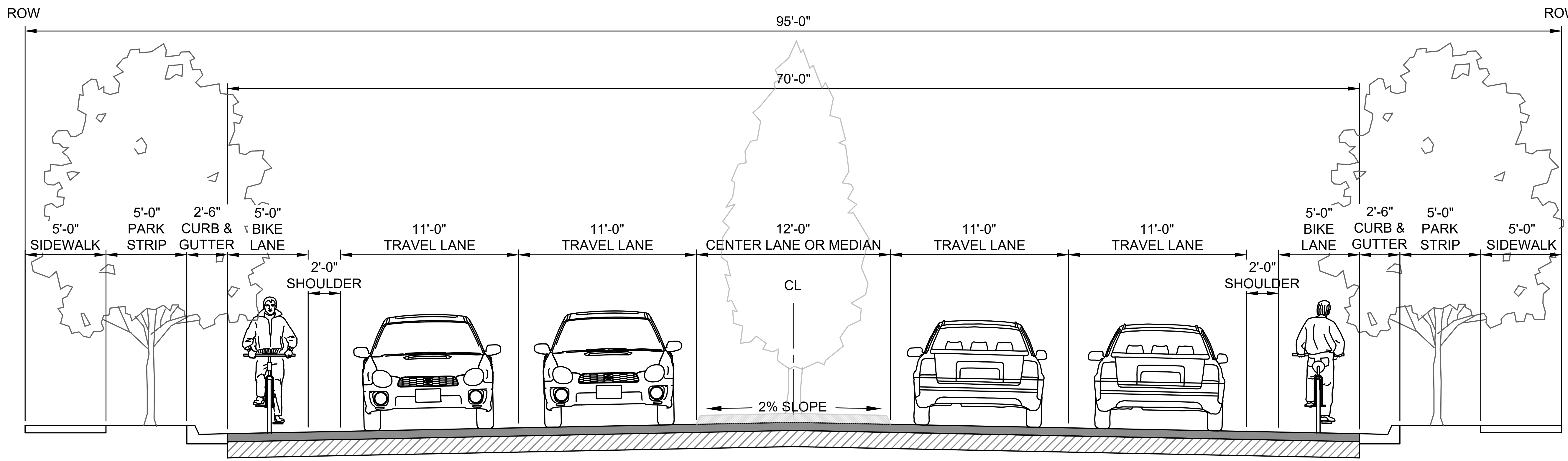


5-LANE URBAN CORE ARTERIAL WITH PARKING

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN CORE ARTERIAL - 5 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22
						PROJECT NO. UT-2966-2102	SHEET NO. 9 OF 14 DRAWING NO. TYP-09



5-LANE URBAN CORE ARTERIAL WITH BIKE LANE

Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN CORE ARTERIAL - 5 LANE TYPICAL CROSS-SECTION	DESIGNED TC, DATE 2/28/22, PROJECT NO. UT-2966-2102 DRAWN TC, DATE 2/28/22, SHEET NO. 10 OF 14 CHECKED KC, DATE 2/28/22, DRAWING NO. TYP-10

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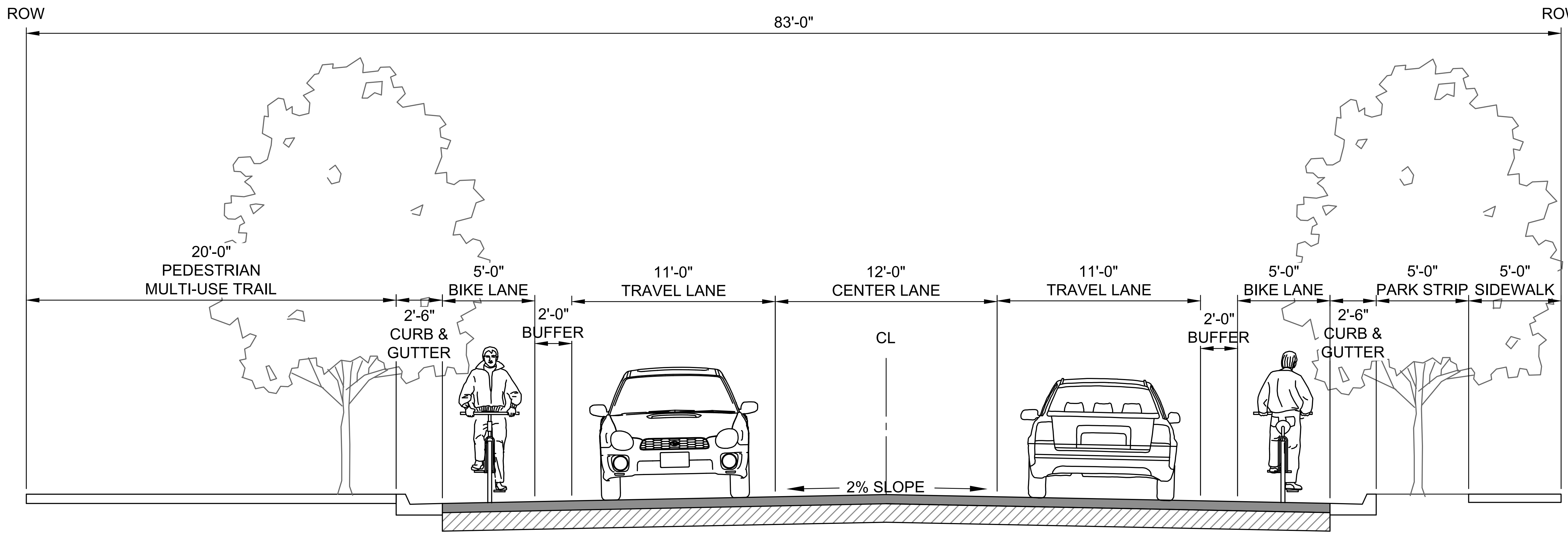

URBAN CORE ARTERIAL
FORT UNION 3 LANE

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS

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COTTONWOOD HEIGHTS

URBAN CORE ARTERIAL - FORT UNION - 3 LANE TYPICAL CROSS-SECTION

DESIGNED	DATE	PROJECT NO.
SE	3/15/22	UT-2966-2102
DRAWN	DATE	SHEET NO.
SE	3/15/22	11 OF 14
CHECKED	DATE	DRAWING NO.
KC	3/15/22	TYP-11

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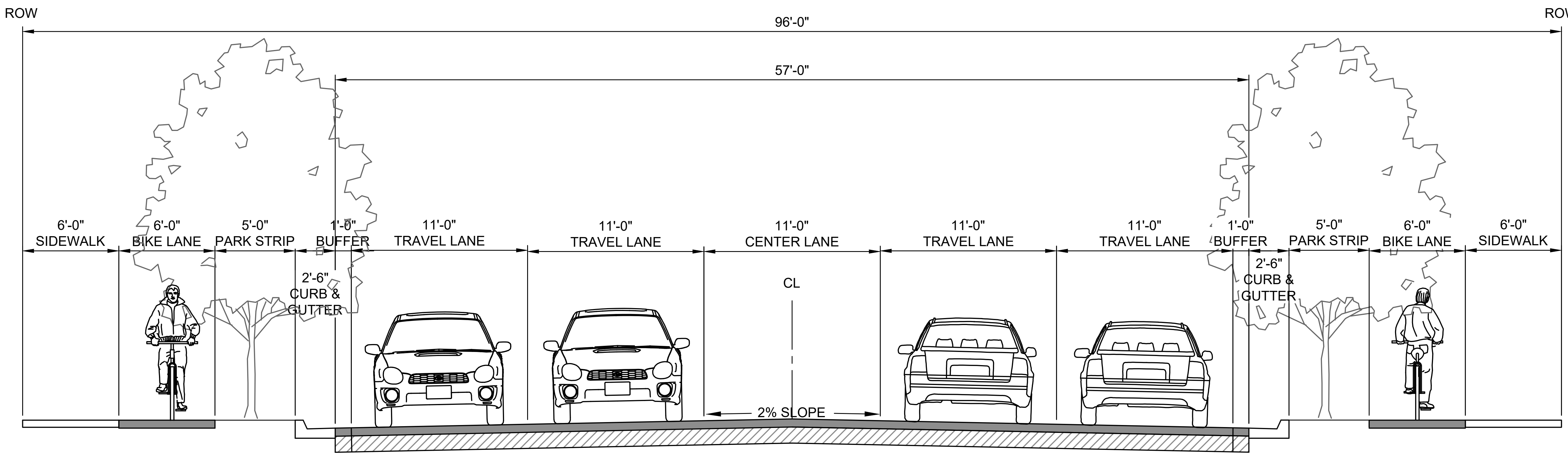

URBAN CORE ARTERIAL FORT UNION - 5 LANE

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS
ENGINEERS

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COTTONWOOD HEIGHTS

URBAN CORE ARTERIAL - FORT UNION - 5 LANE TYPICAL CROSS-SECTION

DESIGNED SE	DATE 3/15/22	PROJECT NO. UT-2966-2102
DRAWN SE	DATE 3/15/22	SHEET NO. 12 OF 14
CHECKED KC	DATE 3/15/22	DRAWING NO. TYP-12

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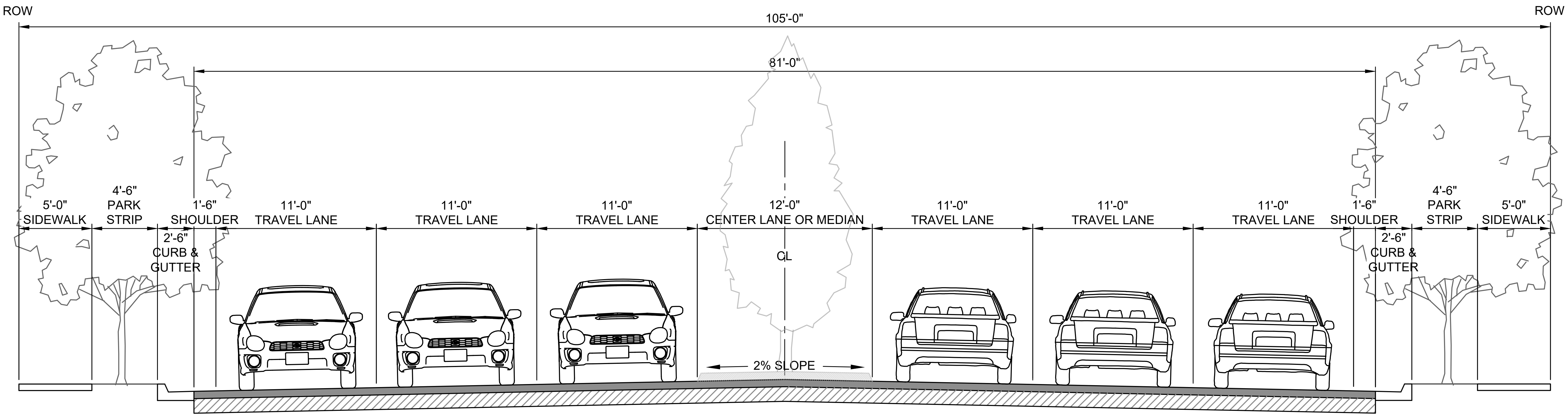

7-LANE URBAN CORE ARTERIAL

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS

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Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

COTTONWOOD HEIGHTS

URBAN CORE ARTERIAL - 7 LANE TYPICAL CROSS-SECTION

DESIGNED	DATE	PROJECT NO.
TC	2/28/22	UT-2966-2102
DRAWN	DATE	SHEET NO.
TC	2/28/22	13 OF 14
CHECKED	DATE	DRAWING NO.
KC	2/28/22	TYP-13

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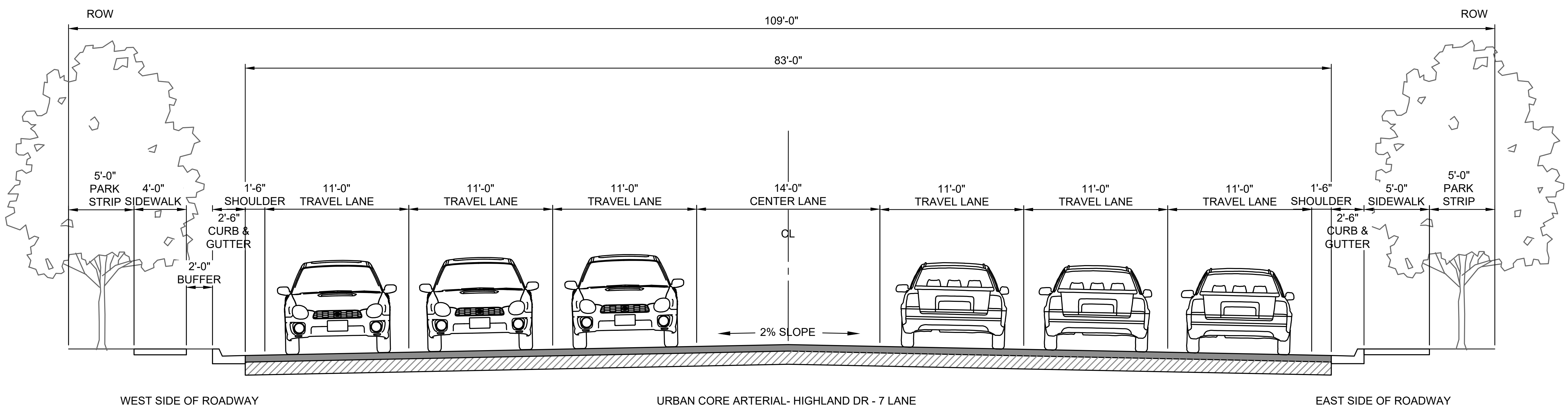
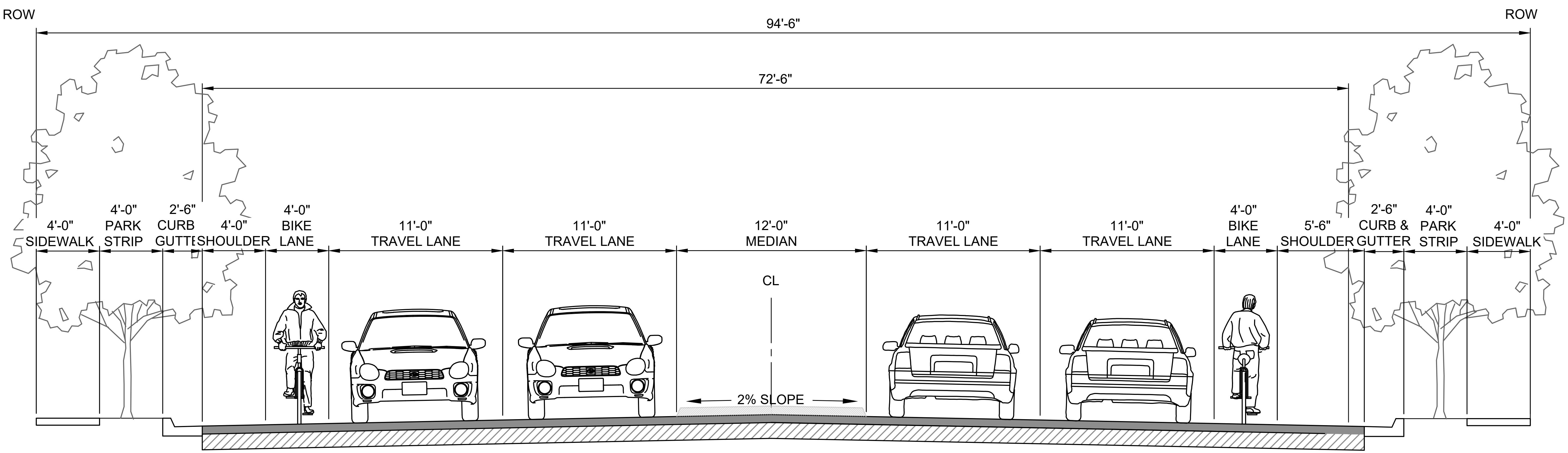


Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN CORE ARTERIAL - 7 LANE TYPICAL CROSS-SECTION	DESIGNED SE DRAWN SE CHECKED KC	DATE 3/15/22 DATE 3/15/22 DATE 3/15/22	PROJECT NO. UT-2966-2102 SHEET NO. 12 OF 13 DRAWING NO. TYP-12



WEST SIDE OF ROADWAY

URBAN CORE ARTERIAL - HIGHLAND DR- 5 LANE

EAST SIDE OF ROADWAY

Cottonwood Heights
City between the canyons

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS

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Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

COTTONWOOD HEIGHTS

URBAN CORE ARTERIAL - 5 LANE TYPICAL CROSS-SECTION

DESIGNED	SE	DATE	3/15/22	PROJECT NO.	UT-2966-2102
DRAWN	SE	DATE	3/15/22	SHEET NO.	14 OF 14
CHECKED	KC	DATE	3/15/22	DRAWING NO.	TYP-14

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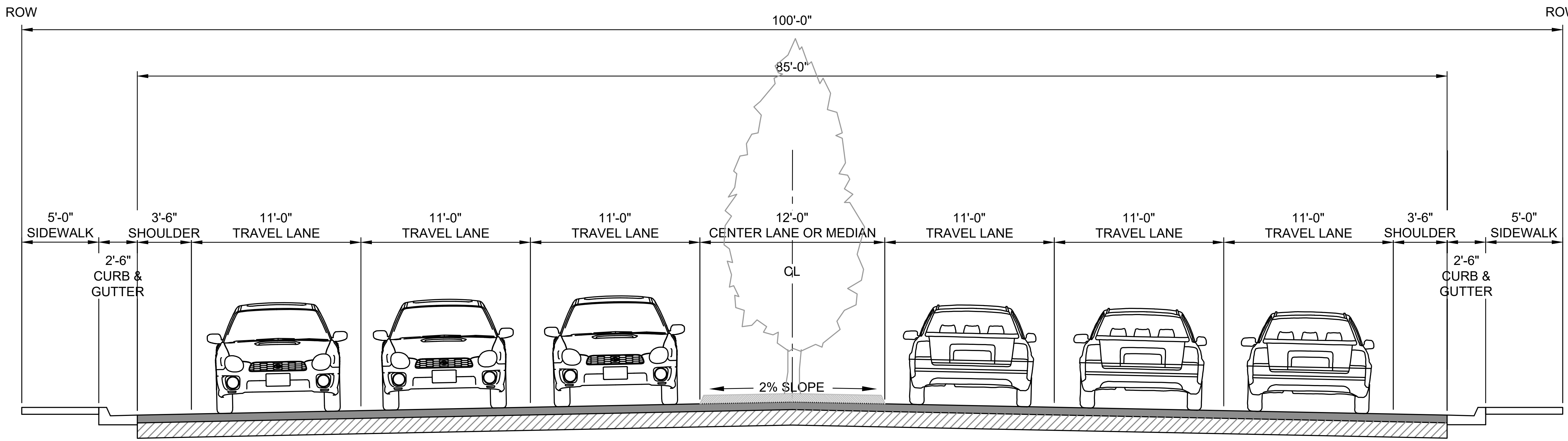

7-LANE URBAN ARTERIAL

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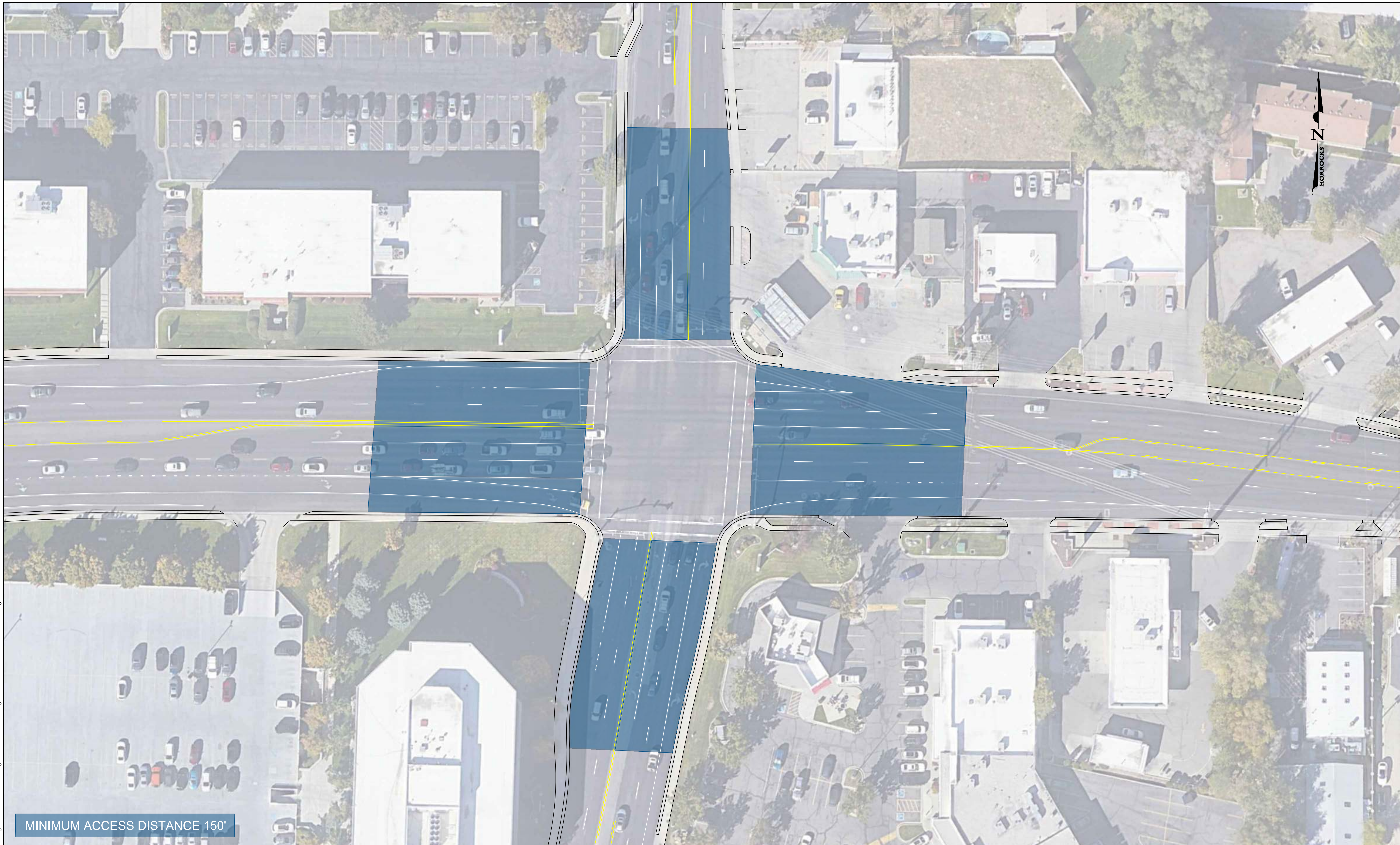
Cottonwood Heights
City between the canyons

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS URBAN ARTERIAL - 7 LANE TYPICAL CROSS-SECTION	DESIGNED TC DRAWN TC CHECKED KC	DATE 2/28/22 DATE 2/28/22 DATE 2/28/22	PROJECT NO. UT-2966-2102 SHEET NO. 9 OF 10 DRAWING NO. TYP-09



PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL 1" = 750' VERTICAL NONE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TMP FORT UNION & 1300 EAST INTERSECTION	DESIGNED SE DRAWN SE CHECKED SN	DATE 7/13/21 DATE 7/13/21 DATE 7/14/21	PROJECT NO. UT-2966-2102 SHEET NO. 2 OF 2 DRAWING NO. ANSI B PDF

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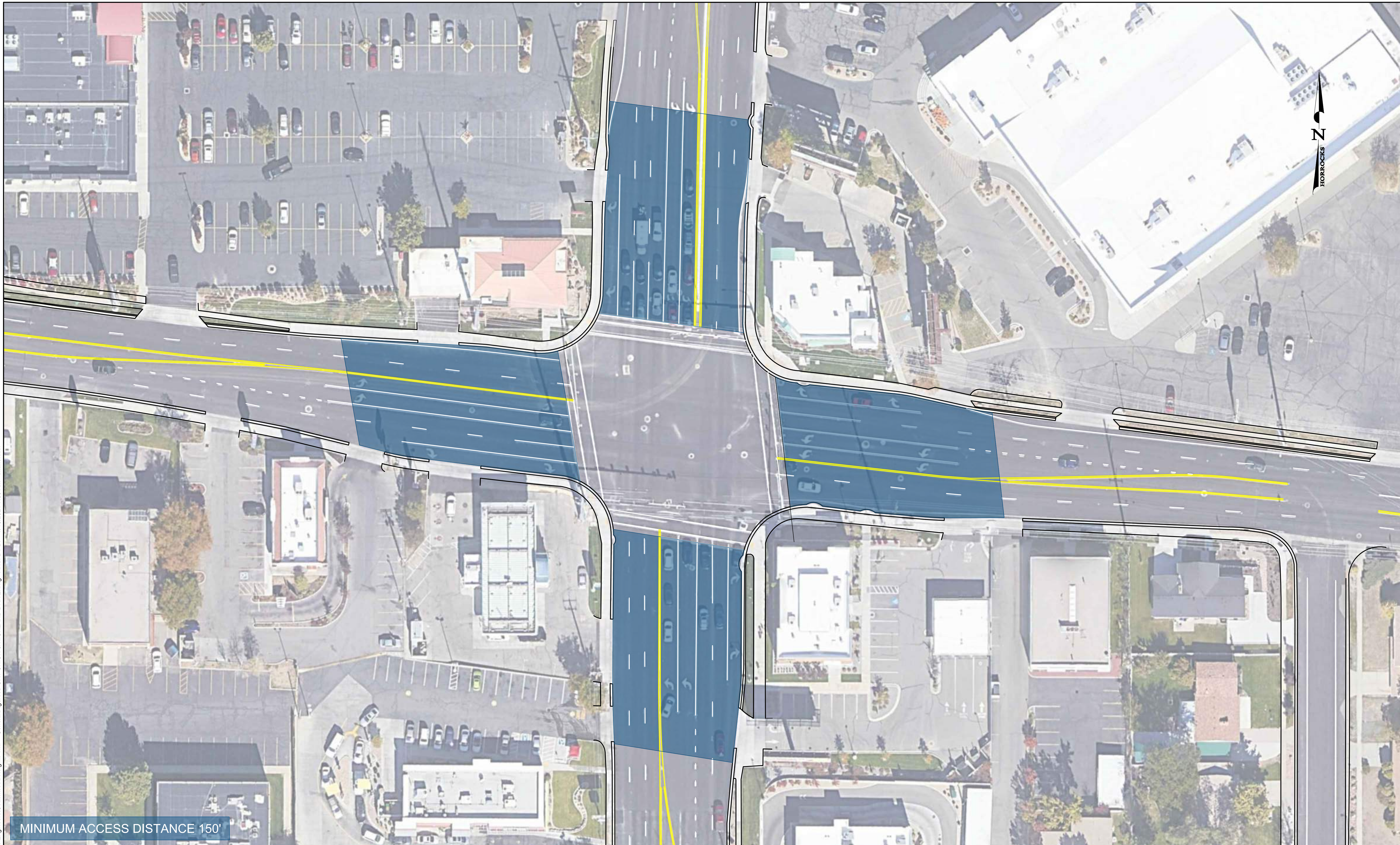

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL 1" = 750' VERTICAL NONE	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TMP FORT UNION & HIGHLAND DRIVE INTERSECTION	DESIGNED SE DRAWN SE CHECKED SN	DATE 7/13/21 DATE 7/13/21 DATE 7/14/21

PROJECT NO.	UT-2966-2102
SHEET NO.	1 OF 2
DRAWING NO.	ANSI B PDF

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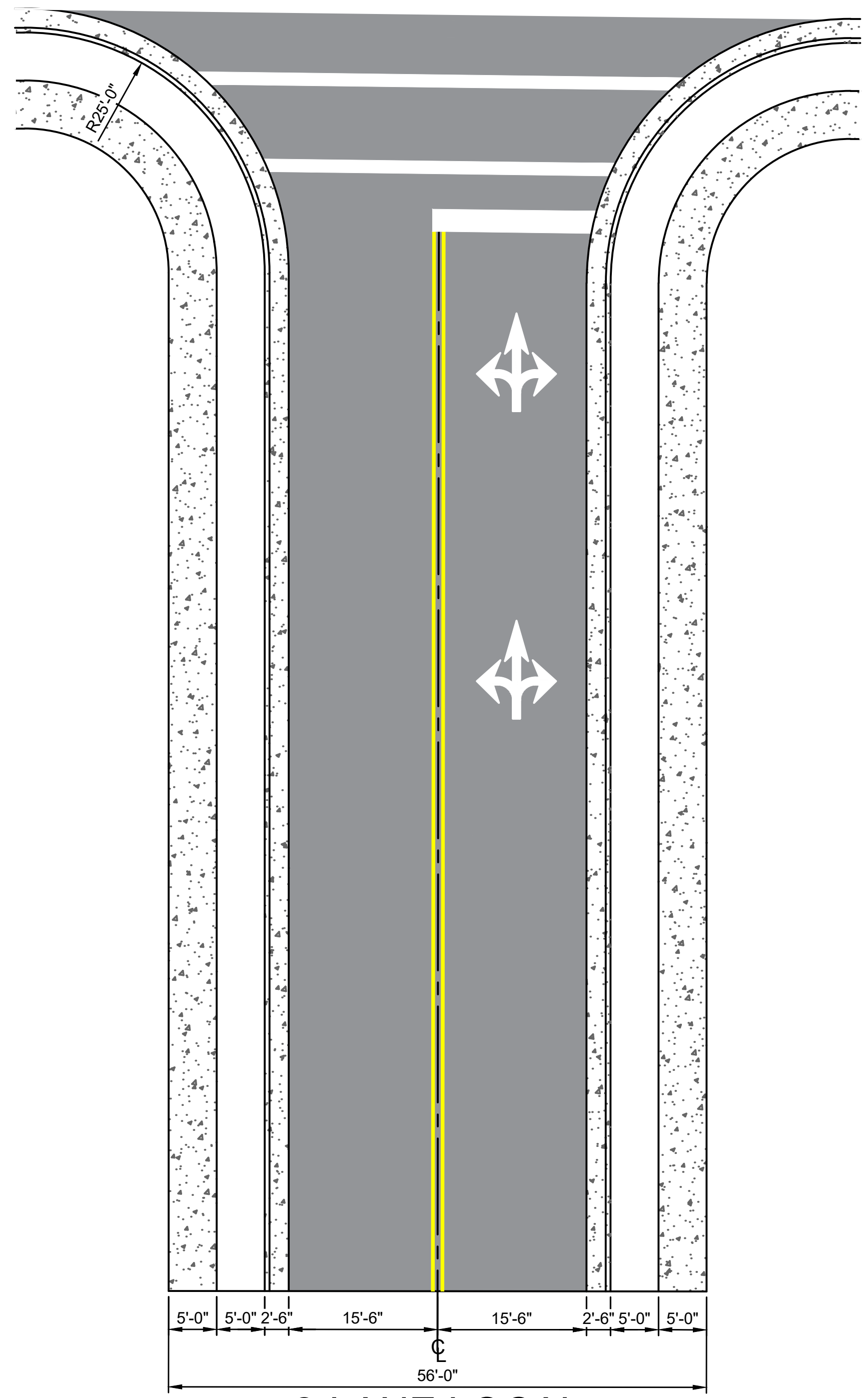
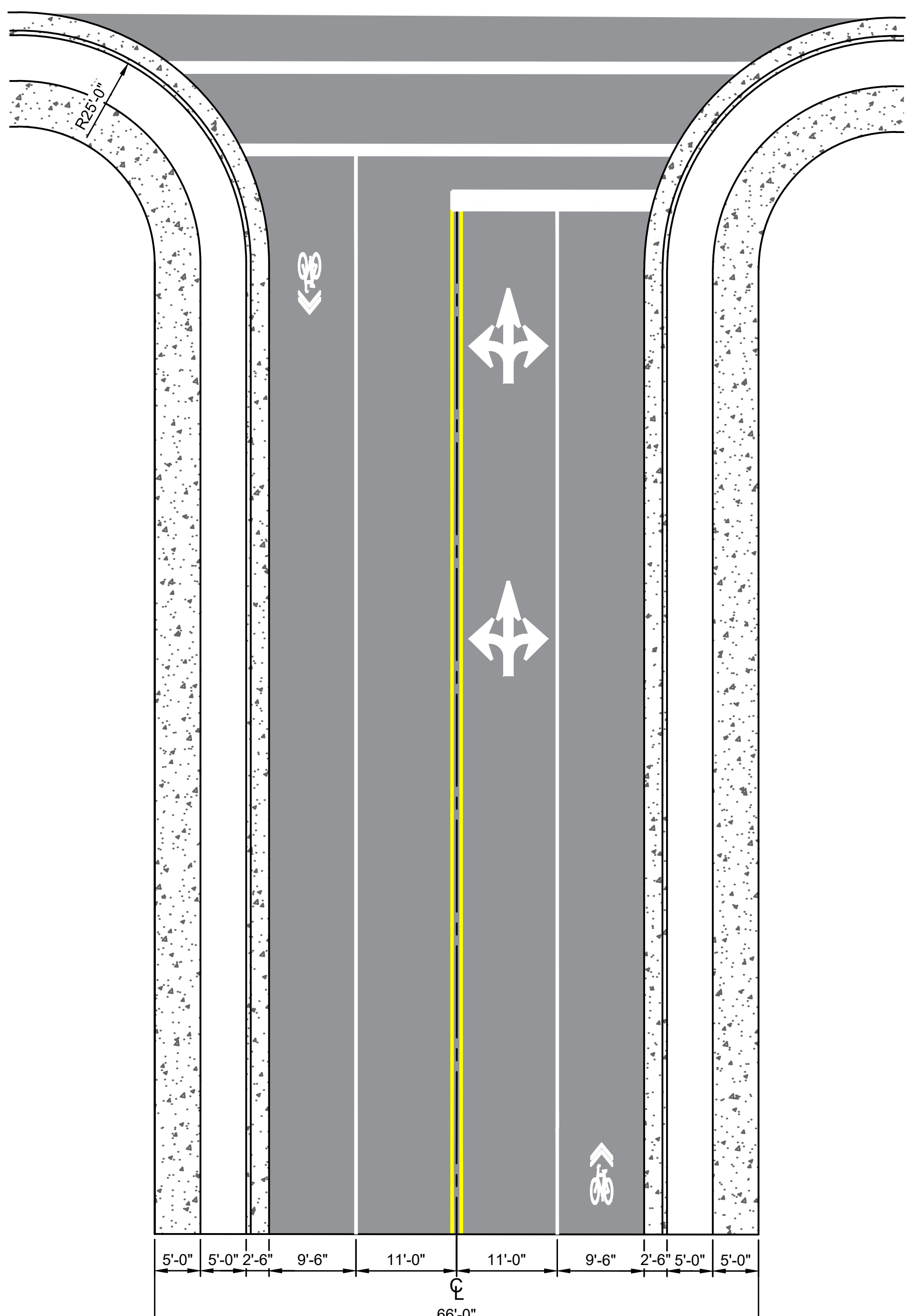
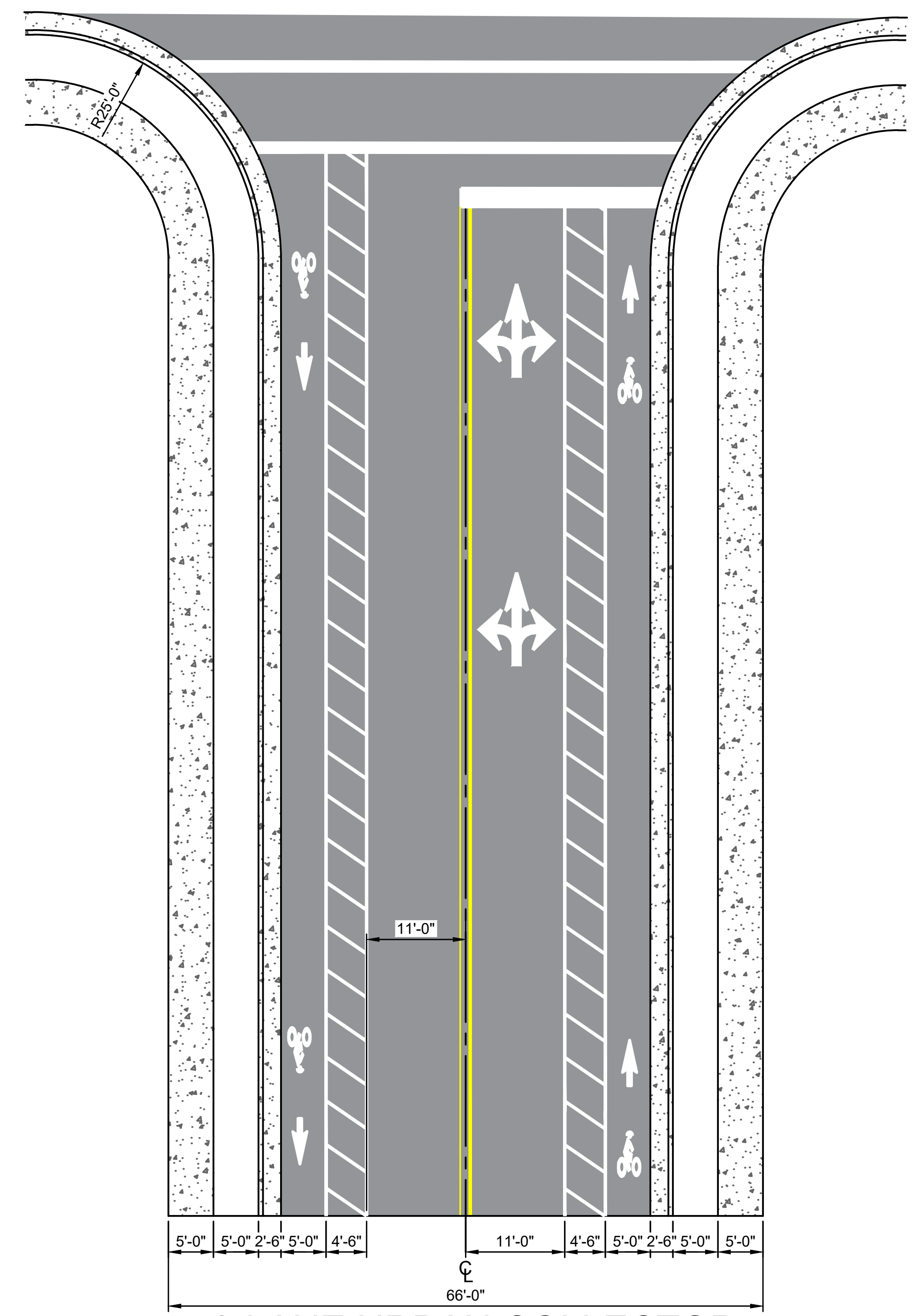


2-LANE LOCAL

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL CROSS-SECTIONS	DESIGNED MP DRAWN LJ CHECKED KC	DATE 9/25/19 DATE 9/25/19 DATE 9/25/19	PROJECT NO. UT-1305-1808 SHEET NO. 1 OF 11 DRAWING NO. 2-LANE LOCAL

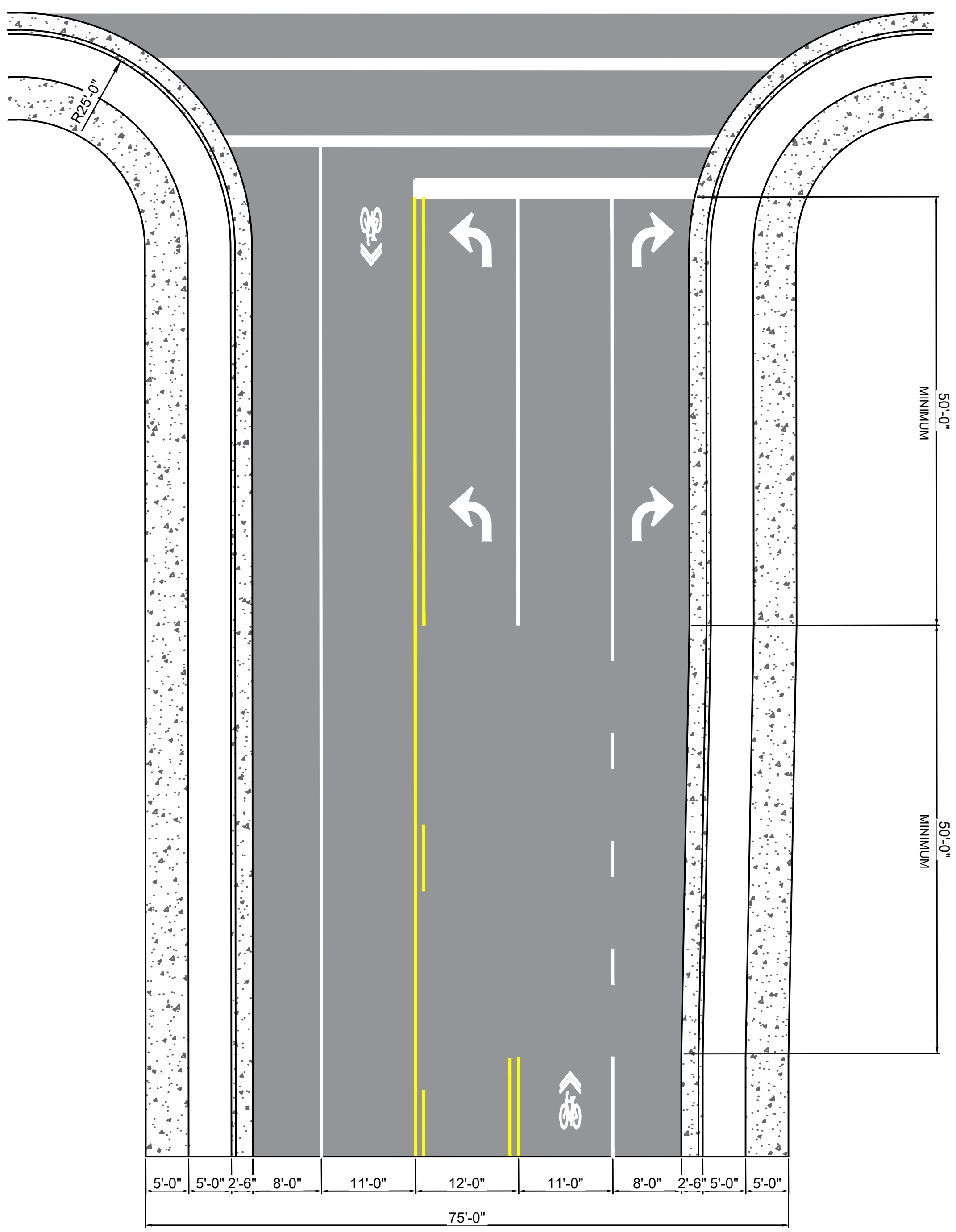


2-LANE URBAN COLLECTOR
WITH PARKING

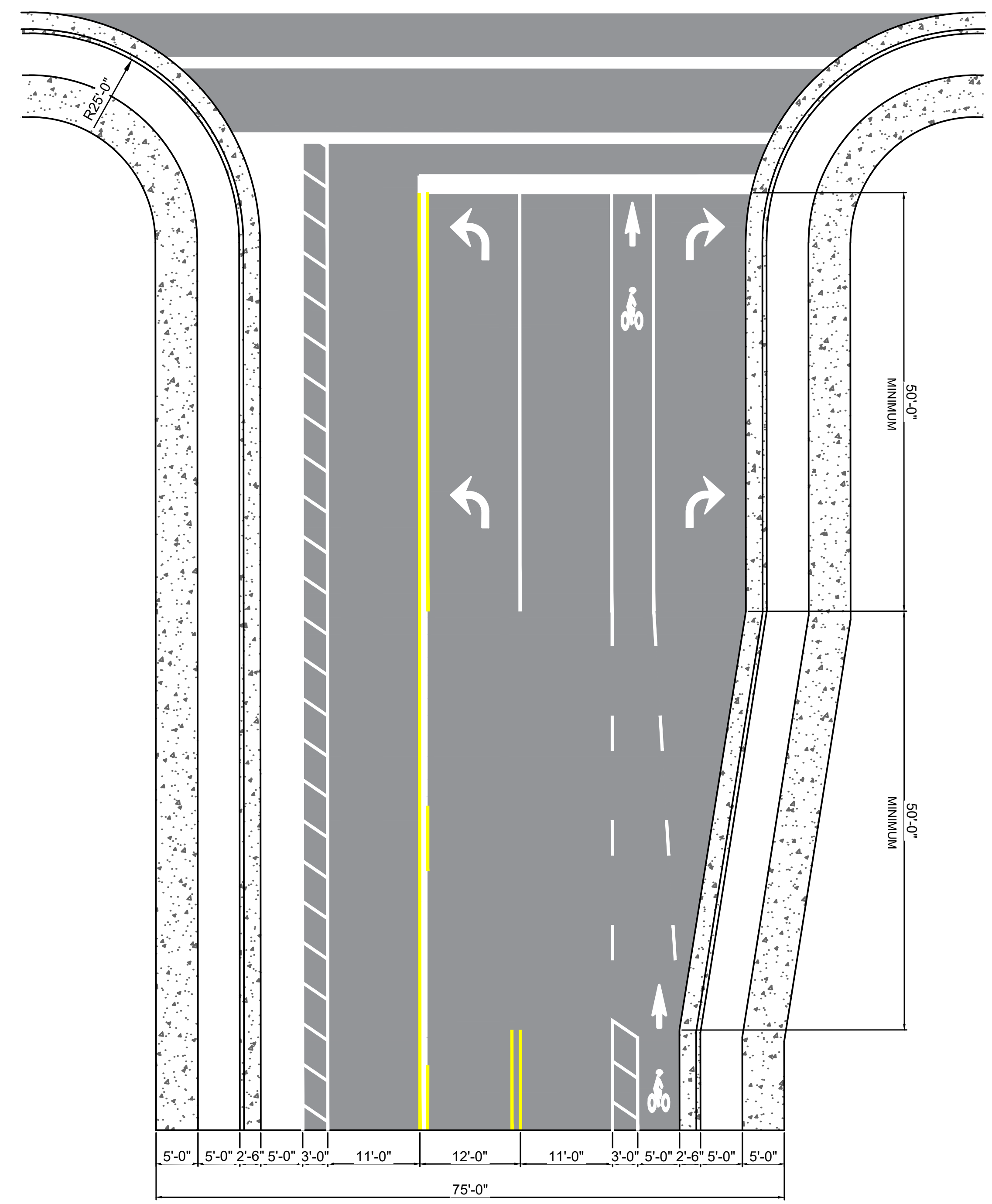


2-LANE URBAN COLLECTOR
WITH BIKE LANE
& NO PARKING

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL INTERSECTION CROSS-SECTIONS	DESIGNED DRAWN CHECKED	DATE DATE DATE
						PROJECT NO.	SHEET NO. 2 OF 11 DRAWING NO.



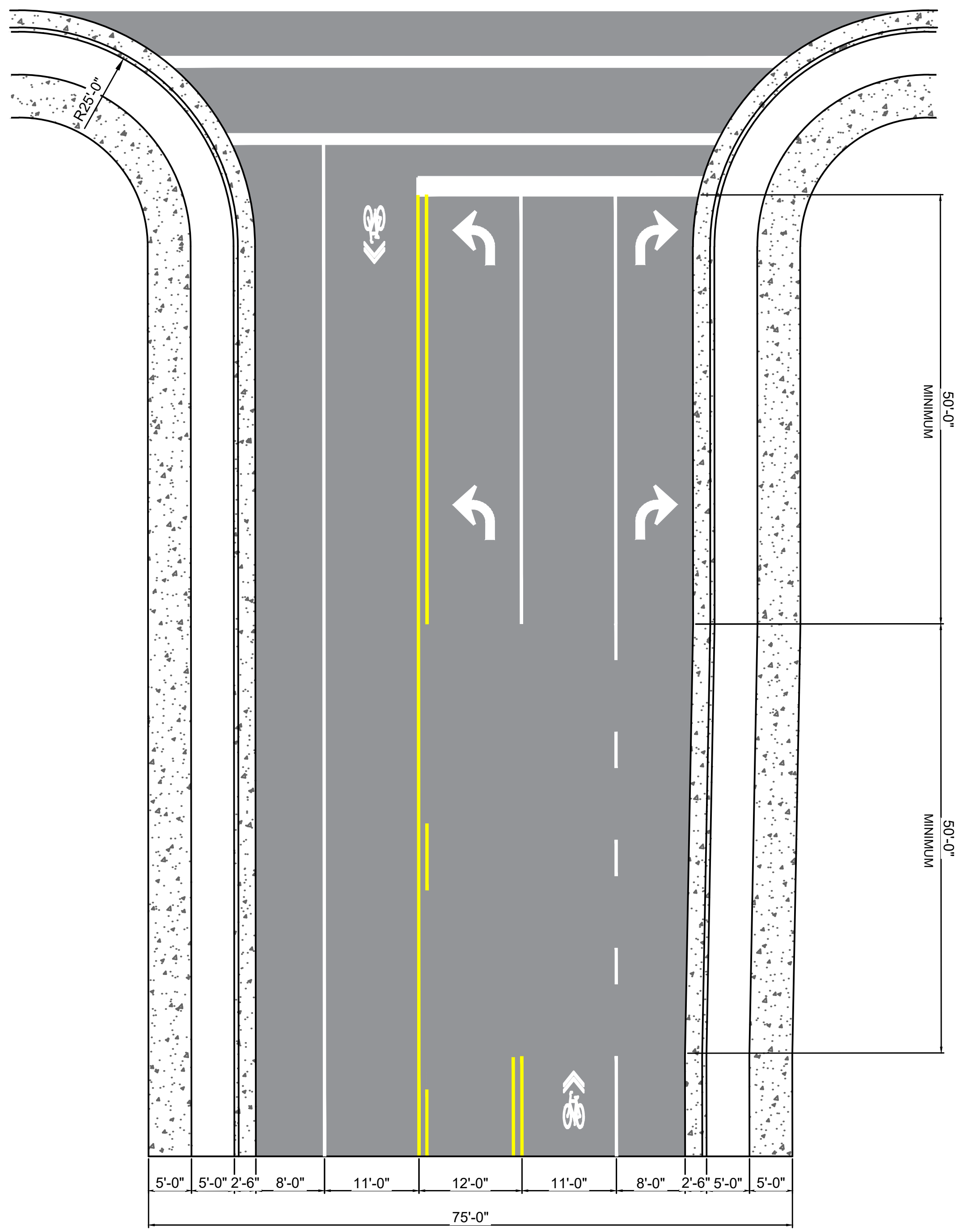
3-LANE URBAN COLLECTOR
WITH PARKING



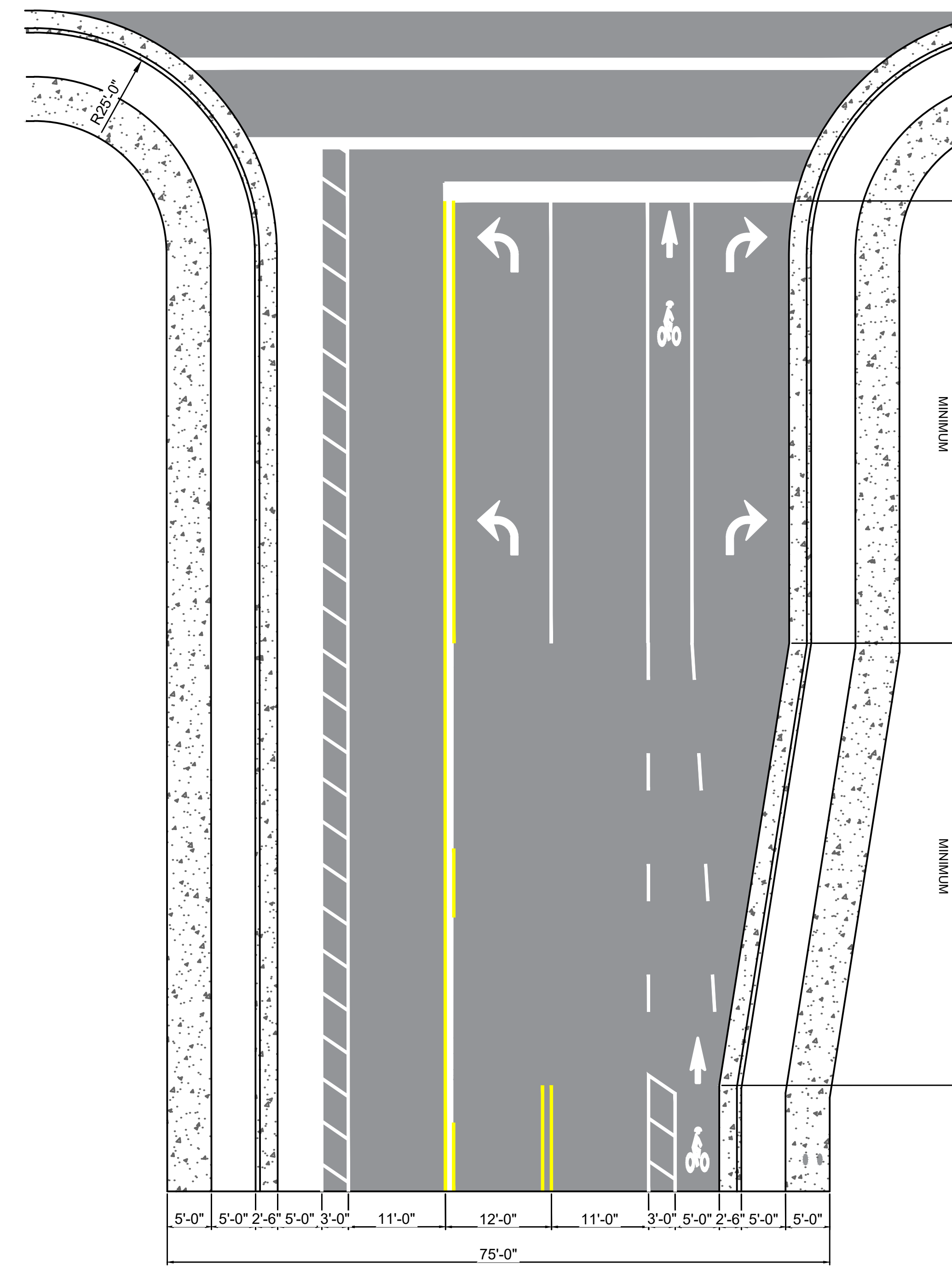
3-LANE URBAN COLLECTOR
WITH BIKE LANE

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL CROSS-SECTIONS	DESIGNED MP DRAWN LJ CHECKED KC	DATE 9/25/19 DATE 9/25/19 DATE 9/25/19

PROJECT NO.	UT-1305-1808
SHEET NO.	3 OF 11
DRAWING NO.	TYP-01

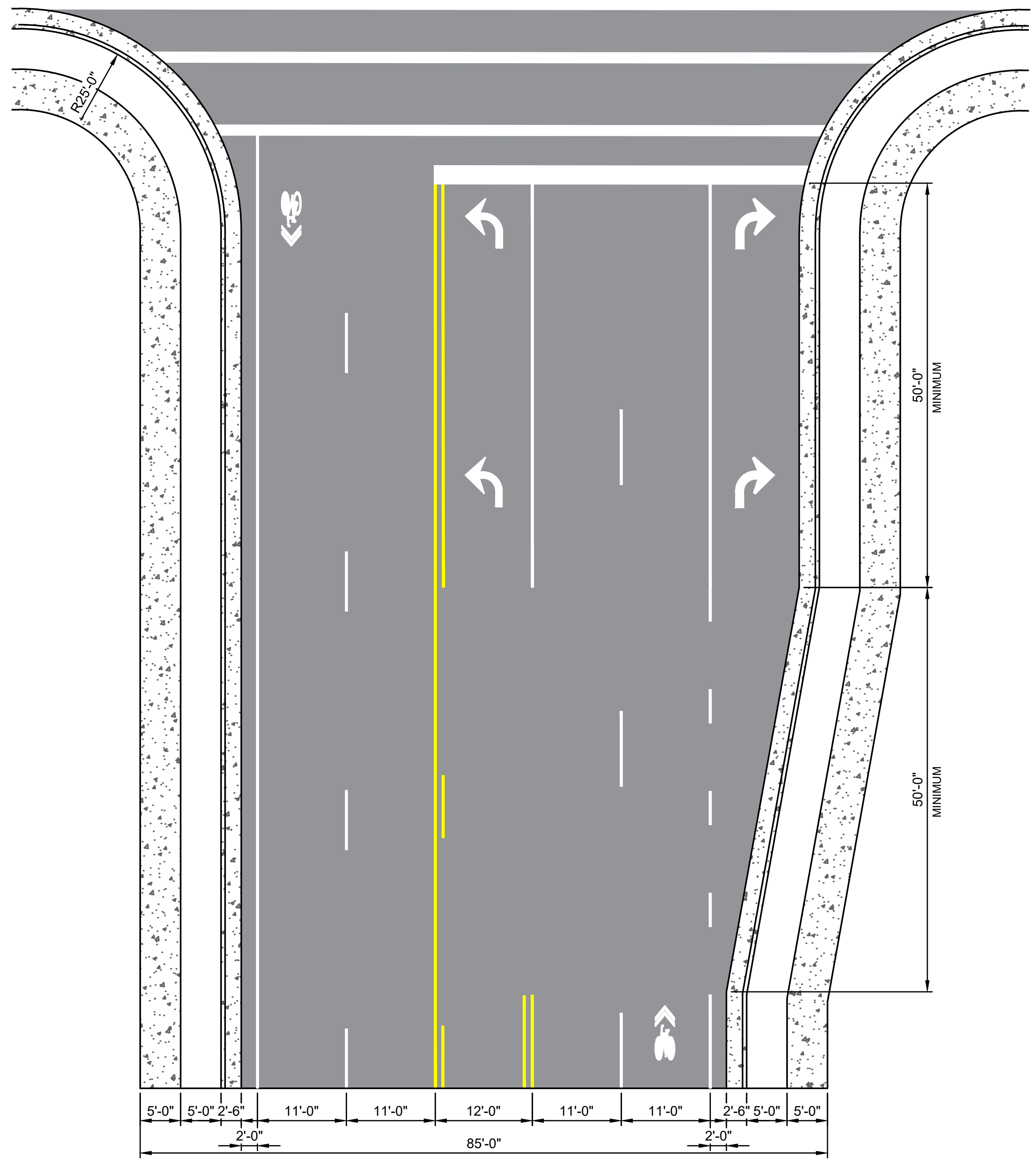


3-LANE URBAN COLLECTOR
WITH PARKING



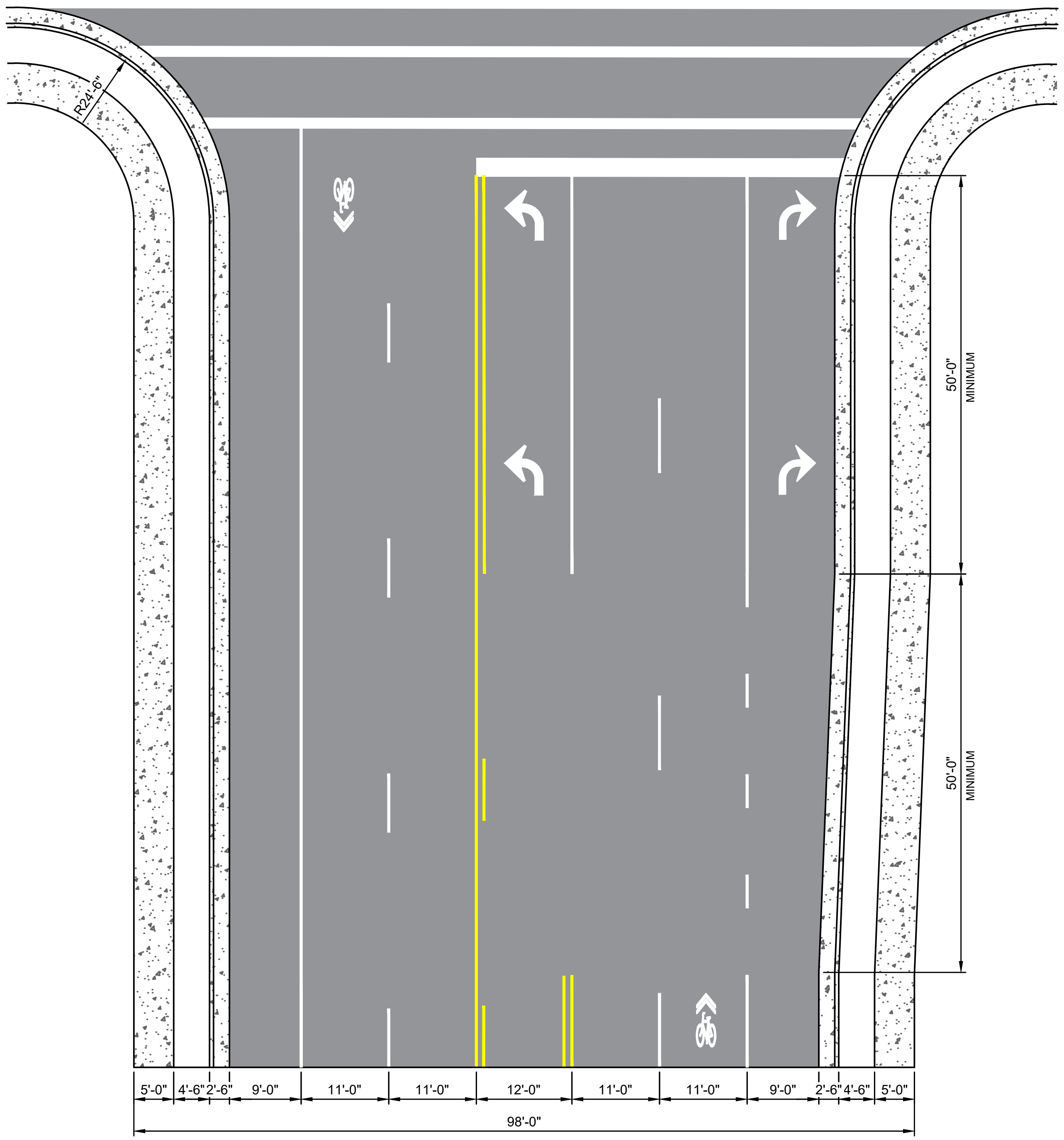
3-LANE URBAN COLLECTOR
WITH BIKE LANE

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL CROSS-SECTIONS	DESIGNED MP DRAWN LJ CHECKED KC	DATE 9/25/19 DATE 9/25/19 DATE 9/25/19	PROJECT NO. UT-1305-1808 SHEET NO. 4 OF 11 DRAWING NO. TYP-01

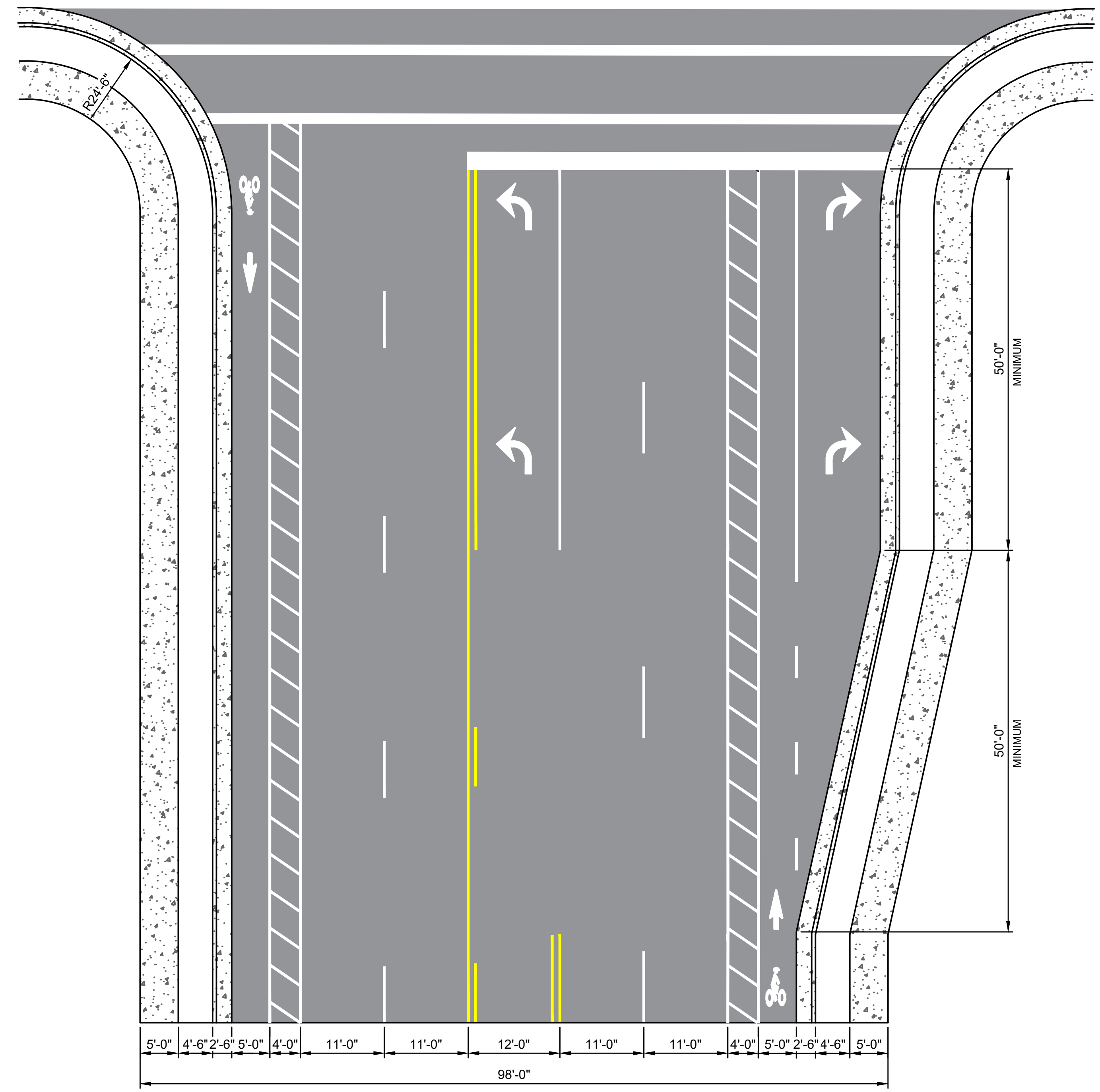


5-LANE URBAN ARTERIAL

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL CROSS-SECTIONS	DESIGNED MP DRAWN LJ CHECKED KC	DATE 9/25/19 DATE 9/25/19 DATE 9/25/19	PROJECT NO. UT-1305-1808 SHEET NO. 5 OF 11 DRAWING NO. TYP-01



5-LANE URBAN CORE ARTERIAL WITH PARKING



5-LANE URBAN CORE ARTERIAL WITH BIKE LANE

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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Pleasant Grove, UT 84062
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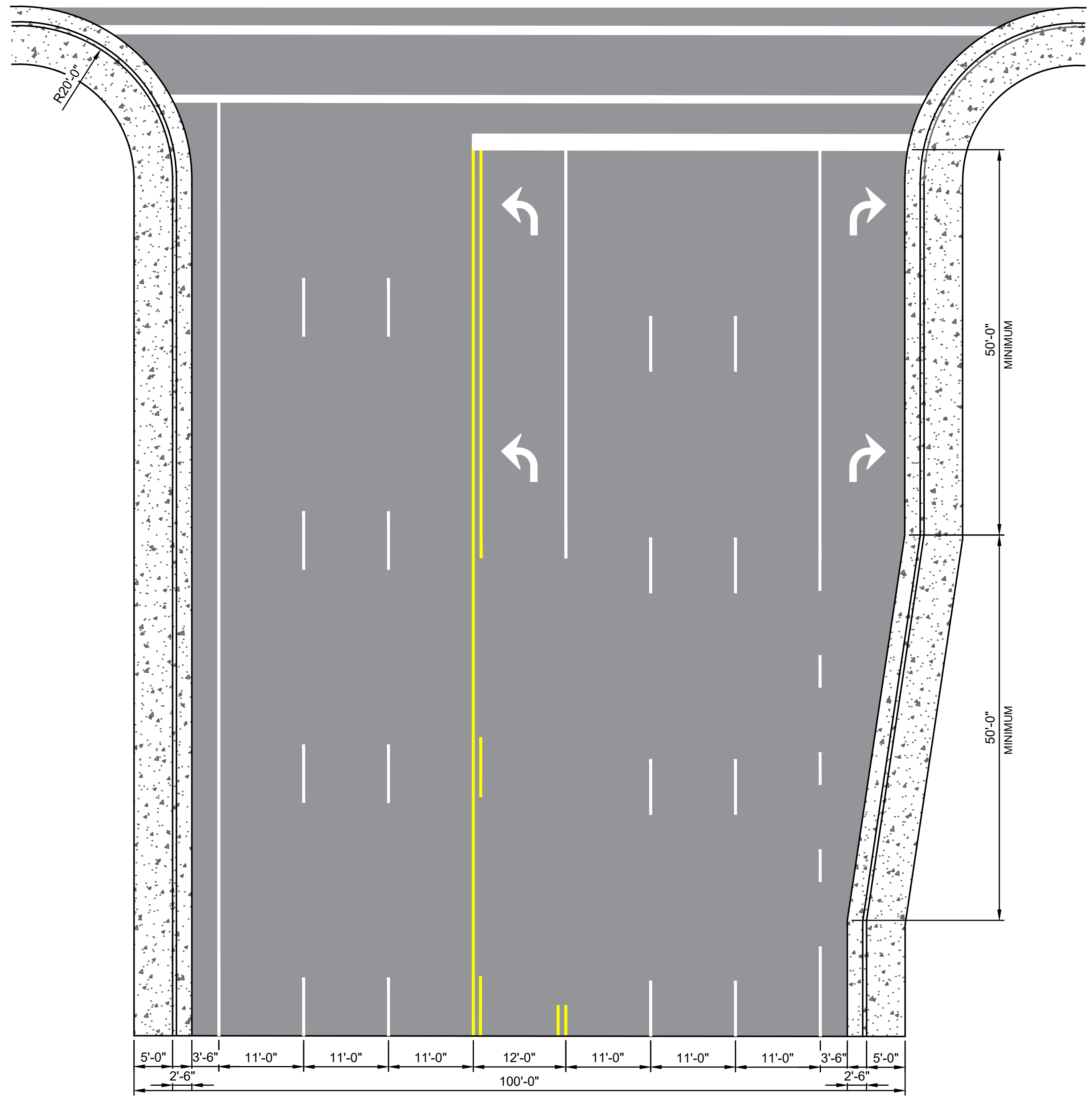
COTTONWOOD HEIGHTS

TYPICAL CROSS-SECTIONS

DESIGNED	DATE	PROJECT NO.
MP	9/25/19	UT-1305-1808
DRAWN	DATE	SHEET NO.
LJ	9/25/19	6 OF 11
CHECKED	DATE	DRAWING NO.
KC	9/25/19	TYP-01



7-LANE URBAN ARTERIAL

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE
HORIZONTAL N/A
VERTICAL N/A

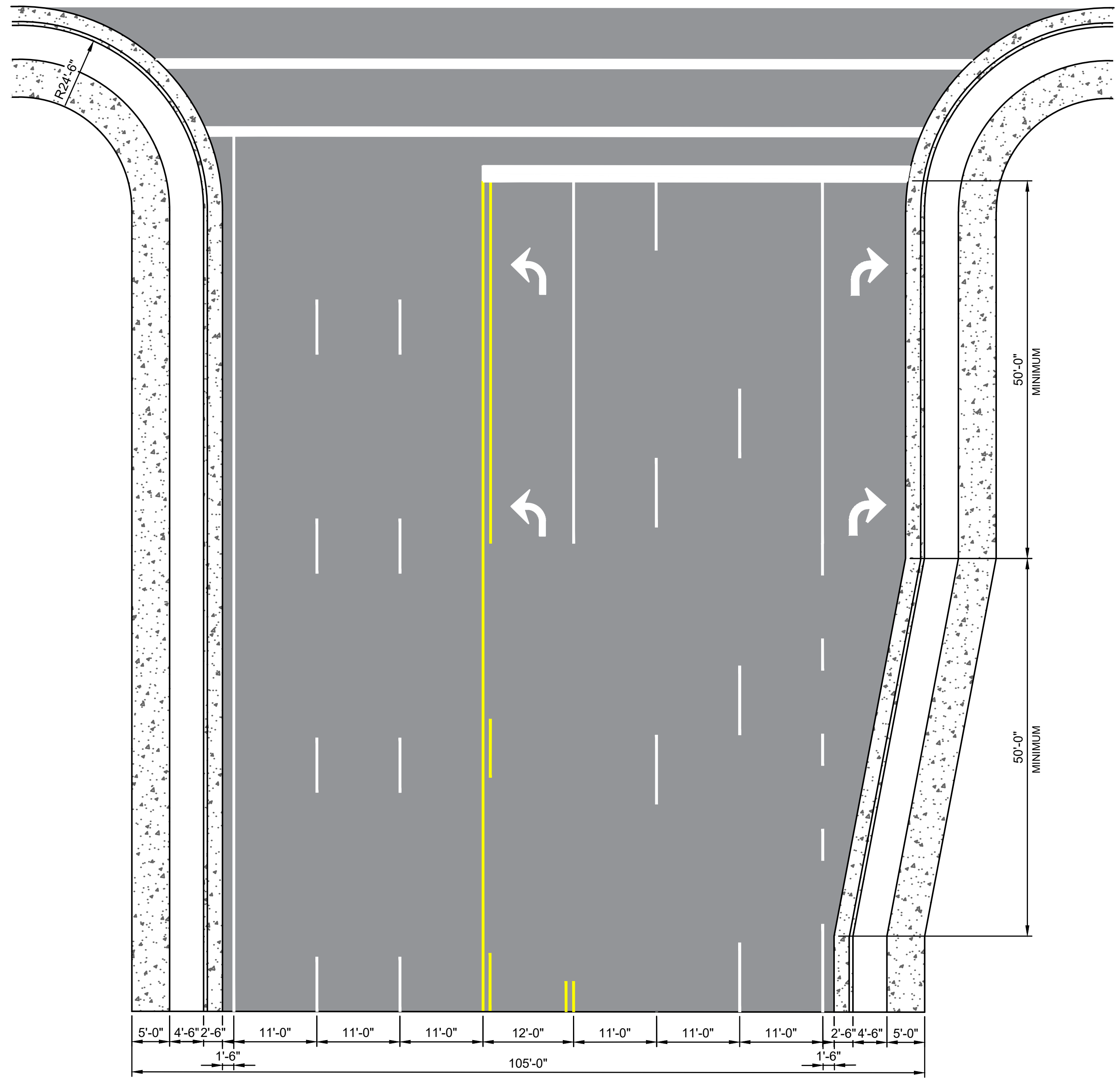
WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

HORROCKS ENGINEERS
2162 West Grove Parkway
Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

COTTONWOOD HEIGHTS

TYPICAL CROSS-SECTIONS

DESIGNED MP	DATE 9/25/19	PROJECT NO. UT-1305-1808
DRAWN LJ	DATE 9/25/19	SHEET NO. 7 OF 11
CHECKED KC	DATE 9/25/19	DRAWING NO. TYP-01



7-LANE URBAN CORE ARTERIAL

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS TYPICAL CROSS-SECTIONS

DESIGNED	DATE	PROJECT NO.
MP	9/25/19	UT-1305-1808
DRAWN	DATE	SHEET NO.
LJ	9/25/19	8 OF 11
CHECKED	DATE	DRAWING NO.
KC	9/25/19	TYP-01

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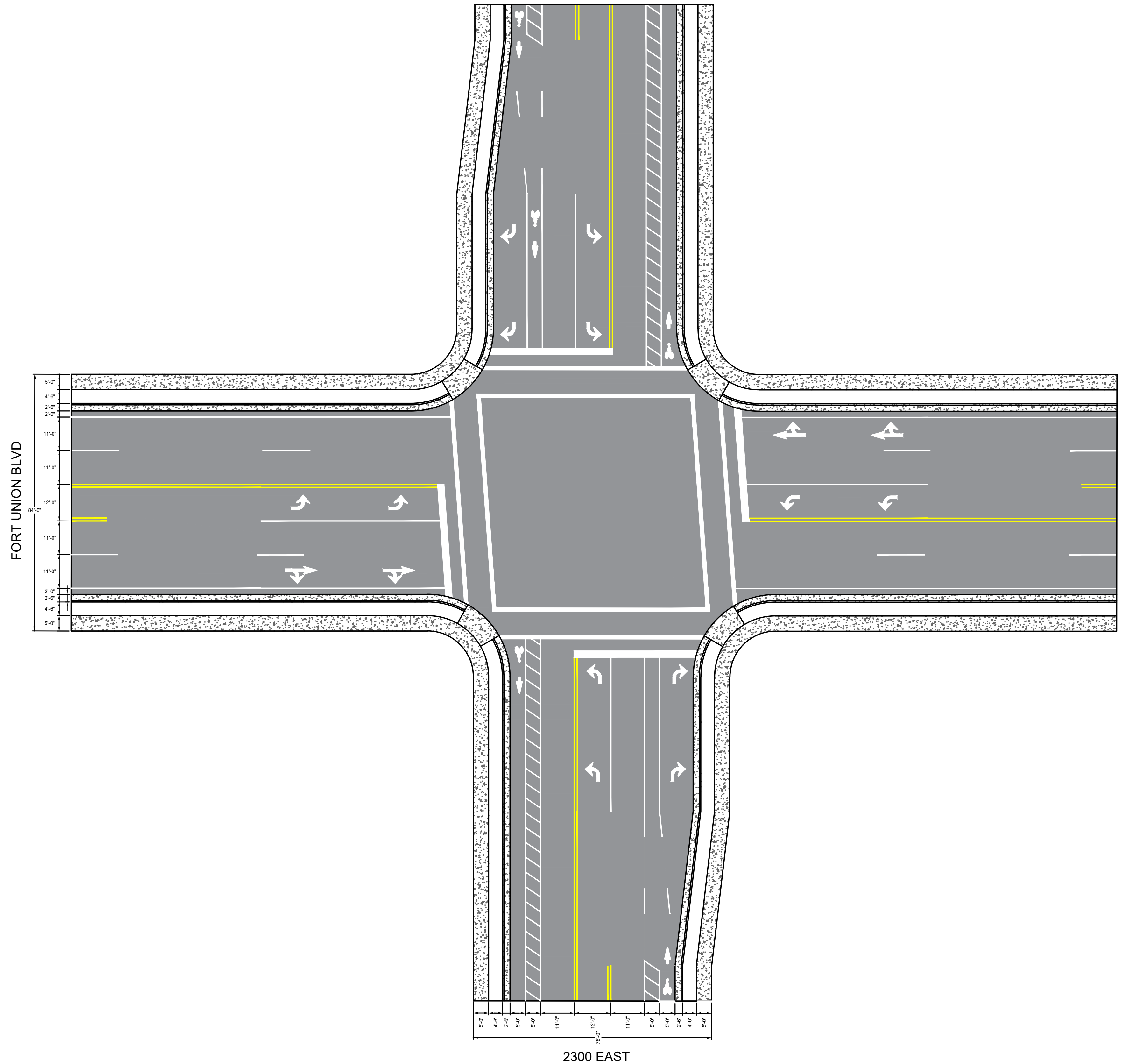

PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS 2300 EAST & FORT UNION	DESIGNED MP DRAWN LJ CHECKED KC	DATE 9/25/19 DATE 9/25/19 DATE 9/25/19	PROJECT NO. UT-1305-1808 SHEET NO. 9 OF 11 DRAWING NO. TYP-01

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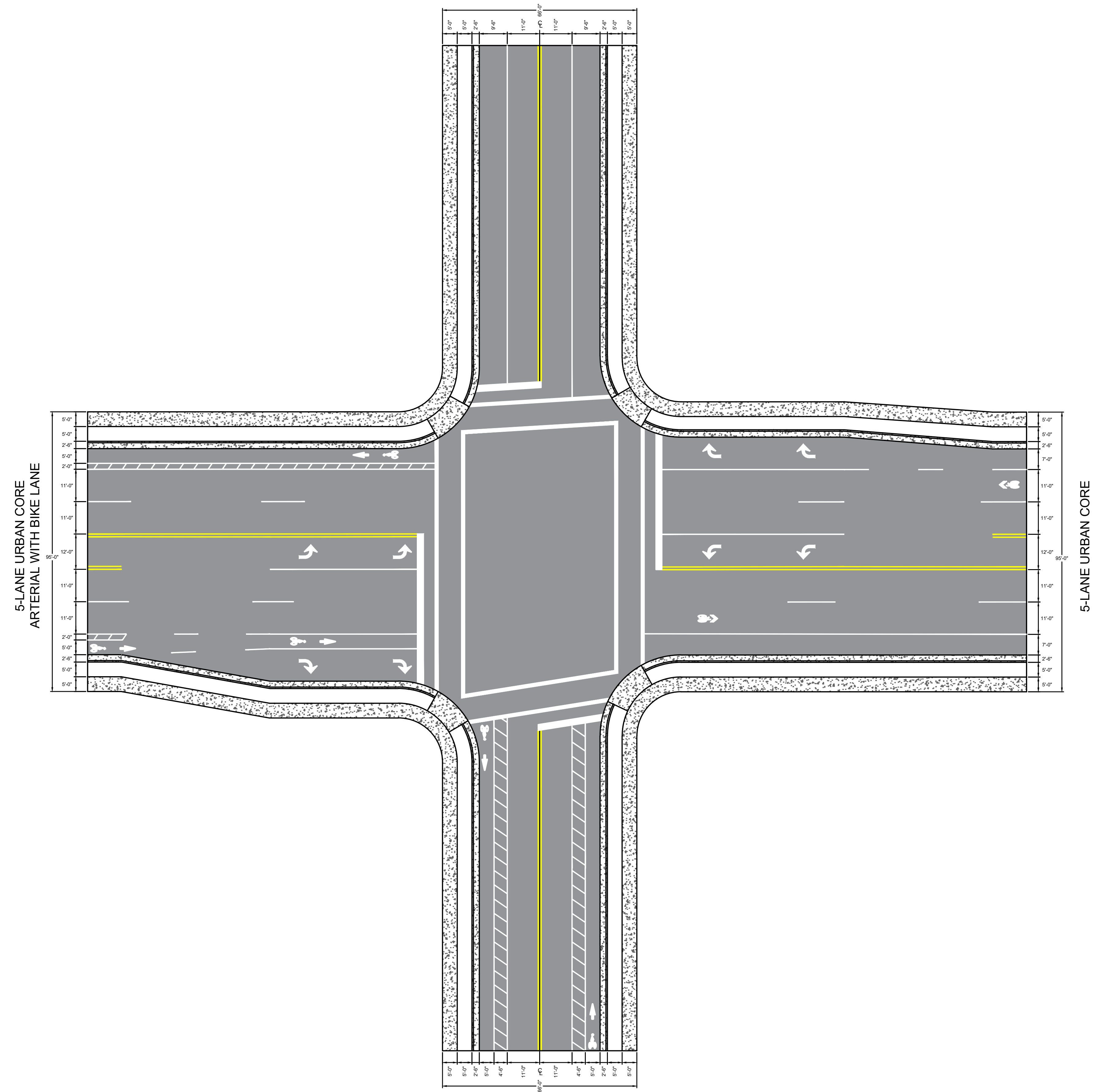

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PRELIMINARY

NOT FOR CONSTRUCTION

SCALE	
HORIZONTAL	N/A
VERTICAL	N/A

WARNING

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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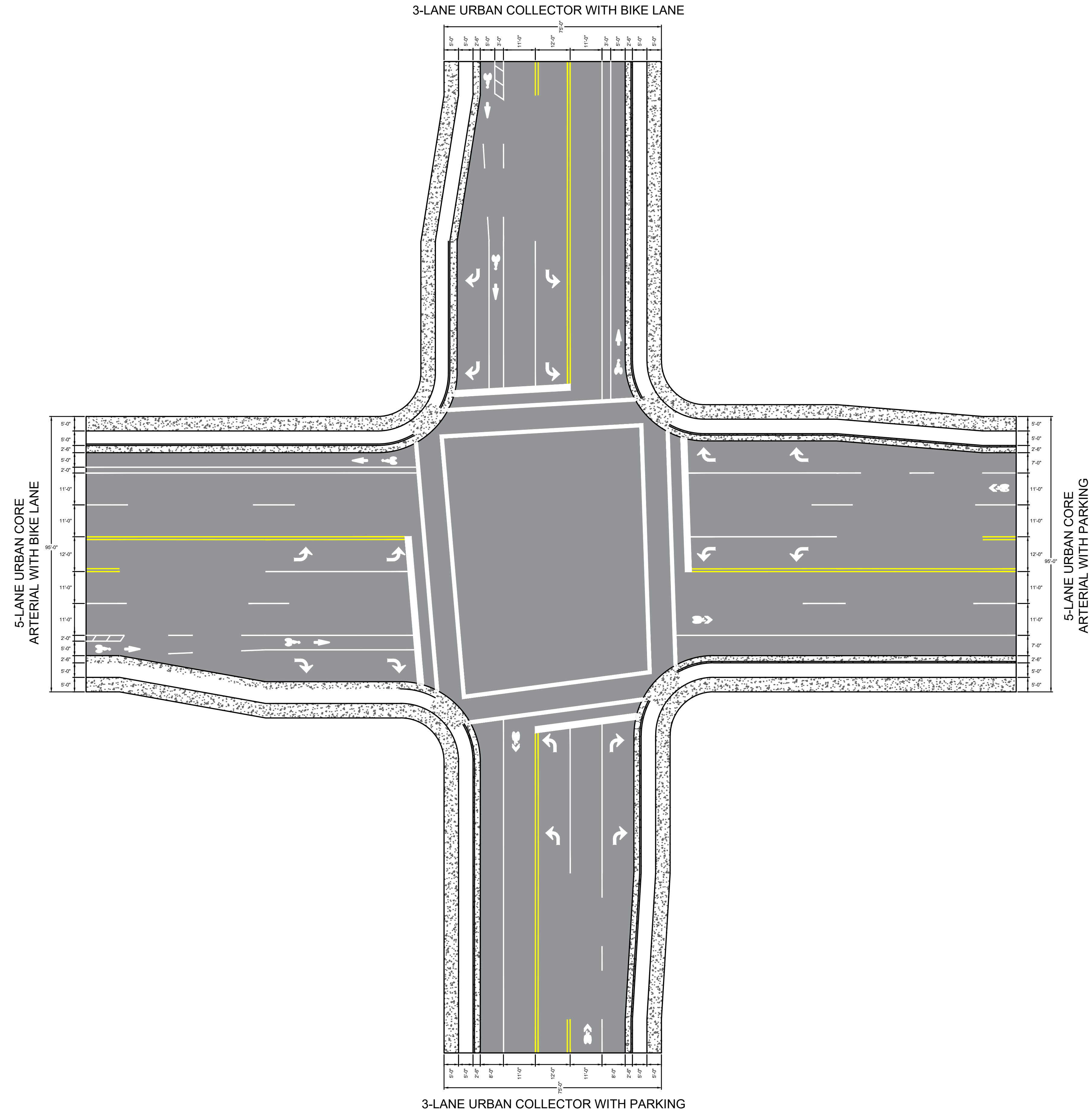
COTTONWOOD HEIGHTS

2-LANE COLLECTOR & 5-LANE URBAN CORE ARTERIAL

DESIGNED	DATE	PROJECT NO.
MP	9/25/19	UT-1305-1808
DRAWN	DATE	SHEET NO.
LJ	9/25/19	10 OF 11
CHECKED	DATE	DRAWING NO.
KC	9/25/19	TYP-01



PRELIMINARY NOT FOR CONSTRUCTION	SCALE HORIZONTAL N/A VERTICAL N/A	WARNING 0 1/2 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE	HORROCKS ENGINEERS	2162 West Grove Parkway Suite 400 Pleasant Grove, UT 84062 (801) 763-5100	COTTONWOOD HEIGHTS 3-LANE COLLECTOR & 5-LANE URBAN CORE ARTERIAL	DESIGNED MP, DATE 9/25/19, PROJECT NO. UT-1305-1808 DRAWN LJ, DATE 9/25/19, SHEET NO. 11 OF 11 CHECKED KC, DATE 9/25/19, DRAWING NO. TYP-01

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Appendix B: Traffic Impact Studies

Traffic Impact Study Requirements

When a Traffic Impact Study (TIS) is required, the study needs to be prepared to the appropriate TIS level as shown below. The traffic shell, at a minimum, incorporates Cottonwood Heights principles, standards, and national practices. Cottonwood Heights may impose additional requirements and investigation upon the applicant as necessary.

GENERAL REQUIREMENTS TO PERFORM A TIS

Cottonwood Heights has provided general requirements to perform a TIS. The first requirement is to verify or obtain the Wasatch Front Regional Council (WFRC) travel demand model for future traffic growth. The WFRC travel demand model is required because the future traffic growth in Cottonwood Heights is different. Included below are qualifications for the group performing the TIS.

- Have a current Utah PE License.
- Be a firm Specializing in Traffic Engineering.
- Use of software utilizing most recent Highway Capacity Manual (HCM) Methodologies.

As part of the TIS, a pre-application meeting with the Cottonwood Heights city engineer is mandatory to cover basic the information listed below:

- Scope (Submitted to Cottonwood Heights and Developer)
- Establish Study Area
- Establish Trip Generation
- Establish Trip Distribution
- Study Intersections
- AM/PM Peak Hours and or Weekend Peak Hours
- Design year
- Required level of TIS

PERMIT LEVEL / TRAFFIC STUDY LEVEL 1

PROJECT ADT < 100 TRIPS

This permit level has no proposed modifications to traffic signals, roadway elements or geometry.

1. ***Study Area***
   - The study area, depending on the size and intensity of the development and surrounding development, may be identified by:
     - Parcel boundaries,
     - Area of immediate influence, or
     - Reasonable travel time.
   - The study area may be limited to or include property frontage and include neighboring and adjacent parcels.
   - Identify site, cross, and closest adjacent upstream and downstream access points within access category distance of property boundaries.
2. ***Design Year***
   - Opening day of the project.
3. ***Analysis Conditions and Period***
   - Identify site traffic volumes and characteristics.
   - Identify adjacent street(s) traffic volumes and characteristics.
4. ***Identify Right-of-Way, Geometric Boundaries, and Physical Conflicts***
   - Investigate the existence of federal or state, no access or limited access control line.
5. ***Generate Access Point Capacity Analysis as Necessary***
   - Analyze site and adjacent road traffic for the following time periods:
     - Weekday AM and PM peak hours,
     - Saturday peak hours if required by the City Engineer, and
     - Special event peak hour as necessary (per roadway peak and site peak).
6. ***Design and Mitigation***
   - Identify operational concerns and mitigation measures to ensure safe and efficient operations according to the appropriate state highway access category.

PERMIT LEVEL / TRAFFIC STUDY LEVEL 2 COMMERCIAL TIS

PROJECT ADT 500 TO 3,000 TRIPS OR PEAK HOUR < 500 TRIPS

1. ***Study Area***
   - The study area, depending on the size and intensity of the development and surrounding development, may be identified by:
     - Parcel boundaries,
     - Area of immediate influence, or
     - Reasonable travel time.
- An acceptable traffic study boundary can vary between a ¼ - ½ mile on each side of the project site. Confirm boundary expectations with the city engineer.
- The intersection of site access drives with state highways and any signalized or unsignalized intersection within access category distance of property line. Include any identified queuing distance at site and study intersections.

2. ***Design Year***
   - Opening day of the project and five years after project completion.
   - Document and include all phases of development (including out pad parcels).
3. ***Analysis Period***
   - Analyze site and adjacent road traffic for the following time periods:
     - Weekday AM and PM peak hours,
     - Saturday peak hours if required by the city engineer, and
     - Special event peak hour as necessary (per roadway peak and site peak).
4. ***Data Collection***
   - Daily and turning movement counts.
   - Identify site and adjacent street roadway and intersection geometries.
   - Traffic control devices, including traffic signals and regulatory signs.
   - Traffic accident data.
5. ***Trip Generation***
   - Use equations or rates available in the latest edition of the ITE Trip Generation Manual.
     - When developed equations are unavailable for intended land use, perform trip rate study and estimation following ITE procedures or develop justified trip rate agreed to by the Department.
6. ***Trip Distribution and Assignment***
   - Document distribution and assignment of the existing site.
   - Document background and future traffic volumes on the surrounding network of the study area.

7. *Conflict / Capacity Analysis*

- Diagram flow of traffic at the access point(s) for the site and adjacent development.
- Perform capacity analysis for daily and peak hour volumes.

8. *Traffic Signal Impacts*

- For modified and proposed traffic signals:
  - Identify and complete traffic signal warrants,
  - Identify and complete traffic signal drawings, and
  - Complete queuing analysis.

9. *Design and Mitigation*

- Determine and document safe and efficient operational design needs based on the study area and site data.
- Identify operational concerns and mitigation measures to ensure safe and efficient operation according to the appropriate state highway access category.

PERMIT LEVEL / TRAFFIC STUDY LEVEL 2 RESIDENTIAL TIS

PROJECT ADT 100 TO 500 TRIPS

1. ***Study Area***
   - The study area, depending on the size and intensity of the development and surrounding development, may be identified by:
     - Parcel boundaries,
     - Area of immediate influence, or
     - Reasonable travel time.
   - Intersection of site access drives with state highways and any signalized and unsignalized intersection within access category distance of property line. Include any identified queuing distance at site and study intersections.
2. ***Design Year***
   - Opening day of the project.
3. ***Analysis Period***
   - Identify site and adjacent road traffic for weekend AM and PM peak hours (Saturdays if required by the city engineer).
4. ***Data Collection***
   - Identify site and adjacent street roadway and intersection geometries.
   - Identify adjacent street(s) traffic volume and characteristics.
5. ***Conflict / Capacity Analysis***
   - Diagram flow of traffic at the access point(s) for the site and adjacent development.
   - Perform capacity analysis as determined by the city engineer.
6. ***Right-of-Way Access***
   - Identify:
     - Right-of-way,
     - Geometric boundaries, and
     - Physical conflicts.
   - Investigate the existence of federal or state, no access or limited access control line.
7. ***Design and Mitigation***
   - Determine and document safe and efficient operational design needs based on the study area and site data.
   - Identify operational concerns and mitigation measures to ensure safe and efficient operations according to the appropriate state highway access category.

PERMIT LEVEL / TRAFFIC STUDY LEVEL 3

PROJECT ADT 3,000 TO 10,000 TRIPS OR PEAK HOUR TRAFFIC 500 TO 1,200 TRIPS

1. *Study Area*

- The study area, depending on the size and intensity of the development and surrounding development, may be identified by:
  - Parcel boundary,
  - Area of immediate influence, or
  - Reasonable travel time.
- The basis of an acceptable traffic study boundary should be on:
  - Travel time or by market area influence,
  - Site access & state highway intersections, and/or
  - Any intersection within ½ mile of the property line on each side of the project site.

2. *Design Year*

- Opening day of the project, five years and twenty years after opening.
- Document and include all phases of development (includes out pad parcels).

3. *Analysis Period*

- For each design year, analyze the site and adjacent road traffic for:
  - Weekday AM and PM peak hours,
  - Saturday peak hours if identified as needed per the city engineer, and
  - Special event peak hour as necessary (adjacent roadway peak and site peak).

4. *Data Collection*

- Daily and Turning movement counts.
- Identify site and adjacent street roadway and intersection geometries.
- Traffic control devices, including traffic signals and regulatory signs.
- Automatic continuous traffic counts for at least 48 hours.
- Traffic accident data.

5. *Trip Generation*

- Use equations or rates available in the latest edition of the ITE Trip Generation Manual. When developed equations are unavailable for intended land use, perform trip rate study and estimation following ITE procedures or develop justified trip rate agreed to by the Department.

6. *Trip Distribution and Assignment*

- Document distribution and assignment of the existing site.
- Document background and future traffic volumes on the surrounding network of the study area.

7. *Capacity Analysis*

a. Level of Service (LOS) for all intersections.

b. LOS for existing conditions, design year without the project, and design year with the project.

8. Traffic Signal Impacts for Proposed Traffic Signals

- For modified and proposed traffic signals:
    - Identify and complete traffic signal warrants,
    - Identify and complete traffic signal drawings, and
    - Complete queuing analysis.
- Traffic systems analysis. Include:
    a. Acceleration,
    b. Deceleration, and
    c. Weaving.
- Traffic coordination analysis.

9. Accident and Traffic Safety Analysis

- Existing vs. proposed development.

10. Design and Mitigation

- Determine and document safe and efficient operational design needs based on the study area and site data.
- Identify operational concerns and mitigation measures to ensure safe and efficient operation according to the appropriate state highway access category.

PERMIT LEVEL / TRAFFIC STUDY LEVEL 4

PROJECT ADT GREATER THAN 10,000 TRIPS OR PEAK HOUR TRAFFIC > 1,200 VEHICLES PER HOUR

1. ***Study Area***
   - The study area, depending on the size and intensity of the development, will include the surrounding roadways ½ mile from the parcel boundary or reasonable travel time boundary.
2. ***Design Year***
   - Opening day of the project, five years and twenty years after opening.
   - Document and include all phases of development (includes out pad parcels).
3. ***Analysis Period***
   - For each design year, analyze the site and adjacent road traffic for:
     - Weekday AM and PM peak hours,
     - Saturday peak hours as needed per the city engineer, and
     - Identify special event peak hours as necessary (adjacent roadway peak and site peak).
4. ***Data Collection***
   - Daily and turning movement counts.
   - Identify site and adjacent street roadway and intersection geometries.
   - Traffic control devices, including traffic signals and regulatory signs.
   - Automatic continuous traffic counts for at least 24 hours or obtain ADT from local or state agencies.
   - Traffic accident data.
5. ***Trip Generation***
   - Use equations or rates available in the latest edition of the ITE Trip Generation Manual.
     - When developed equations are unavailable for intended land use, perform trip rate study and estimation following ITE procedures or develop justified trip rate agreed to by the Department.
6. ***Trip Distribution and Assignment***
   - Document distribution and assignment of the existing site.
   - Document background and future traffic volumes on the surrounding network of the study area.
7. ***Capacity Analysis***
   - Level of Service (LOS) for all intersections.
   - LOS for existing conditions, design year without the project, and design year with the project.

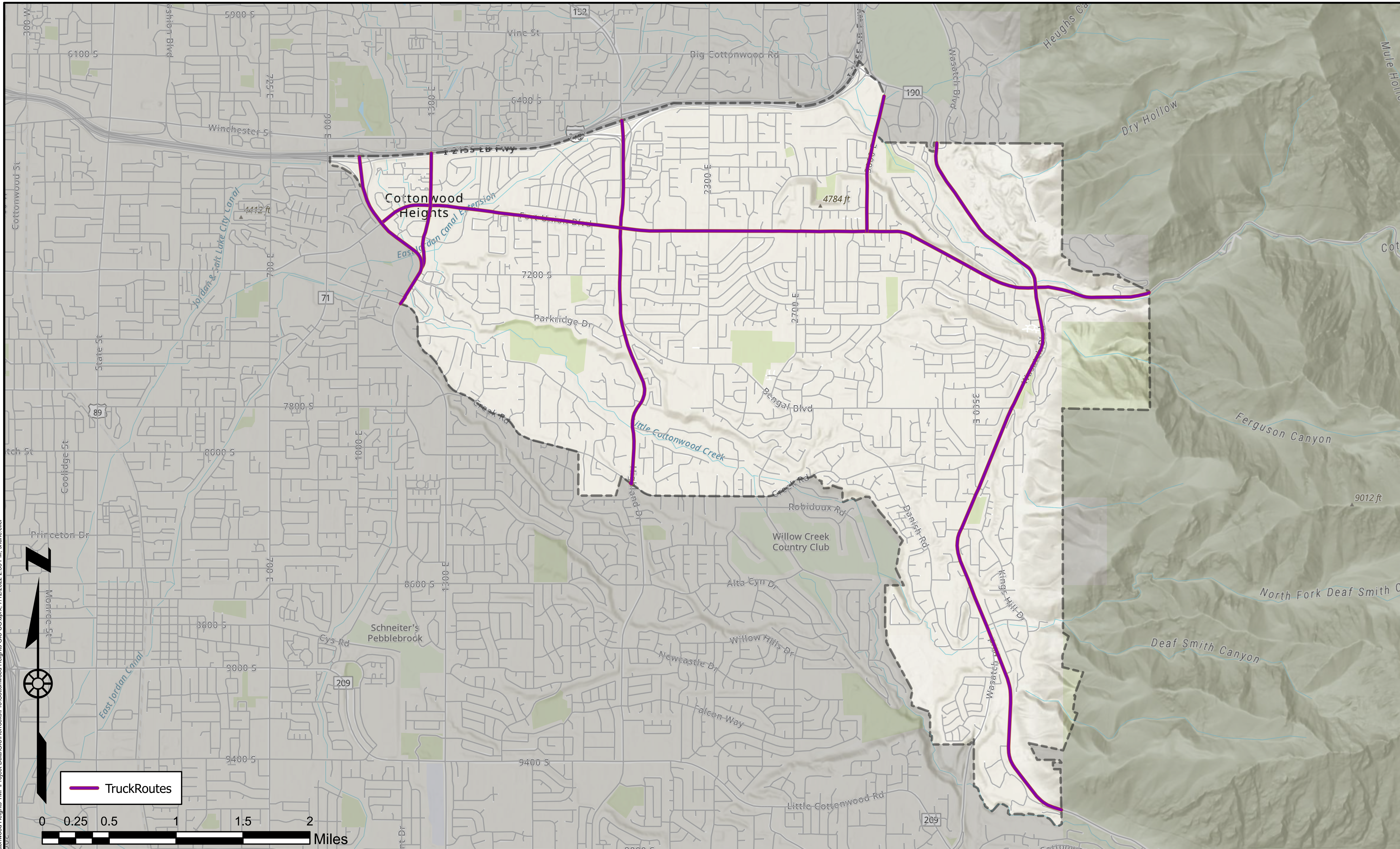
8. Traffic Signal Impacts for Proposed Traffic Signals

- For modified and proposed traffic signals:
  - Identify and complete traffic signal warrants,
  - Identify and complete traffic signal drawings, and
  - Complete queuing analysis.
- Traffic systems analysis includes:
  a. Acceleration,
  b. Deceleration, and
  c. Weaving.
- Traffic coordination analysis.

9. Design and Mitigation

- Determine and document safe and efficient operational design needs based on the study area and site data.
- Identify operational concerns and mitigation measures to ensure safe and efficient operation according to the appropriate state highway access category.

Appendix C: Truck Routes



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HORROCKS ENGINEERS

2162 West Grove Parkway
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Cottonwood Heights Transportation Master Plan

Truck Routes

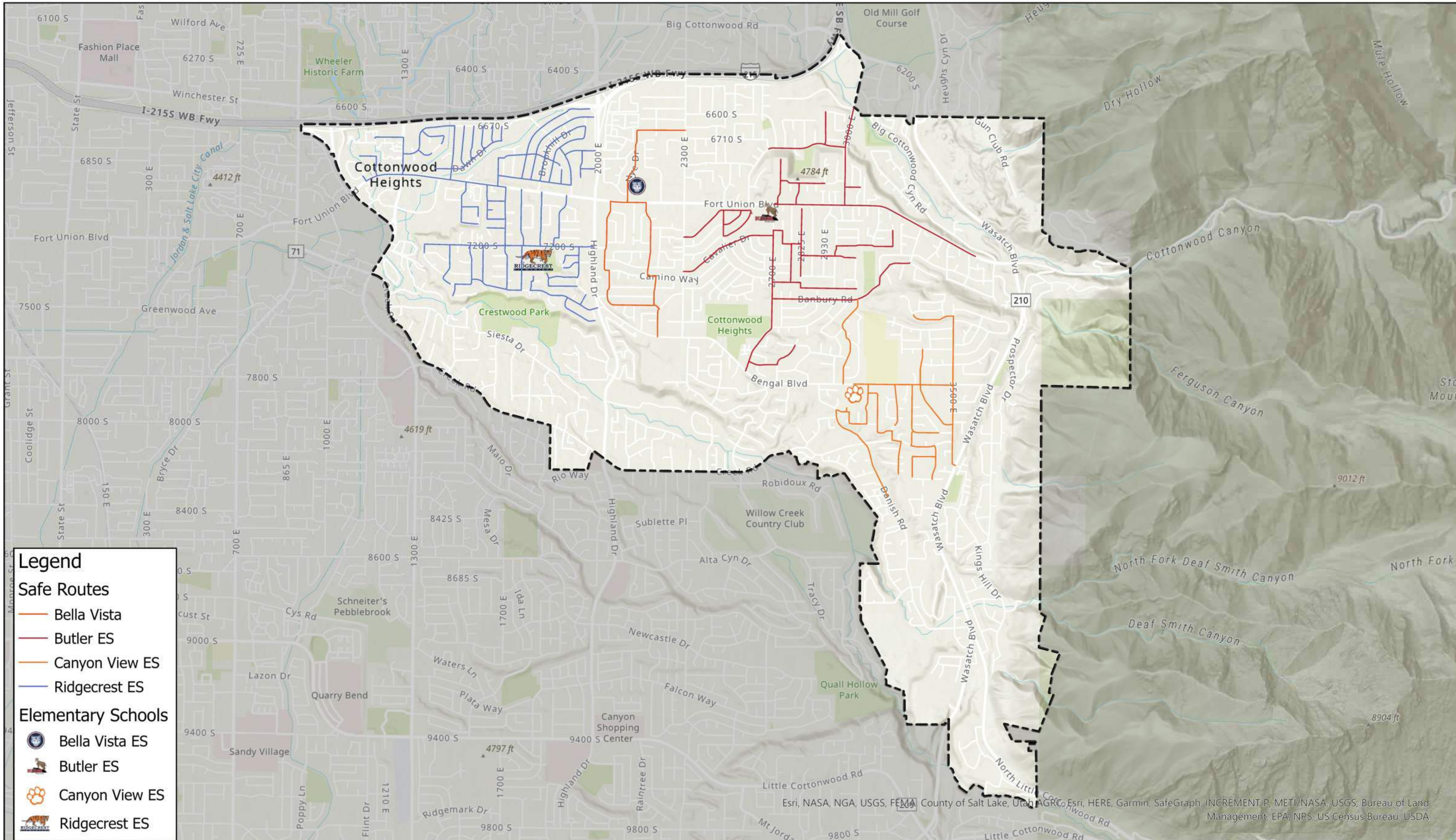
DATE 7/12/2022

DRAWN

Figure 1

Appendix D: Active Transportation

Prepared by Horrocks Engineers
March 30, 2023



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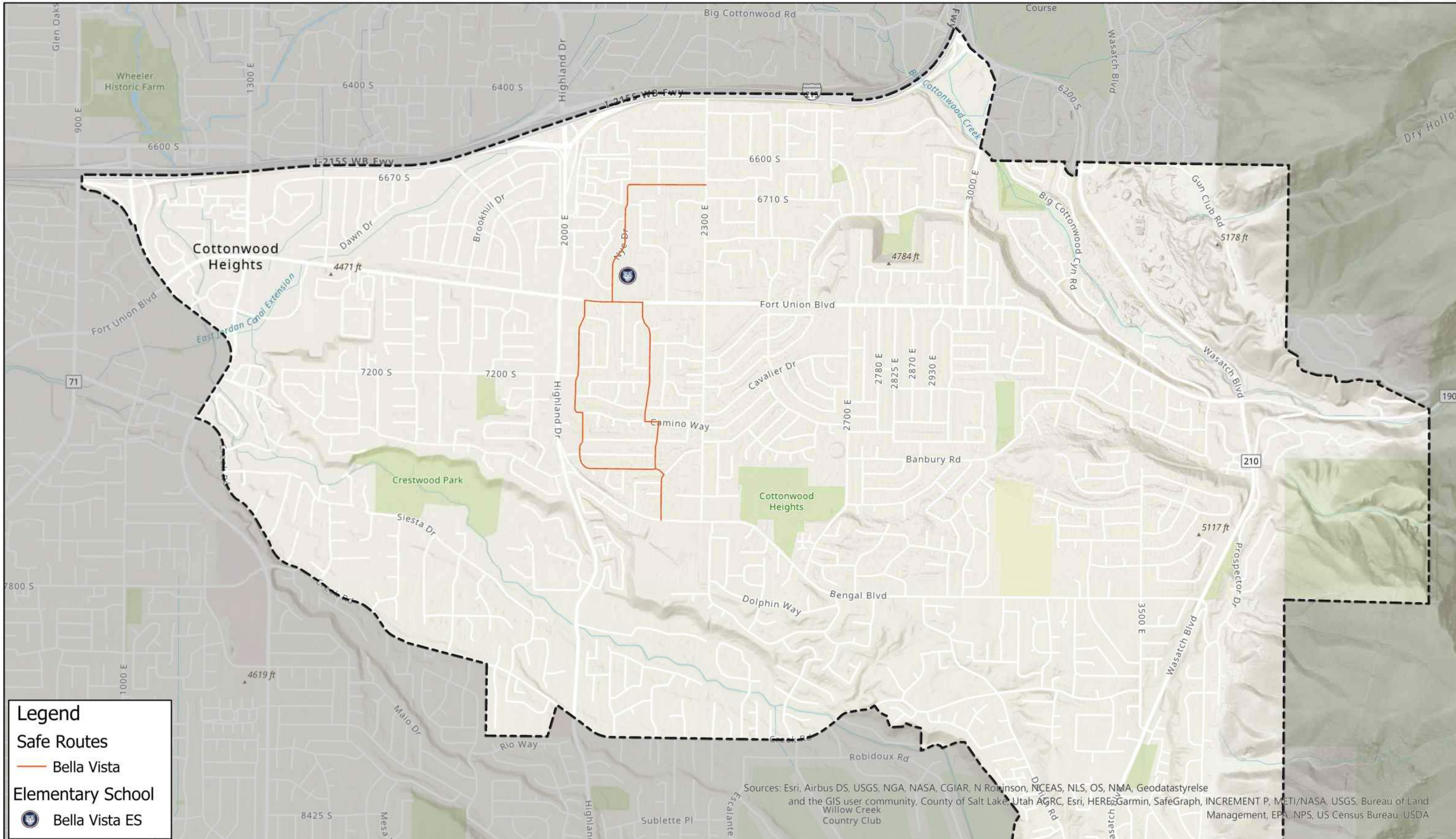
ELEMENTARY SCHOOL SAFE ROUTES

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021

DRAWN SEE

Figure XX



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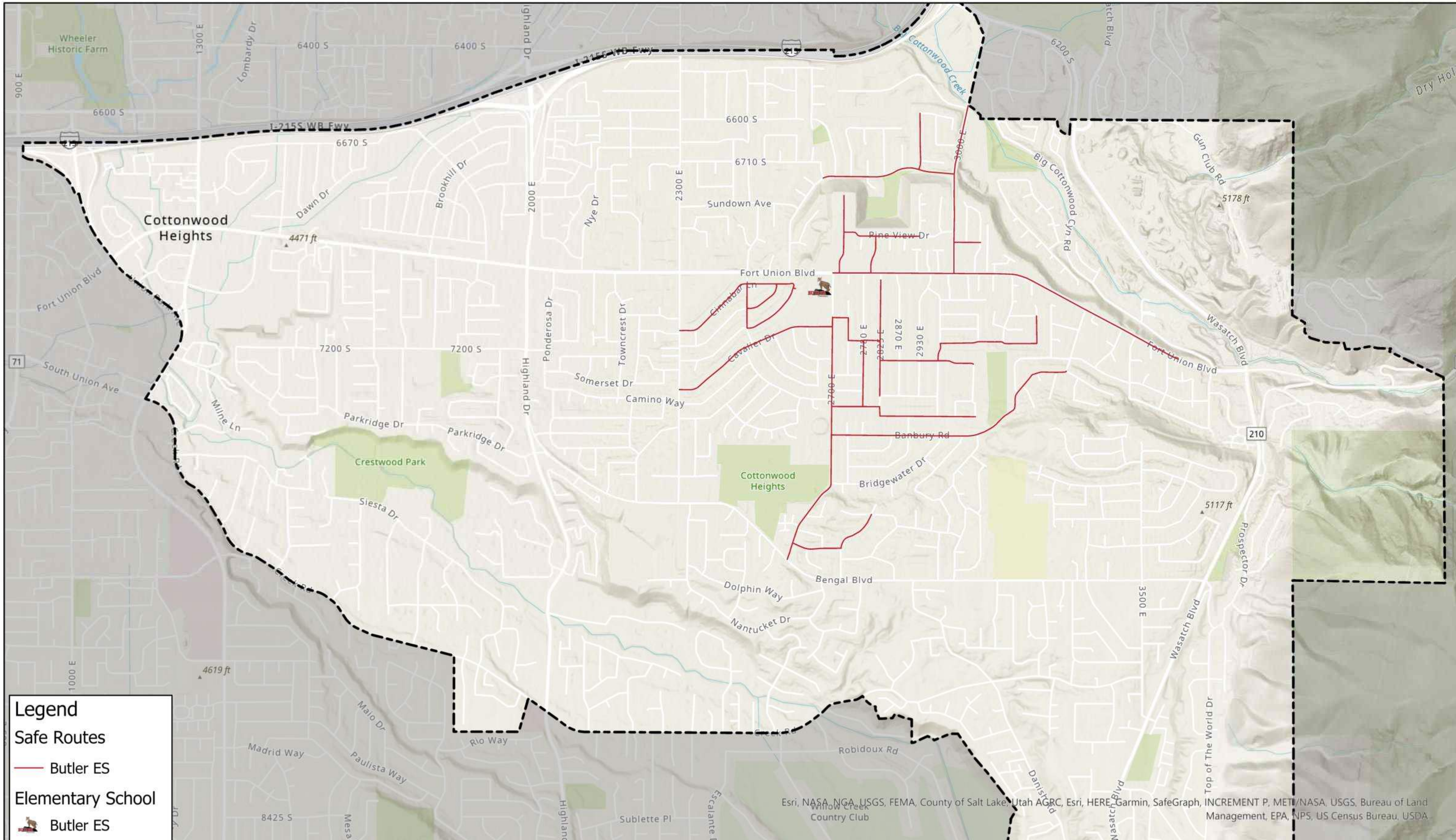
BELLA VISTA ELEMENTARY SCHOOL SAFE ROUTES

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021

DRAWN SEE

Figure XX



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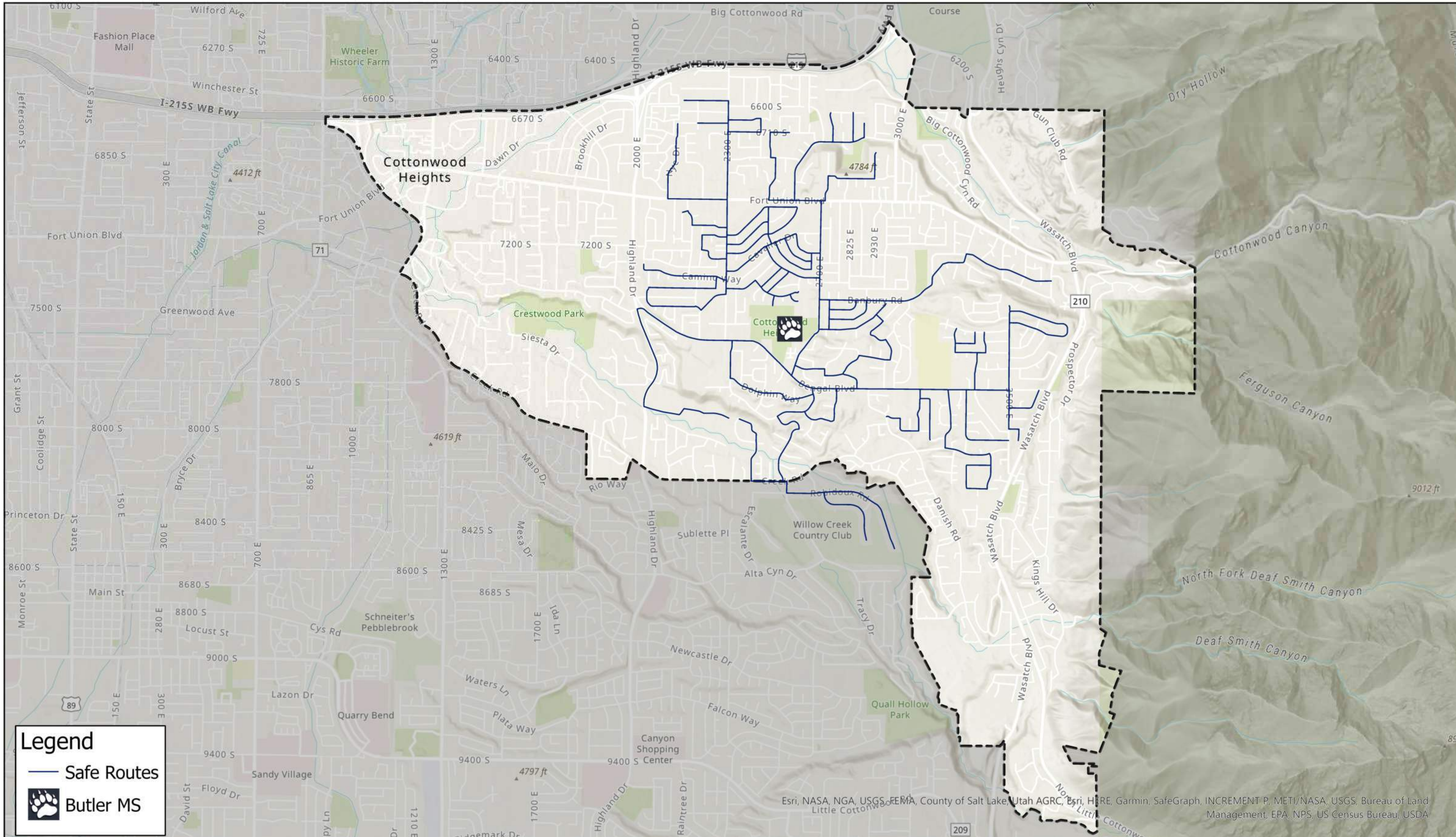
BUTLER ELEMENTARY SCHOOL SAFE ROUTES

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE	7/20/2021
DRAWN	SEE
	Figure XX



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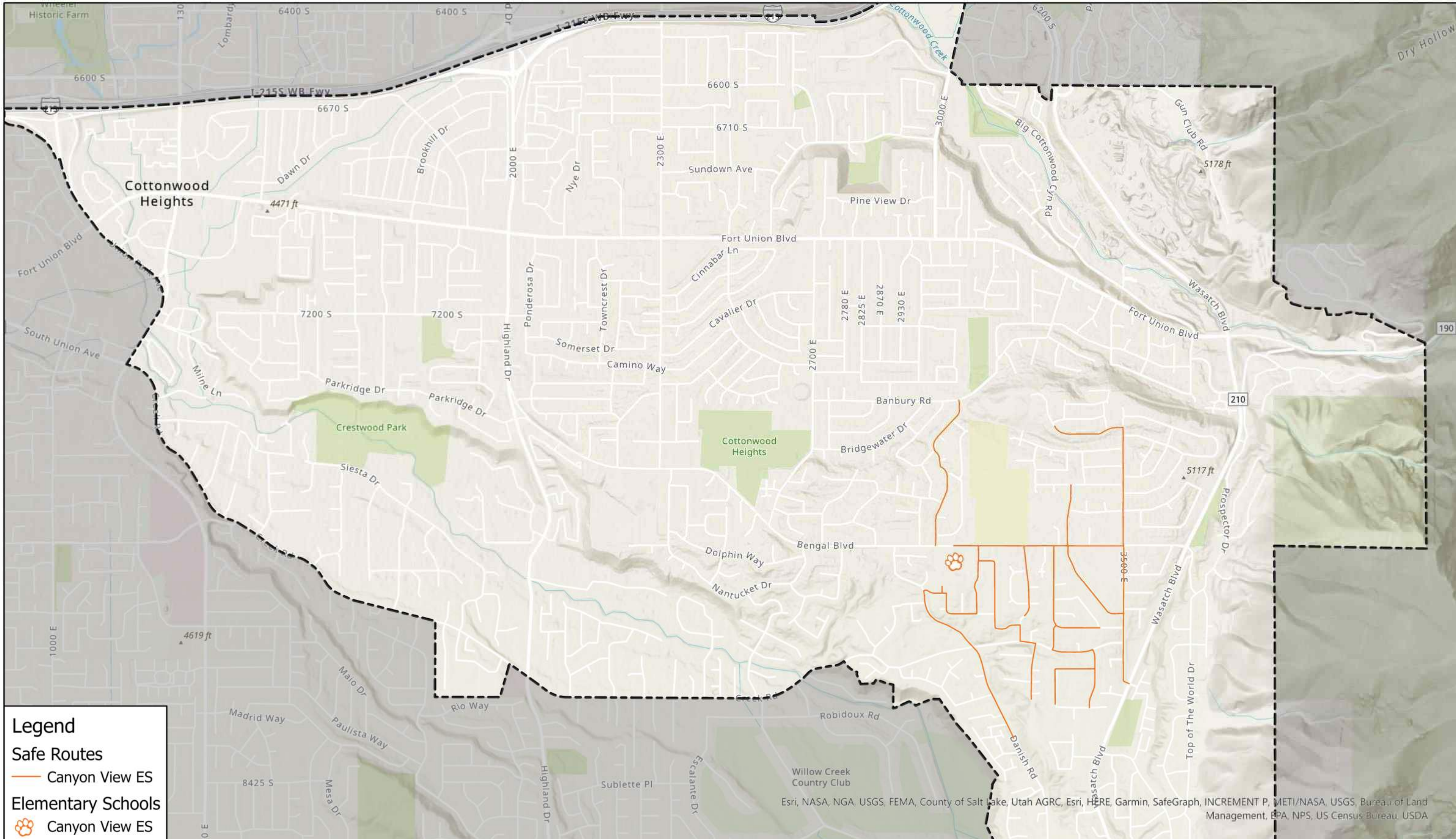
BUTLER MIDDLE SCHOOL SAFE ROUTES
COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021
DRAWN SEE
Figure XX



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CANYON VIEW ELEMENTARY SCHOOL SAFE ROUTES

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021

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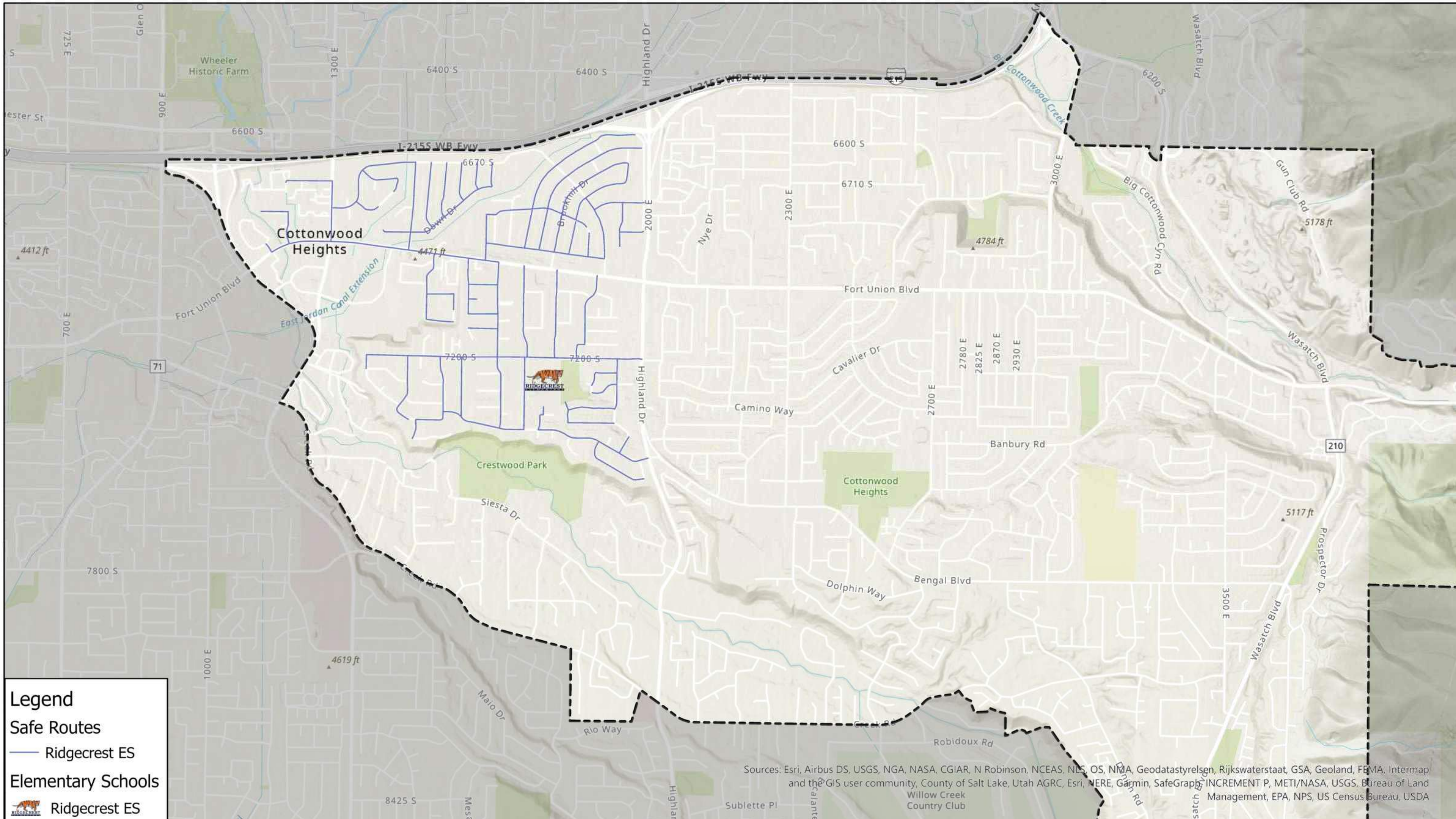
Figure XX



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BUTLER ELEMENTARY SCHOOL SAFE ROUTES

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021

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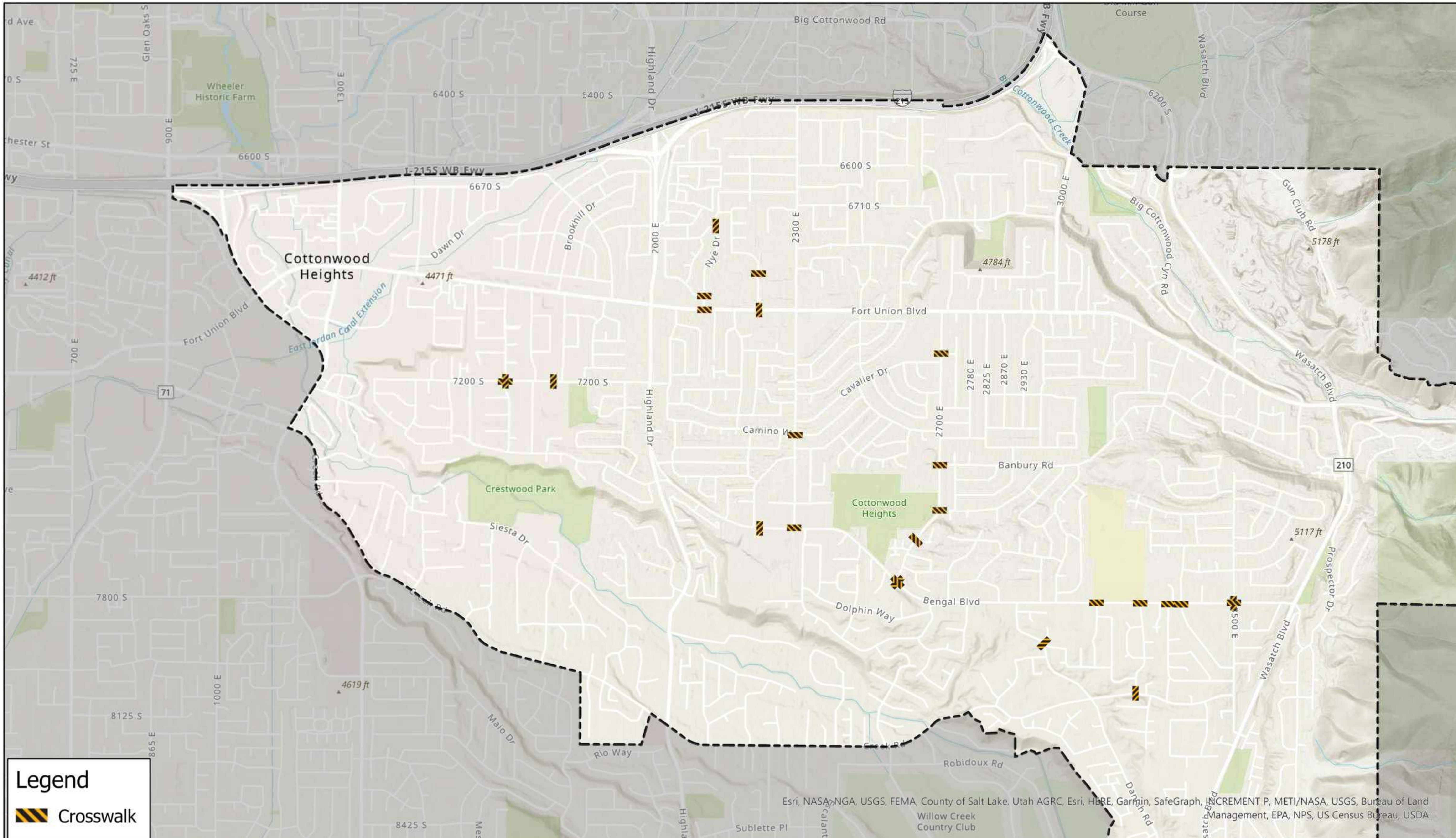
Figure XX



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SCHOOL ZONE CROSSWALKS

COTTONWOOD HEIGHTS TRANSPORTATION MASTER PLAN

DATE 7/20/2021

DRAWN SEE

Figure XX