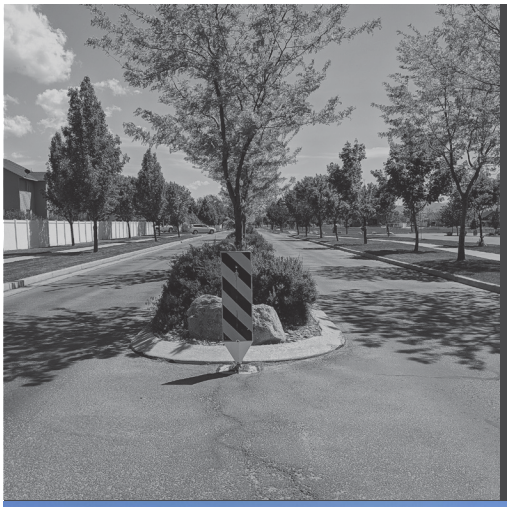
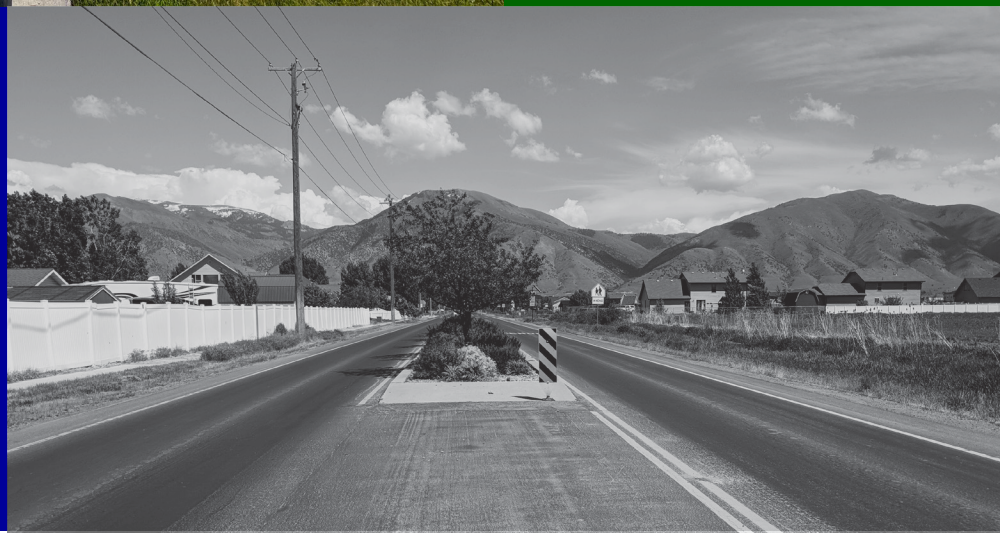


Nibley Transportation Master Plan

January 2019



ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

Nibley City is located in Cache Valley, between US-91 and SR-165, and is approximately 4 square miles in size. Nibley is bordered to the north by Logan, to the north and east by Millville, and to the south by Hyrum. Much of the neighboring land is unincorporated Cache County.

The purpose of this Transportation Master Plan is to ensure that a coordinated, master-planned effort is undertaken to plan for the transportation needs of the City, given the future land use planning efforts. Because of growth in the City, it becomes necessary to update this master transportation plan periodically.

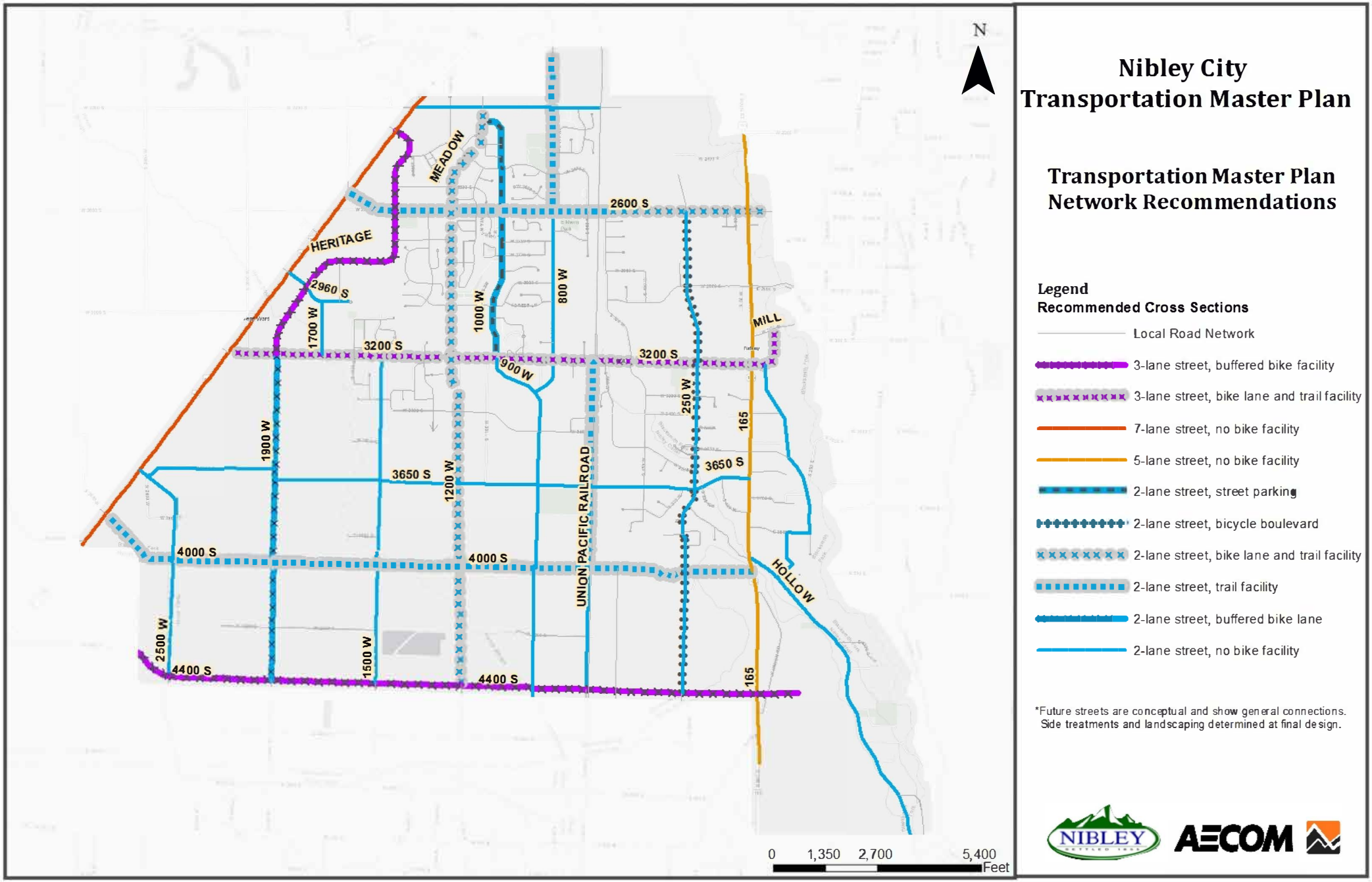
In addition to planned street improvements, this master plan includes a capital facilities plan, which will serve as a foundation for an Impact Fee Facilities Plan (IFFP) and Impact Fee Analysis (IFA).

A Goals Workshop was held at the beginning of this master planning process, and group responses weighted safety as the highest priority for transportation improvements in Nibley City. Safety scored significantly above other prioritization elements, including mobility, community character, environmental quality, and economic development. Therefore, this plan also focuses on implementing safe bicycle facilities and traffic calming elements.

Nibley's population has grown significantly over the last few decades and is currently estimated to be approximately 7,000. Limited commercial land use exists within the city boundaries, but there is a desire for increased economic development, which could affect travel patterns.

Future traffic forecasts were estimated using the Cache Metropolitan Planning Organization (CMPO) travel demand model. The model was edited to reflect the latest land use plans for Nibley. Bicycle facility recommendations were made in order to create a high comfort facility, taking into account future traffic volumes and anticipated speed limits for each road. The resulting recommended cross sections for each collector and arterial road are shown in **Figure 1**.

FIGURE 1: RECOMMENDED STREET NETWORK



1.0 INTRODUCTION

1.1 BACKGROUND

Nibley City is located in Cache Valley between US-91 and SR-165, and is approximately 4 square miles in size. Nibley is bordered to the north by Logan, to the north and east by Millville, and to the south by Hyrum. Much of the neighboring land is unincorporated Cache County.

The population of Nibley has doubled every decade in recent years, growing from just over 1,000 people in 1990, to 2,000 people in 2000, to over 5,000 people in 2010. The current population is estimated to be approximately 7,000. Limited commercial land use exists within the city boundaries, but there is a desire for increased economic development, which will also affect travel patterns.

The purpose of this Transportation Master Plan is to ensure that a coordinated, master-planned effort is undertaken to plan for the transportation needs of the City, given the future land use planning efforts. Because of growth in the City, it becomes necessary to update this master transportation plan periodically.

The most recent transportation master plan was adopted in 2011, although updates to the street map have occurred since then. A Parks, Trails, Recreation, and Open Space Master Plan was also recently completed in 2017.

The 2016 Nibley City General Plan list the following goal for transportation:

> *Nibley supports an efficient circulation system that will allow traffic flow on major streets and create a safe atmosphere that encourages pedestrians and bicyclists. Trails are critical parts of the transportation system.*[1]

1.2 REPORT OUTLINE

This report is organized into the following sections:

1. **Introduction**—This section provides background information and the purpose of the transportation master plan along with a report outline.
2. **Goals and Policies**—This section details the vision, goals, and priorities of Nibley City with respect to transportation infrastructure.
3. **Existing Conditions**—This section details existing land use and transportation conditions in Nibley City.
4. **Future Conditions**— This section details anticipated changes to land use and how they affect transportation demand.

[1] Nibley City General Plan, 2016, page 7

5. **Recommendations**—This section makes recommendations for achieving Nibley City's goals for future streets based on anticipated growth in the city.
6. **Capital Facilities Plan**—This section outlines projected costs and phasing associated with recommended streets.

The Impact Fees Facilities Plan (IFFP) and Impact Fee Analysis (IFA) are contained in a separate report.

1.3 PURPOSE

This transportation master plan is an update to previous planning efforts and subsequent revisions to incorporate updated land use information, new streets, and other planned improvements. It also utilizes the latest travel forecasting methodologies, including version 2.0 of the travel demand model used by the Cache Metropolitan Planning Organization (Cache MPO). The model has been adjusted to reflect 2050 socioeconomic conditions and "build out" conditions in Nibley.

In addition to planned street improvements, this master plan includes a capital facilities plan, which will serve as a foundation for an Impact Fee Facilities Plan (IFFP) and Impact Fee Analysis (IFA).

1.4 STEERING COMMITTEE

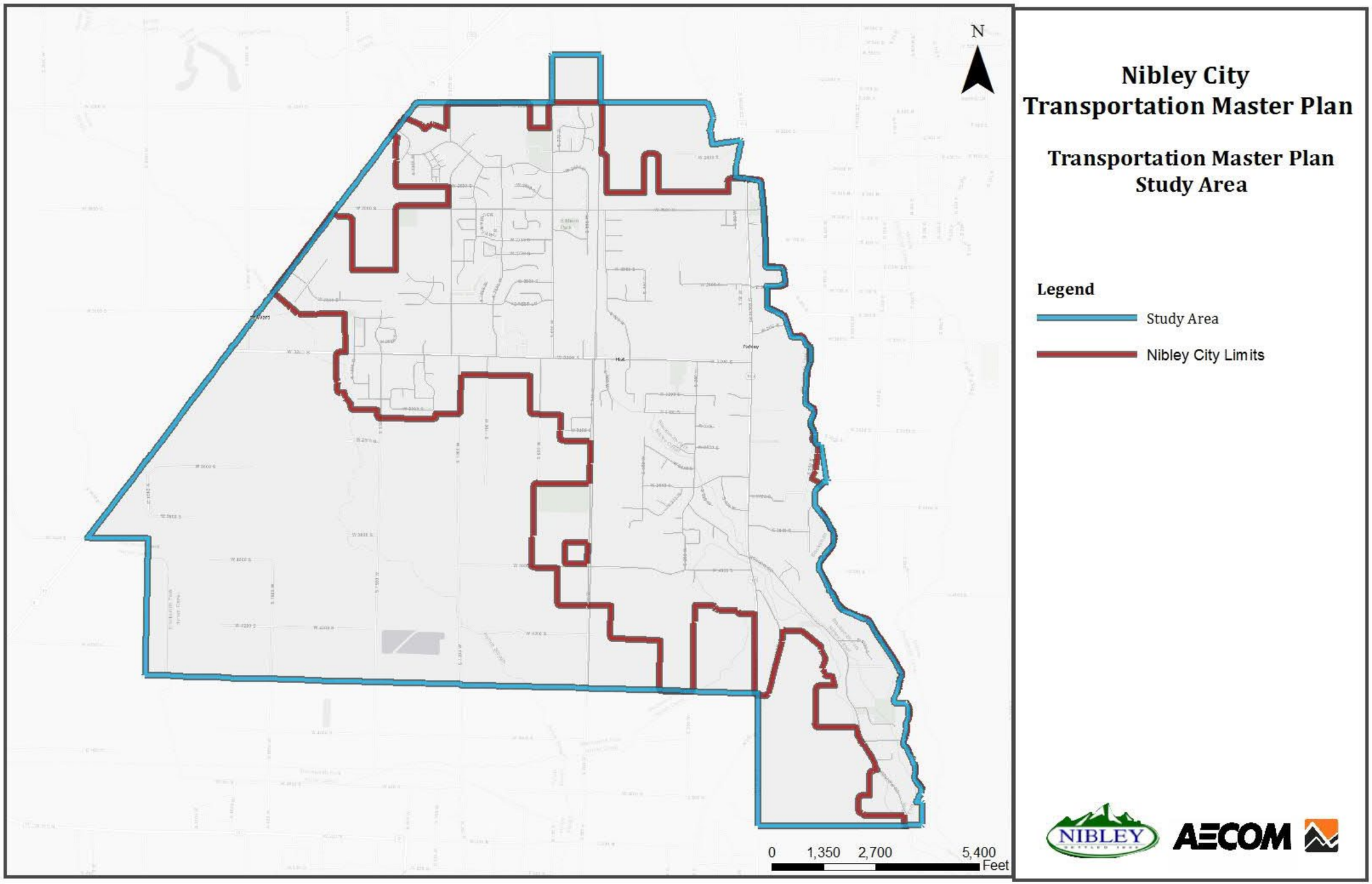
A steering committee was established for this transportation master plan, which included elected and appointed officials and staff from Administration, Planning, Engineering, and Public Works.

A citizen transportation committee was also formed, and city staff utilized this committee for valuable feedback during the process.

1.5 STUDY AREA

The study area was established based on existing incorporated land, as well as land likely to be annexed in the future. Figure 2 shows the study area for this transportation master plan.

FIGURE 2: STUDY AREA



2.0 GOALS AND POLICIES

The transportation master planning process for Nibley City began with an effort to gather relevant data from research and from a stakeholder kick-off meeting to discuss the visions, goals, and priorities of Nibley City.

A goals workshop was hosted at Nibley City Hall on November 30, 2017 with the objective of merging ideas taken from the 2016 Nibley City General Plan, concerns identified, and public input to drive the direction of the transportation master plan process. Five themes taken from the 2016 General Plan were presented at the goals workshop as they relate to transportation infrastructure and operations in the City. The themes, described in detail below using excerpts from the 2016 General Plan, are:

- *Mobility*
- *Safety*
- *Community Character*
- *Environmental Quality*
- *Economic Development*

In addition to the consultant team, nine people attended the goals workshop, including various Nibley City staff, and elected and appointed officials.

An analytic hierarchy process (AHP) method was used to measure respondents' prioritization of a theme in relation to another theme. The method was used to quantify the weight of importance of each individual theme to the development of transportation improvements in the city.

2.1 THEMES

The following themes and key discussion points, which were derived from the Nibley City 2016 General Plan and shown in Figure 3, were used to guide discussion with Nibley City workshop attendees. The themes were used to help determine community priorities for their transportation network. Quoted text comes from the Nibley General Plan (June 2016).

FIGURE 3: GOALS WORKSHOP THEMES

Mobility

"Nibley supports an efficient circulation system that will allow traffic flow on major streets and create a safe atmosphere that encourages pedestrians and bicyclists. Trails are a critical part of the transportation system."

Efficiency, connectivity of various travel facilities and multi-modal mobility were central to this discussion.

Safety

"Residents of Nibley City consider the City to be a safe place for all people and expect it to remain that way. Safety can be described in terms of community and environmental health, or a lack of crime or environmental hazards."

Discussion points included multi-modal infrastructure and design, safety for all users of various travel facilities and reduction or mitigation of crashes. Attendees also remarked on school zone safety as a priority.

Community Character

"… The Nibley community is characterized to a large extent by its open residential layout, recreational opportunities, rural development patterns, community feeling, and connections to surrounding communities."

Environmental Quality

"… Nibley City is home to wide open space, dramatic mountain views of the Wellsville Mountains… and the Blacksmith Fork River."

This discussion linked air quality, open space and mitigating environmental impacts with the development of desired transportation facilities and networks.

Economic Development

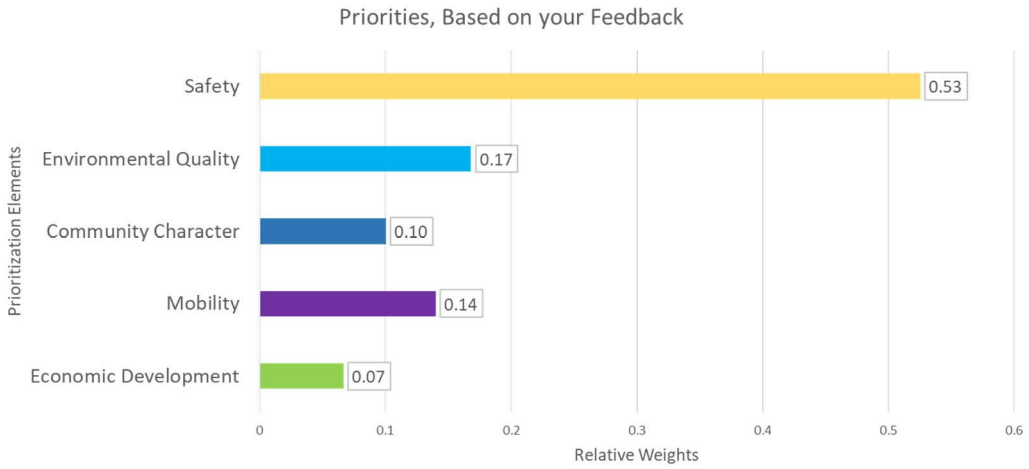
"… nearly everyone has to commute for employment. A key long-term goal for Nibley is to establish commercial services… [that] could diversify the economy of the City and generate sales tax revenue in a sustainable manner…"

Economic development was tied to improved connectivity, transportation to support jobs and business and the importance of linking local and regional activity centers.

2.2 AHP EXERCISE RESULTS

Seven members of the committee provided responses to the prioritization exercise, the results of which are illustrated in Figure 4.

FIGURE 4: AHP EXERCISE RESULTS



Responses weighted safety as the highest priority to transportation improvements in Nibley City, significantly above the four other prioritization elements.

Following the goals workshop, Nibley City conducted local surveys to gather residents' input on transportation concerns and opportunities for improvement. Additionally, Nibley City invited residents to join a transportation master plan advisory committee to interface with the mayor and city staff to provide input on safety, mobility, active transportation, safe routes to school, future projects, and other concerns. On February 7, 2018, RSG met with the transportation master plan advisory committee to gather input on preliminary recommended improvements to the transportation network. Nibley City then transmitted ongoing comments and feedback from the advisory committee to RSG for use in refining modeling considerations and recommendations.

3.0 EXISTING CONDITIONS

3.1 OVERVIEW

Existing transportation, land use, and socioeconomic data for Nibley City are essential to characterizing base year 2017 conditions to investigate constraints and opportunities that will impact future transportation in the city.

3.2 SOCIOECONOMIC CONDITIONS

Socioeconomic data for Nibley are derived from a variety of data sources. According to the U.S. Census Bureau, Nibley City's current population is estimated to be 6,747 people and the total number of households is 1,488. The estimated median household income in Nibley is $76,250, based on data obtained from the CMP travel demand model. The number of jobs in Nibley City and adjacent Millville combined is 1,760 according to Department of Workforce Services statistics. There are 915 jobs in Nibley City according to U.S. Census Bureau Longitudinal Employer-Household Dynamics data.

3.3 EXISTING LAND USE AND ZONING

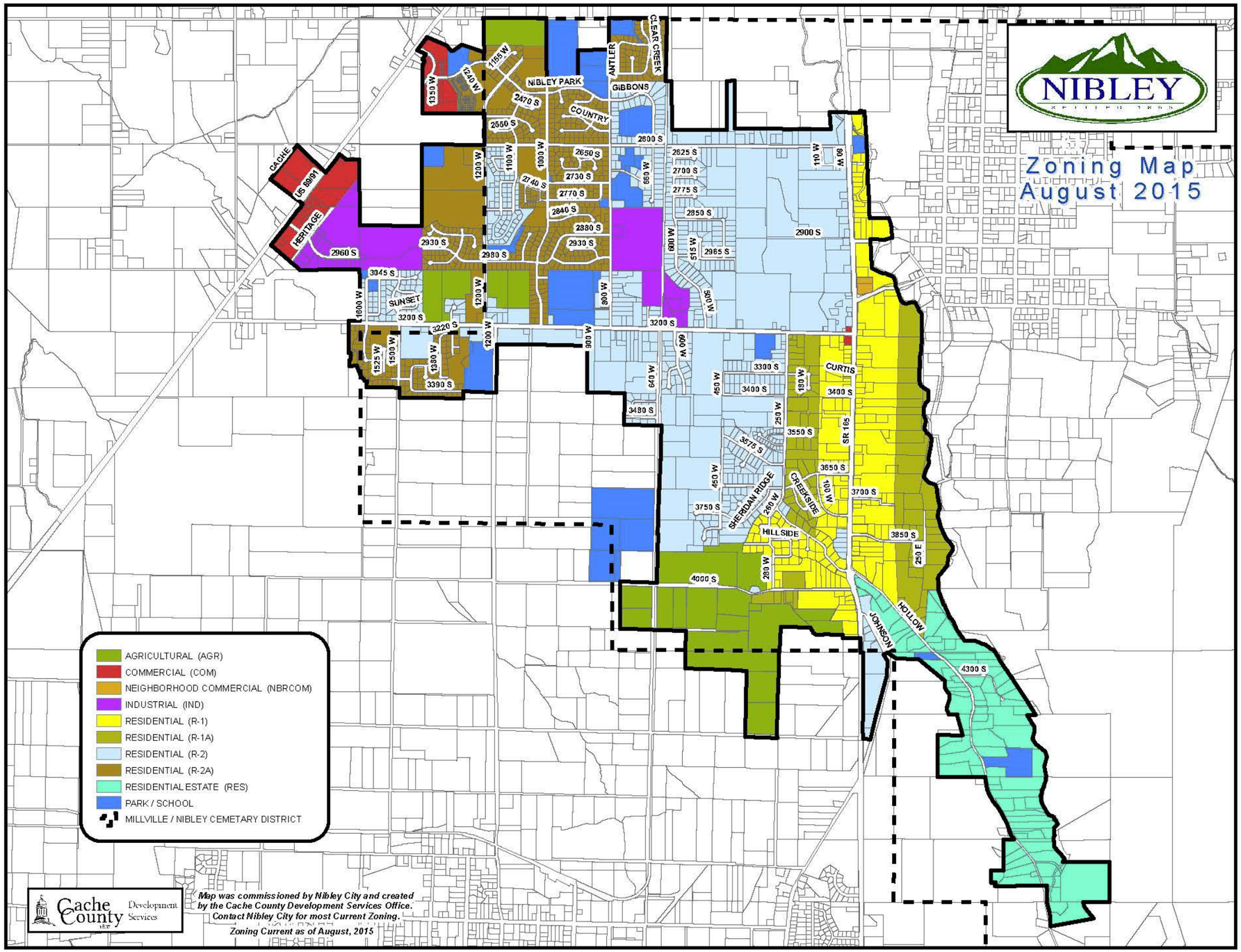
Existing zoning in Nibley City is depicted in Figure 5. As shown in Figure 5, most of Nibley City is currently zoned for residential use, with some agricultural uses on the south side of Nibley and some commercial uses on the west side of Nibley. Nearby unincorporated portions of the study area are composed primarily of agricultural uses.

3.4 TRANSPORTATION NETWORK

Functional classification of roadways is one attribute to describe the use of a street segment in relationship to a larger transportation system. Factors to consider when classifying roadways may include examining the extent to which the road segment provides a mobility function or an accessibility function, the efficiency of travel on the street and the frequency of access points, the posted speed limit, vehicle miles traveled and the spacing of facilities in relation to facilities of other functional classes within a transportation network. Functional classification categories applied to streets in Nibley City are described as follows, in order of highest to lowest functional classification:

- Principal Arterial: Principal arterials provide high mobility in connection with major activity centers and may serve abutting land uses, access points, and at-grade roadways. Only state highways are Principal Arterials within Nibley City.

FIGURE 5: NIBLEY CITY EXISTING ZONING MAP



- Minor Arterial: Minor arterials may connect principal arterials, intersect with roadways of all classifications, and provide access to abutting land uses that are not discrete residential neighborhoods. Minor arterials are planned to have rights-of-way of 80 or 99 feet.
- Collector: Collectors may connect local streets to arterials and thus traverse dense commercial areas or residential neighborhood areas. Collectors have planned rights-of-way of 66 feet.
- Local Street: Local streets provide the highest level of access to abutting land uses and are not intended to move through traffic. Local streets are planned to have rights-of-way of 60 feet.
- Sidewalks, bike lanes, and trails: Nibley considers these networks to be valid and important aspects of the transportation system.

Figure 6 depicts the existing Nibley City street network. With the exception of Principal Arterials US-89/91 and SR-165, and a portion of 3100 South (which is a county road), all other streets within Nibley City limits are under the jurisdiction of Nibley City.

Most intersections within Nibley City are uncontrolled or two-way stop controlled. There are no traffic signals located on city streets, only on UDOT facilities.

Bike lanes are signed and delineated along 3200 South. No other signed and striped bike lanes currently exist in the City. Hollow Road is a shared street for active transportation users and vehicles and is identified as a recreational route in Nibley City. Nibley Heritage Loop is a signed path along quiet streets and neighborhood sidewalks in Nibley. As outlined in the Nibley City Parks, Trails, Recreation and Open Space Master Plan, a network of sidewalks and park pathways serve as facilities for active transportation modes such as walking, rolling or biking. Existing sidewalk facilities are most dense in the northwest area of Nibley City, west of 600 West and north of 3200 South, connecting residential areas. Ongoing expansion of bike lanes, trails, and pathways is an expressed desire of Nibley City and an essential element of this Transportation Master Plan for Nibley City. The Major Trails Map from the currently adopted Parks, Trails, Recreation, and Open Space Plan is shown in Figure 8.

3.5 PUBLIC TRANSPORTATION

The Cache Valley Transit District (CVTD) serves the Cache Valley region and is the sole provider of public transit in Nibley City. Three CVTD routes connect Nibley City to the regional CVTD transit system. Route 11 provides a looped route connection, which runs along Nibley Park Avenue, 1000 West, 3200 South, Elkhorn Ranch Road, 600 West and 2600 South, connecting local neighborhoods and Nibley City Hall. The route operates with one-hour headways (the time

between successive busses) from 5:30 AM to 5:30 PM Monday through Friday and from 10:30 AM to 5:30 PM on Saturdays. Route 12 has termini in Logan and Hyrum, serving stops in Nibley along SR-165. The bus operates with one-hour headways from 4:50 AM to 6:00 PM Monday through Friday with no weekend service. Like Route 12, Route 13 has termini in Logan and Hyrum, serving stops in Nibley City along SR-165. Unlike Route 12, however, Route 13 passes through Providence and Millville City along city streets. The Route 13 bus operates with one-hour and fifteen-minute headways from 9:00 AM to 12:45 PM Monday through Friday and from 10:15 AM to 5:45 PM on Saturdays. A park-and-ride lot is informally designated at an LDS Church located at 360 West 3200 South. Figure 7 shows the current CVTD system in Nibley City.

FIGURE 6: EXISTING STREET NETWORK CLASSIFICATION

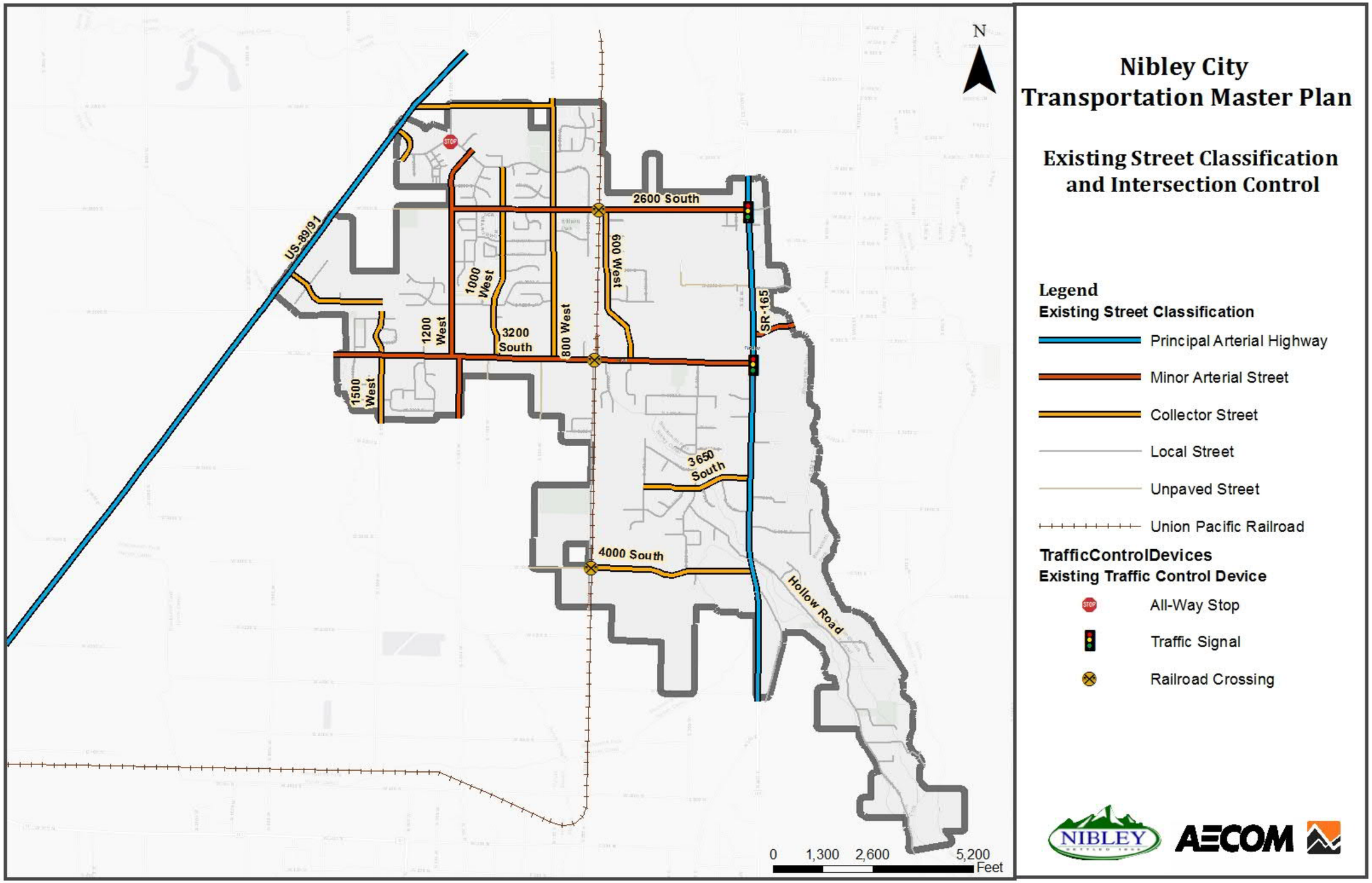
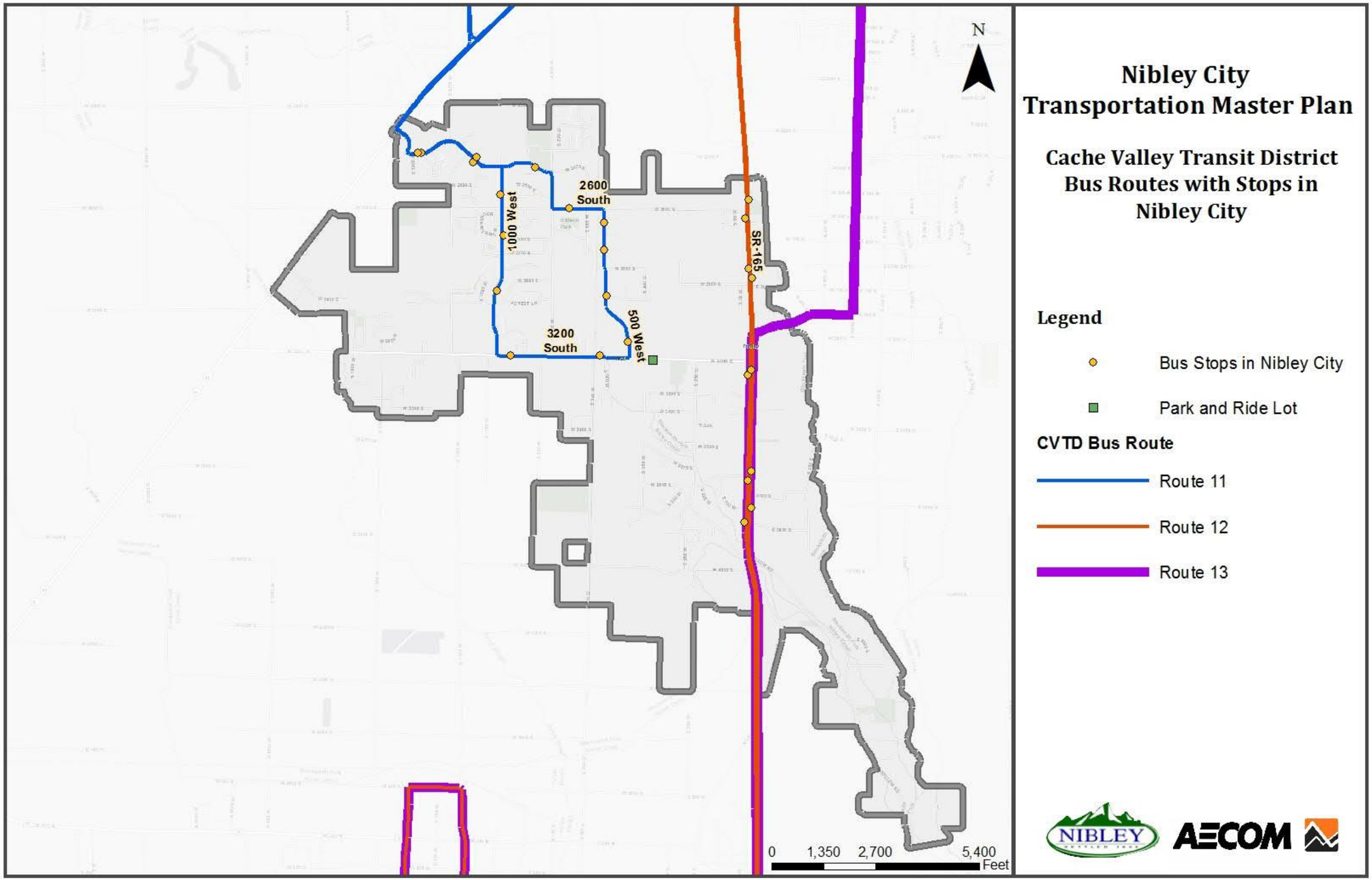


FIGURE 7: CVTD BUS ROUTES WITH STOPS IN NIBLEY



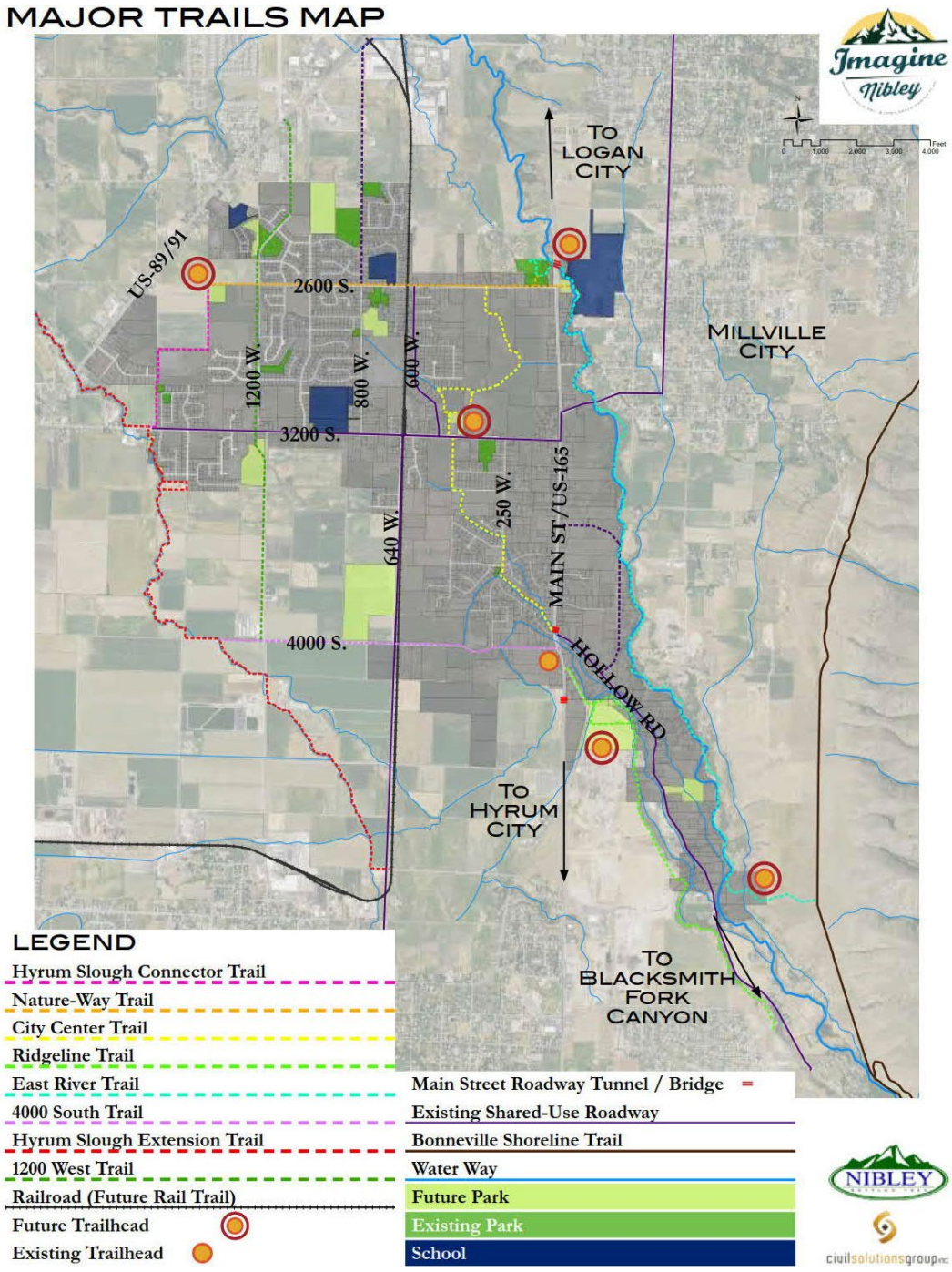
3.6 TRAFFIC CONDITIONS

Recent traffic counts were obtained for a few selected city streets for purposes of validating the travel demand model (discussed later in Section 4.4 of this master plan). Figure 9 shows existing traffic volumes on Nibley City streets.

3.7 STREET CAPACITY

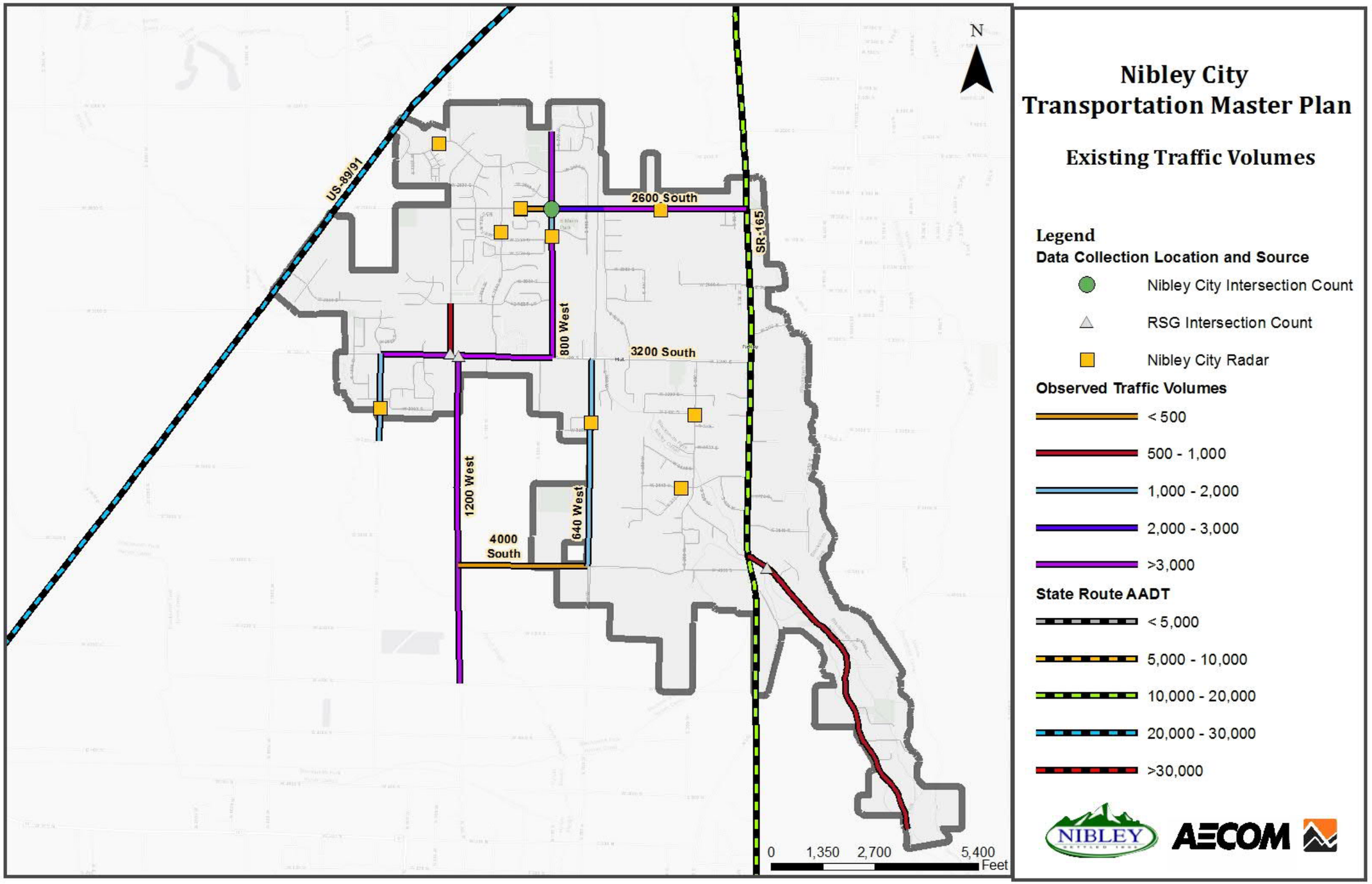
Level of service (LOS) is a complex concept for transportation systems as it is dependent upon an estimation of demand (which can vary from day-to-day) and capacity (which is based on prevailing roadway, traffic, and control conditions) both of which can be very difficult to precisely define. Capacity is essentially the amount of traffic that can theoretically be serviced by a road while LOS (often described as quality of service) defines under what operating conditions this occurs (e.g., the amount of congestion, queuing, etc.). Conditions where demand exceeds capacity are usually defined as LOS F (the worst), while conditions with near free-flow operations are LOS A (the best). In the United States, capacity and LOS are both defined based on extensive research by the Transportation Research Board (TRB) found in the Highway Capacity Manual (HCM). The most current edition of the HCM is the 2010 edition.

FIGURE 8: MAJOR TRAILS MAP[2]



[2] Nibley City Parks, Trails, Recreation, and Open Space Master Plan, September 2017, page 37.

FIGURE 9: EXISTING TRAFFIC VOLUMES



While the capacity describes the theoretical limit of traffic on a road, conditions at capacity (service flow rate E) are often very poor and most municipalities and agencies set a goal to achieve a better LOS. The HCM 2010 states that "[f]or cost, environmental impact, and other reasons, roadways are not typically designed to provide LOS A" (Volume 1, pg. 5-3). However, there is no universally-accepted LOS standard. The HCM 2010 further states that "…it is up to local policy makers to decide the appropriate LOS for a given system element in their community" (Volume 1, pg. 5-3). According to the Institute of Transportation Engineers (ITE) Traffic Engineering Handbook (5th Edition, 1999), "[f]or most design or planning purposes…service flow rates D or C are usually used because they ensure a more acceptable quality of service to facility users" (pg. 95).

According to the UDOT Roadway Design Manual of Instruction (May 2007, updated August 2011), LOS D is the threshold for state roads in urbanized areas (Section 7 – Page 4).

While a transportation master plan typically analyzes demand and capacity of links (i.e., for roadways and streets, not intersections), the HCM outlines methodologies for determining intersection-level LOS and not link LOS (except for uninterrupted facilities such as freeways). Therefore, a correlation must be made between an intersection LOS and roadway/street LOS.

The volume-to-capacity (*v/c*) ratio can be calculated for a given segment which provides a reasonable method to estimate the operations of a roadway. Roadway capacities are complex and depend on variables such as number of lanes, access spacing, traffic signal timing and coordination, the proportion of left and right turns, pedestrian activity, and several other factors. For purposes of this transportation master plan, a *v/c* ratio less than 0.75 was considered LOS "C" or better.

The estimated LOS C capacity for roadways in Nibley are established as shown in Table 1. LOS D capacities are also shown for reference. Based on these thresholds and the counts obtained in 2017, it does not appear that any city streets currently operate above capacity.

TABLE 1: CAPACITY THRESHOLDS

Cross Section	Lane Configuration	LOS C Capacity (vpd)	LOS D Capacity (vpd)
Minor Arterial	5 Lanes	***24,000***	27,000
Minor Arterial	3 Lanes	***11,000***	13,000
Minor Arterial	2 Lanes	***8,000***	9,000
Collector	3 Lanes	***11,000***	13,000
Collector	2 Lanes	***8,000***	9,000

4.0 FUTURE CONDITIONS

4.1 OVERVIEW

Future conditions are studied to determine transportation improvements that may be necessary to achieve long-range transportation goals in Nibley. While the actual date for "build-out" is unknown, a 2050 horizon year was selected, as it represents the most current long-range planning horizon in the Cache Valley area. This 2050 horizon year is assumed to have build-out of the currently adopted Nibley City General Land Use Plan. In order to project future conditions, future land use plans and estimated demographics are combined with the currently planned future street network, as identified by the Cache MPO. Together, these data are used in a travel demand model that estimates future traffic volumes on the collector and arterial streets throughout the region. An anticipated level of service (LOS) can then be calculated for each roadway segment to determine which transportation improvements are required to bring the system to the city's preferred LOS.

4.2 FUTURE LAND USE

An understanding of anticipated future land use is key to the master planning efforts of a transportation system. City staff provided future land use data as shown in Figure 10 from the 2007 General Plan Update. Based on discussions with city staff, several assumptions regarding land use intensity, as well as adjustments based on more recent planning efforts, were used to establish the future land use scenario. Although the future land use map has been recently updated by the city, most of the significant changes have been reflected in this travel demand forecasts for this transportation master plan.

Nibley City future land use extents, as illustrated in Figure 2, were refined to terminate at the westernmost boundaries of Nibley City at US-89/US-91. Northern extents were also refined based on discussions with city staff. The 2016 Nibley General Plan including future land use map, parcel data for Nibley City from November 2017, and current zoning ordinances were reviewed to assess planned land use densities. Table 2 details assumptions for land use types used to model future land use elements, refined following feedback from Nibley City Planning & Zoning and from the transportation master plan advisory committee meeting held February 7, 2018.

FIGURE 10: FUTURE LAND USE MAP

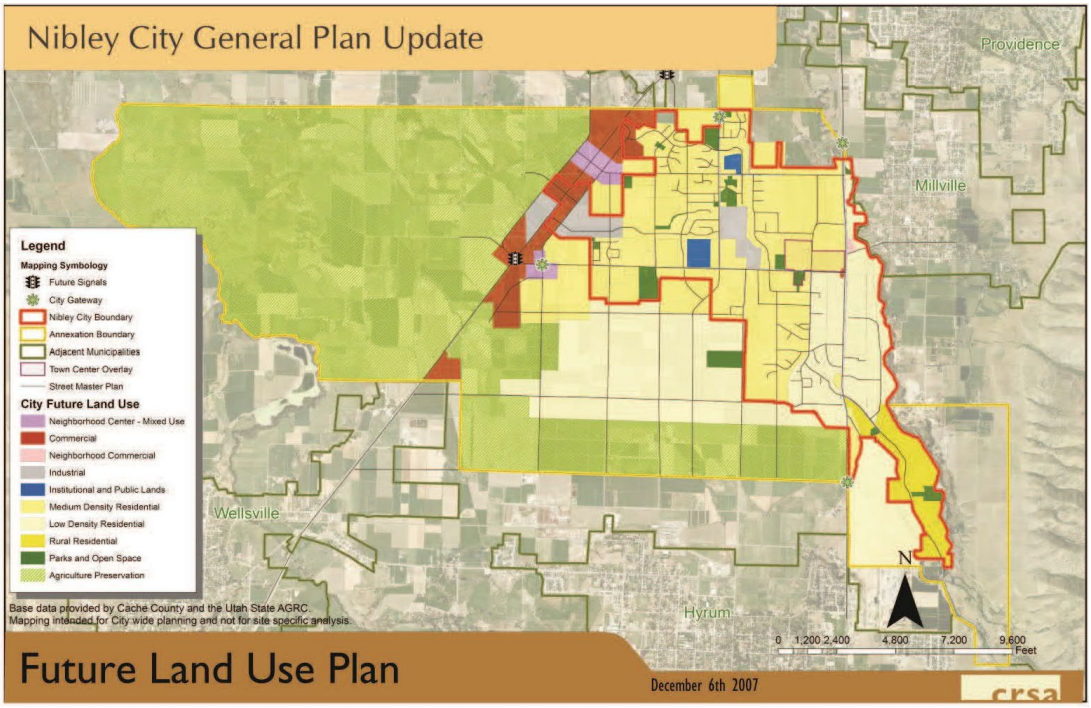


TABLE 2: PLANNED FUTURE LAND USE ASSUMPTIONS

Land Use	Minimum Lot Area (acres)	Floor-to-Area Ratio	Employment Density (employees per square feet)
Agricultural Preservation	1.00		
Commercial	1.53	0.3	1/400
Industrial	3.25	0.2	1/500
Neighborhood Commercial	1.29	0.3	1/400
Neighborhood Center	1.29	0.3	1/400
Park and Open Space	6.54		
Institutional and Public Lands	6.54	0.3	1/12,000
Low Density Residential	1.37		
Medium Density Residential	0.40		
Rural Residential	1.41		

Future land use areas in the 2016 General Plan were modified to reflect updated visions for Nibley City in select areas.

Lewis Young Robertson & Burningham, Inc. developed a study to determine the appropropriate amount of commercial zoning within Nibley City. The study reports that the range of likely supportable commercial zoning is between 150 and 300 acres at buildout. Future land use assumptions involved in developing the CMPO refined model for Nibley City estimated 298 acres of commercial development at full buildout.

Refinement to assumed land use densities occurred with ongoing communication with Nibley Planning and Zoning staff and from stakeholders present at in-person meetings gathering feedback on the transportation master plan.

4.3 PLANNED STREET IMPROVEMENTS

The following projects in Nibley City are included in the *Cache County Regional Transportation Plan 2040*:

Phase I (2015-2024):

- Mill Road: Realign to 3200 South as a two-lane street with median.

Phase II (2025-2034):

- 800 West: Construct from 3200 South to US-91 as a two-lane street with median.

Phase III (2035-2040):

- US-91: Widen between 3200 South (Nibley) and 100 West (Logan) from four lanes plus median to six lanes plus median.
- 1200 West: Widen/construct between Hyrum and Logan as a two-lane street with median.

Unfunded Needs (beyond 2040):

- 4000 South: Construct as a two-lane street with median.
- 800 West: Construct from 4000 South to 3200 South as a two-lane street with median.

All city streets, whether included in the CMPO plan or on the previous transportation master plan, were not considered for inclusion in the “no build” analysis.

4.4 TRAVEL DEMAND MODEL

The following sections discuss the future travel demand forecasting used for this MTP.

Methodology

The CMPO maintains a regional travel demand forecasting model for Cache County. The travel demand model predicts future travel demand based on projections of land use, socioeconomic patterns, and transportation system characteristics. At its core, it

uses the common “four-step” modeling process which consists of trip generation, trip distribution, mode split, and trip assignment. The model is run using the TP+/Cube software. References to “the model” in this master plan refer to the scripts and data maintained by CMPO, not to the Cube software.

The current official version of the CMPO travel demand model is version 2.0, which is calibrated to represent 2008 base year travel conditions. Version 2.0 was used by the Cache MPO for the development of the Cache County Regional Transportation Plan 2040. Additional socioeconomic data and networks included with the official model include the years 2024, 2034, 2040, and 2050. The model version used for this transportation master plan was current as of July 7, 2017.

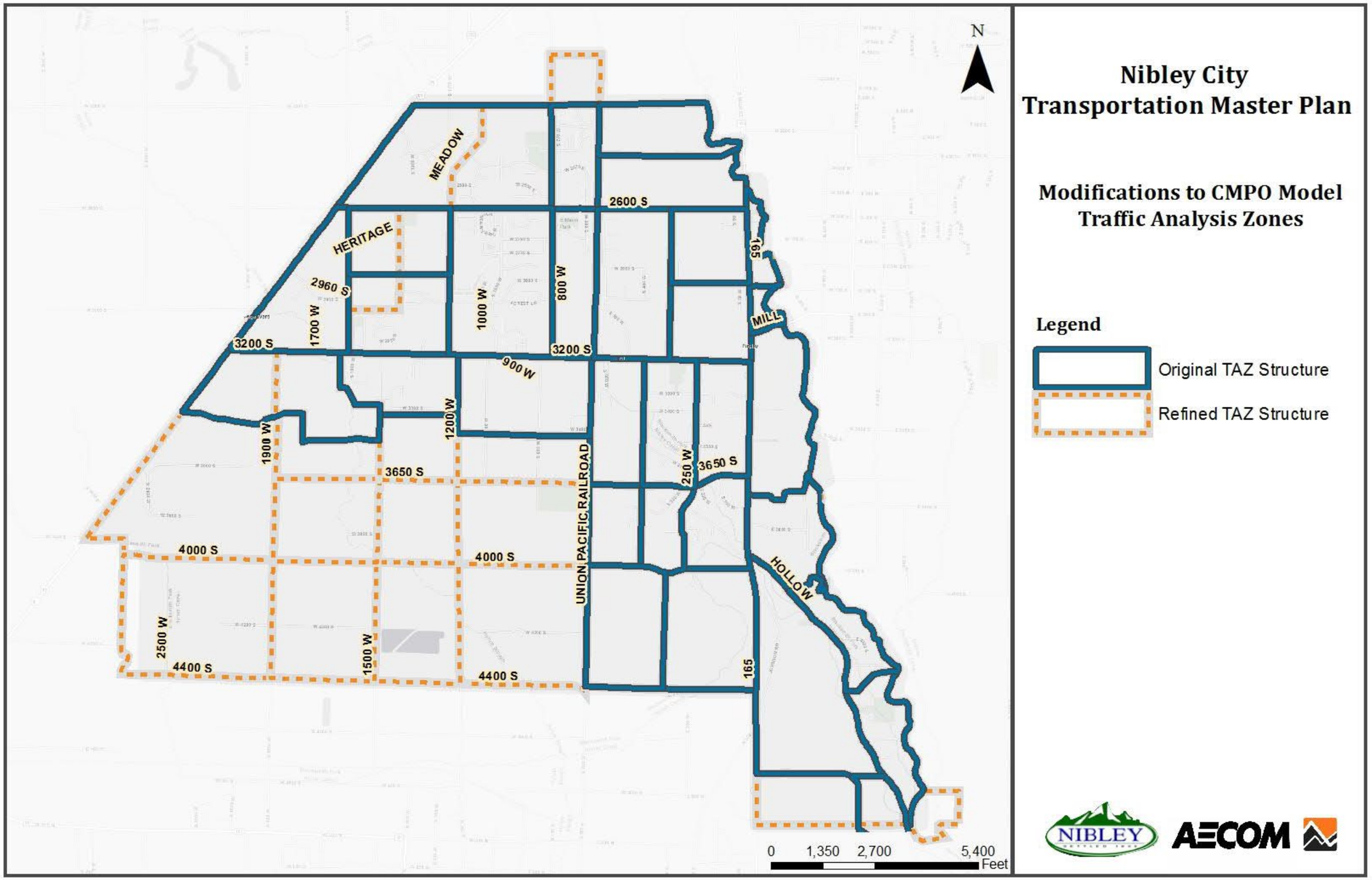
Traffic Analysis Zones (TAZS)

TAZs are geographical areas in the model which specify socioeconomic data such as population, households, and employment. The model uses the information in each TAZ for trip generation, trip distribution, and mode split. Trips generated by each TAZ are loaded onto the roadway network using special links called centroid connectors. The model then uses the roadway network in an iterative process to assign routes for each trip destination.

The original TAZs in the model are well suited for regional traffic forecasts but do not provide adequate detail for a smaller-scale study, such as this master plan. Smaller TAZs can provide a better loading of traffic onto the roadway network. For these reasons, many of the original TAZs within the Nibley City boundaries were split into smaller zones. In most instances, the TAZs were split along barriers such as existing or planned streets, waterways, railroads, and/or major land-use changes. After the splits, the socioeconomic data from the original TAZs were distributed into the new zones. It was assumed that variables such as income and household size for the edited TAZs were the same as the original TAZs.

Figure 11 shows the TAZ structure used in the travel demand modeling process.

FIGURE 11: CMPO TAZ STRUCTURE AND REFINED TAZ STRUCTURE



Socioeconomic Data

Changes to socioeconomic data were made based on the future land use analysis discussed above. Table 3 compares key demographic data within the Nibley City study area for the existing CMPO model and the adjusted model used for this transportation master plan.

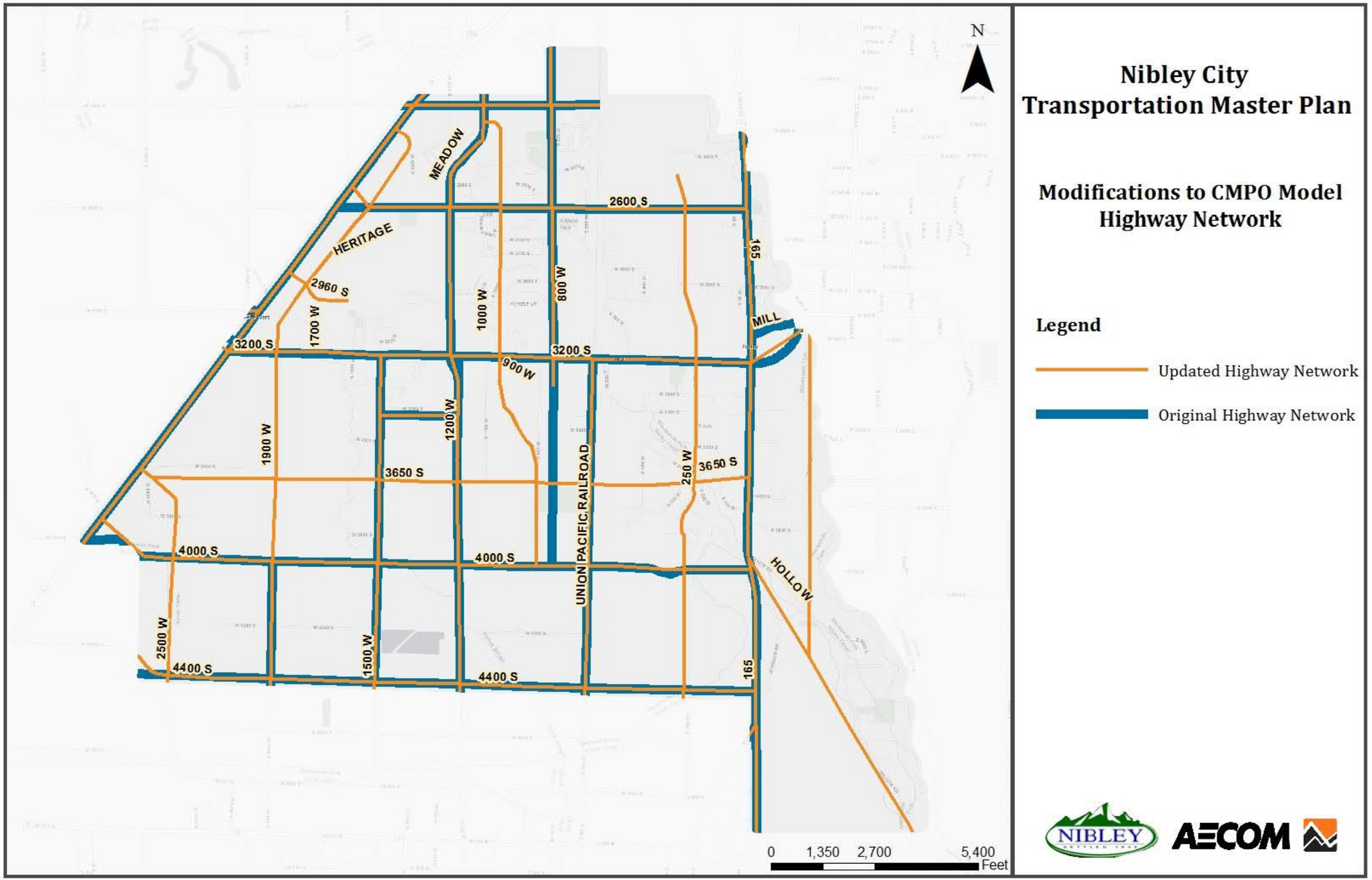
TABLE 3: SOCIOECONOMIC ASSUMPTIONS

Year	Households	Population	Jobs
2017 (CMPO Model)	1,983	7,527	1,228
2017 Modified	2,139	8,128	2,548
2050 (CMPO Model)	6,976	22,017	4,073
2050 Modified	5,092	19,350	6,020

Highway Network

Edits made to the travel demand model's highway network are shown in Figure 12. All future city streets, whether included in the CMPO plan or on the previous transportation master plan, were not considered for inclusion in the "no build" analysis but are included in the "build" analysis.

FIGURE 12. ORIGINAL CMPO MODEL WITH UPDATES



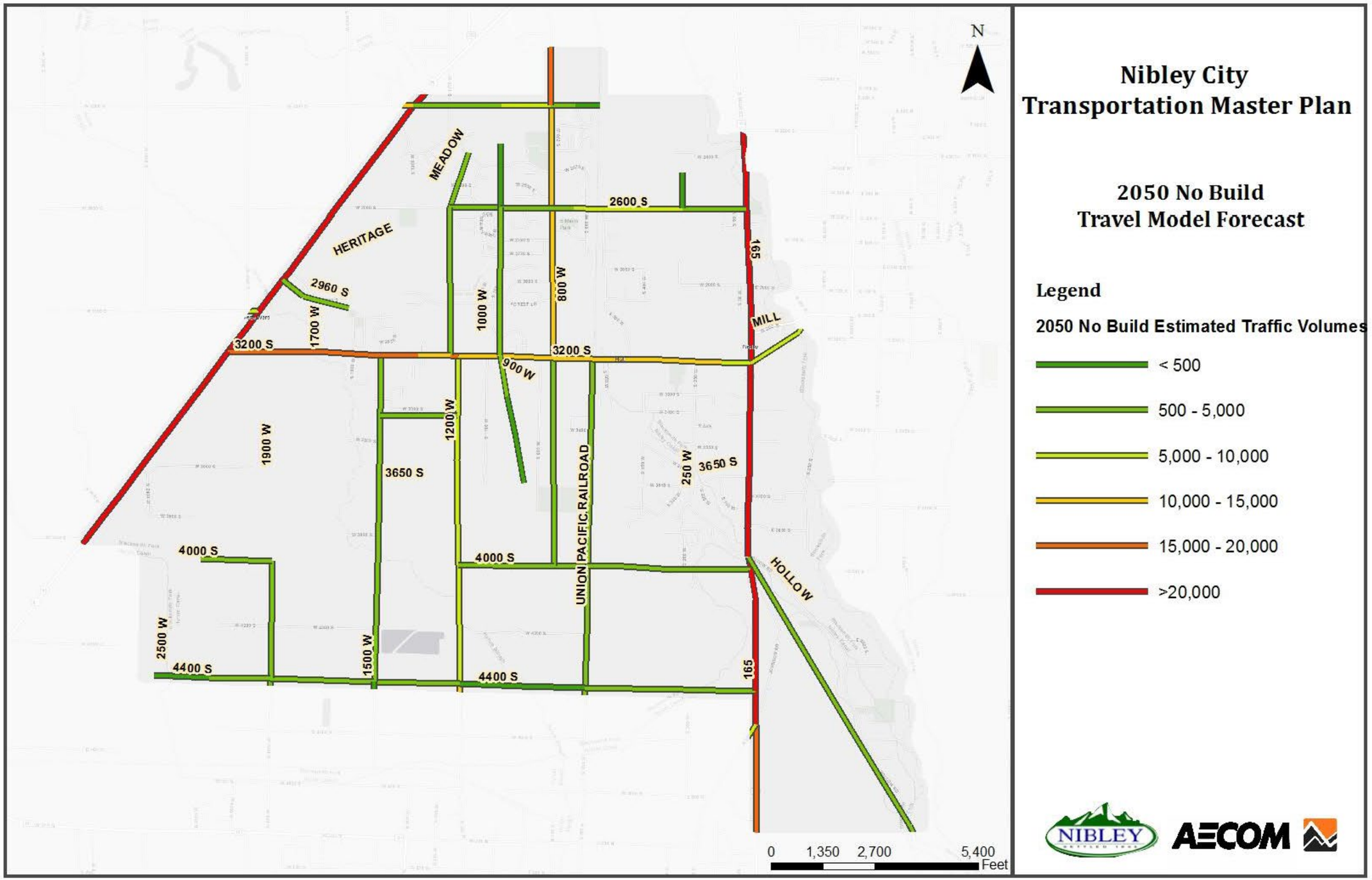
4.5 FORECAST VOLUMES

The CMPO travel demand model was run using the edits discussed above. Figure 13 shows future (2050) traffic volumes for “no build” conditions. “No build” is defined as build out of future land uses but only with the existing street network.

Capacity thresholds were discussed in Section 3.7 and shown in Table 1. As shown in Figure 13, several streets have anticipated traffic demands that will exceed existing capacity. Examples include 3200 South on the west end of Nibley, 800 West in north Nibley, and 1200 West south of 3200 South. Capacity constraints may also exist on the state highways.

Recommendations for mitigating this anticipated congestion are found in the next chapter.

FIGURE 13: FUTURE 2050 NO BUILD TRAFFIC FORECASTS



5.0 RECOMMENDATIONS

5.1 OVERVIEW

This chapter discusses recommended improvements to the transportation system required to achieve the City's transportation goals for build-out conditions as previously discussed in Chapter 2. These goals are listed below.

- *Mobility*
- *Safety*
- *Community Character*
- *Environmental Quality*
- *Economic Development*

These include changes to cross sections to accommodate vehicular and bicycle traffic, as well as traffic calming recommendations.

5.2 POLICY RECOMMENDATIONS

The following transportation policies should be considered in order to incorporate recommendations contained in this transportation master plan:

1. Update Nibley City's design standards and municipal code to reflect changes to cross sections, traffic calming, trail design, swale design, and city-owned park strips.
2. Update subdivision code and connectivity standards to include requirements for a grid system as well as to require trail access for all subdivisions.
3. Update swale standards.
4. Review and update operations and maintenance plan for all streets and trails.
5. Create an access management ordinance including a variance process for all public streets.
6. Create a traffic calming implementation program.
7. Review and update the Streets Master Plan, as required for updating impact fees, when large changes to land use are proposed and/or when significant changes to streets occur.
8. Update the pavement cross section thickness for minor arterial streets.

5.3 STREET CONNECTIVITY

Street connectivity is recommended in order to provide for safe and efficient movement of vehicles, bicyclists, and pedestrians. Good street connectivity has been associated with improved traffic safety, reduced vehicle miles travelled (VMT), and positive health and environmental impacts. The Utah Street Connectivity Guide[3] is a resource available to assist the city with defining, justifying, and implementing street connectivity. Some cities have implemented connectivity standards into their development code which quantify connectivity for new development.[4] Nibley should ensure it adopts ordinances that require connectivity.

[3] *Utah Street Connectivity Guide*, WFRC, UDOT, UTA, MAG, March 2017, http://wfrc.org/Studies/UtahStreetConnectivityGuide-FINALAndAppendix.pdf

[4] For example, Lehi City (Lehi Development Code Chapter 37.050): https://www.lehi-ut.gov/wp-content/uploads/2013/09/Chapter-37-Design-Standards..pdf

FIGURE 14: RECOMMENDED STREET NETWORK

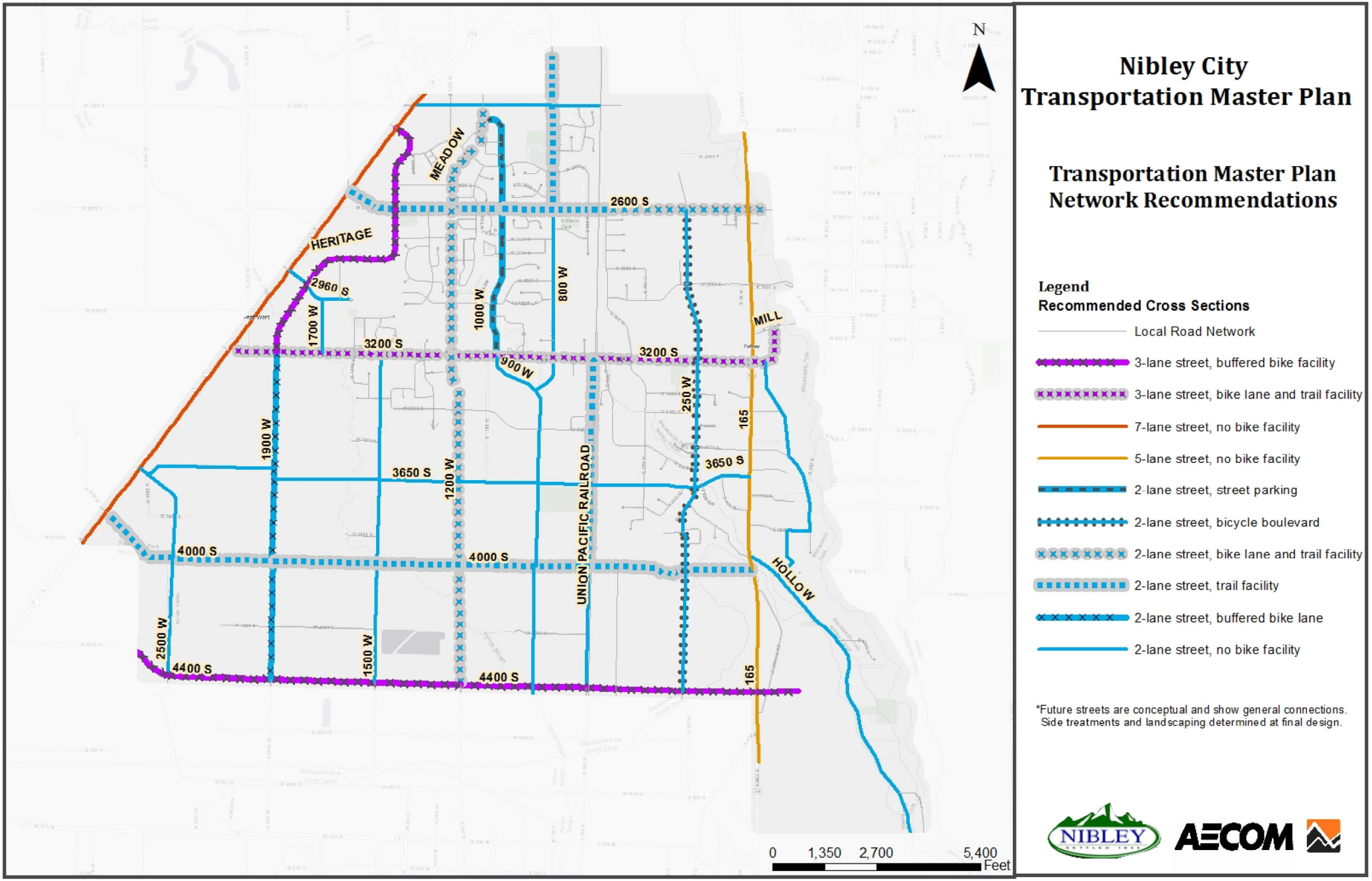
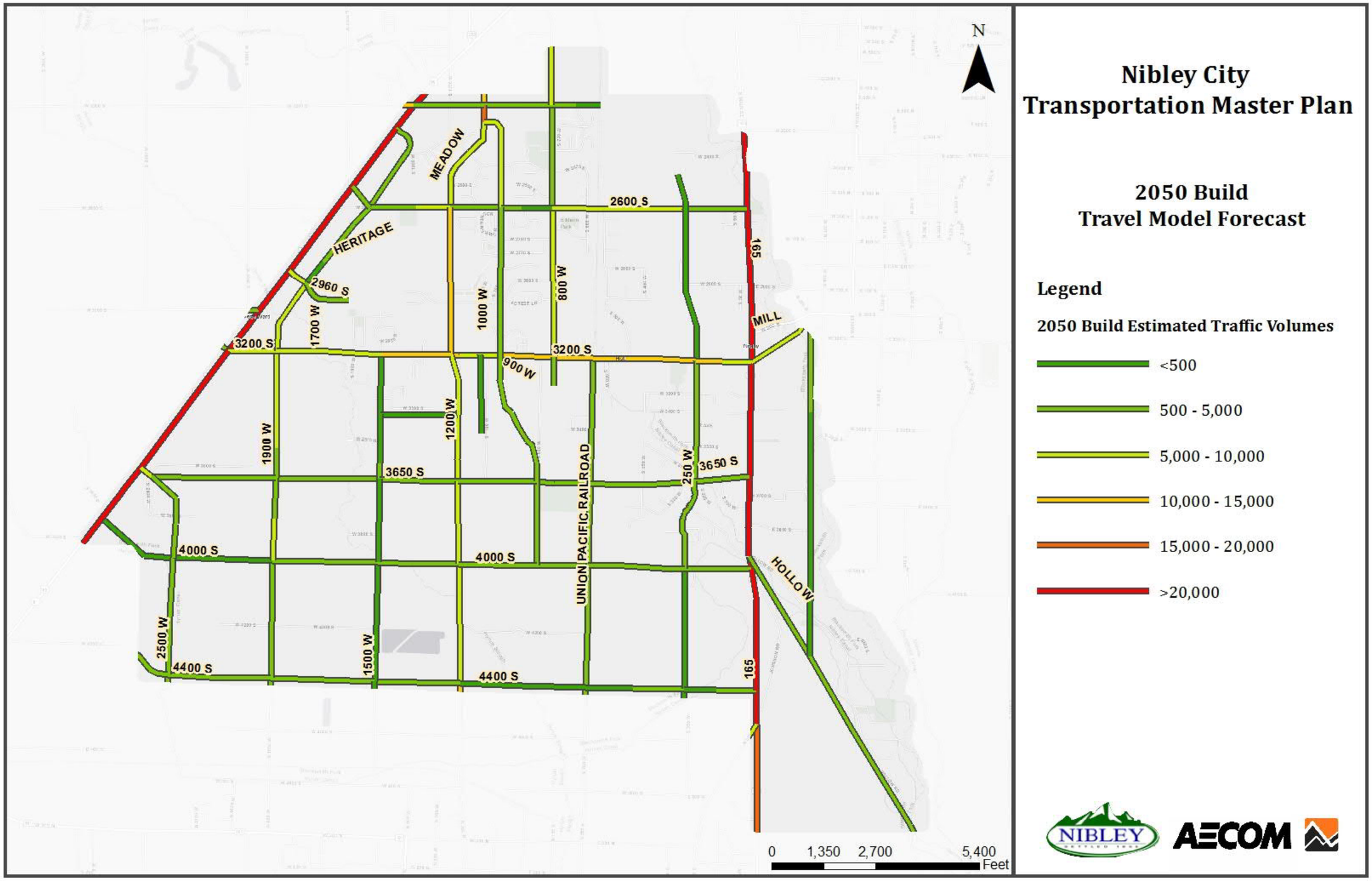


FIGURE 15: 2050 BUILD TRAVEL FORECASTS



5.4 TRAFFIC CALMING

This transportation master plan includes recommendations on traffic calming features that can be implemented throughout the city as opportunities and funding arise. Conceptual recommendations for 1200 West north of 3200 South are also provided.

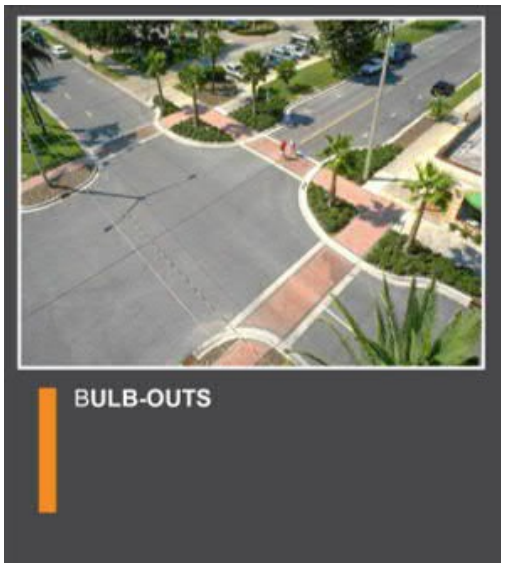
Nibley City's policy is to utilize traffic calming as its default method of addressing compliance with posted speed limits and desired driver behavior. In design, engineers will design roadways with this as their guiding principle.

General Recommendations

Traffic calming includes features added to the design of a street to improve safety and livability of the neighborhood by reducing speeds and cut-through traffic. These features usually directly reduce speed through physical changes in the alignment of the road that require or encourage a vehicle to slow down, visual features causing drivers to voluntarily slow down, or completely blocking access to a street from a certain direction. Major categories include:

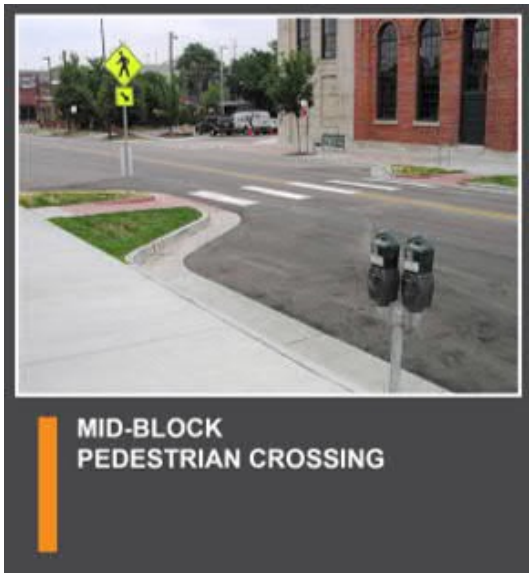
- Horizontal and Vertical Deflection: Examples included lateral shifts, medians and roundabouts
- Narrowing: Examples include bulb-outs and medians
- Restricting Access

Several potential traffic calming measures were reviewed by city staff and the following measures were determined to be feasible for use in Nibley City:



Bulb-outs (Curb extensions)

Bulb-outs or curb extensions are effective measures to visually narrow a street to reduce speed, as well as provide a shorter crosswalk with protection to the pedestrian as they wait to cross. They also can reduce the turning radius at intersections requiring slower right-turn movements which further enhance pedestrian safety. These measures are recommended for locations with wide cross sections or shoulders and are placed at intersections.



MID-BLOCK
PEDESTRIAN CROSSING

Mid-block Pedestrian Crossing

Pedestrian crosswalks should be located at intersections where possible, but when mid-block crossings are needed, these mitigation measures will help reduce speeds and increase pedestrian safety. A mid-block pedestrian crossing is similar to a bulb-out but is located at a mid-block location and could include a center refuge island in addition to, or in place of, curb extensions on the side of the street. These treatments provide refuge for mid-block crossings and also provide visual cues for drivers to slow down. Signing or other enhanced traffic control measures (such as flashers or signals) are sometimes recommended based on engineering study. These measures are recommended for locations with wide cross sections or shoulders where pedestrian crossings are likely to occur.

MID-BLOCK CROSSING WITH
CENTER PEDESTRIAN REFUGE

Lateral Shifts

Lateral shifts using chicanes require vehicles to slow down in order to comfortably drive by them. These shifts can also be accomplished with center medians. Taper rates of 15:1 and 20:1 should be used to obtain a design speed of 30 and 35 mph, respectively. “Fog lines” (white pavement markings on the outside of travel lanes) can also be used to visually narrow the street. Medians can be used in conjunction with left-turn lanes at major intersections.

Roundabouts

Roundabouts create lateral deflection and eliminate the need for stop signs or traffic signals. Roundabouts can be used for intersection control of fairly high traffic volumes, although engineering study and design is recommended before installing them. Mini roundabouts take up less right-of-way (usually within the footprint of a normal intersection) and can be used at lower volume intersections.

Additional schematic drawings are provided in Appendix A.

Traffic Calming Placement

Traffic calming is recommended on city streets that will have pedestrians or bicyclists present and that are likely to have higher traffic volumes and speeds. Recommended streets to focus traffic calming features on include:

- Streets adjacent to schools, parks, churches, neighborhood oriented commercial establishments, and city gateways.
- Streets such as Heritage Way, 1900 West, and 250 West which are planned to have on-street bicycle facilities.
- Approaches to intersections with trail crossings such as roads that intersect with 4000 South, 3200 South, 2600 South, 1200 west, 800 West, and 640 West.

Traffic calming features should be incorporated into future design. For existing streets, an engineering study is recommended that would evaluate prevailing speeds, traffic volumes, pedestrian and bicycle activity, crash history, and other relevant factors in order to recommend appropriate traffic calming mitigation measures. A formal program for implementing traffic calming is recommended to create a process to receive requests, perform evaluations, create design alternatives, and get feedback and buy-in from neighbors and elected officials, and fund and implement changes.

1200 West

Several recommendations for the 1200 West Corridor are shown in Figure 16. This corridor includes a mix of built-out sections and narrow county street sections. The built sections are over 50 feet wide and will require retrofit with traffic calming features to prevent high speeds along the corridor. The design shall use traffic calming to accomplish speed management goals at a 35-mph design speed.

FIGURE 16: CONCEPTUAL TRAFFIC CALMING RECOMMENDATIONS FOR 1200 WEST

5.5 SPEED LIMITS

According to the Utah Manual on Uniform Traffic Control Devices (Utah MUTCD):[5]

> *"Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices. The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles." (Section 2B.13)*

Factors that could be considered by the city when establishing speed limits include:

- Street characteristics such as grade, alignment sight distance, and shoulder condition.
- The context of the street in the overall system as well as the surrounding land uses.
- Parking practices and pedestrian/bicycle activity.
- Crash experience.
- An evaluation of existing speeds such as pace and mean/median speeds (not just an evaluation of 85th percentile speeds).

Guidance on setting speed limits can also be found using the "USLIMITS2" program from FHWA's Office of Safety[6]

5.6 STREET IMPROVEMENTS

Based on the results of the travel demand forecasts described in Section 4.5, the methodology for bicycle infrastructure in Section 5.7, the planned multi-use trails already established by the City, and feedback from steering committee members, recommended cross sections are provided for each collector and arterial within the city. These recommendations are shown in Figure 19. Changes to cross sections should be considered in the future based on changes to land use plans in Nibley as well as adjacent cities.

Table 4 correlates all of the typical sections shown in with each street as shown in Figure 18.

Phasing of future streets projects is discussed in Chapter 6.

Build Model Results

Additional forecasts were created using the model with the recommended streets included. Figure 15 shows the results of this analysis. As shown in Figure 15, all streets have sufficient capacity for anticipated demand.

[5] *Utah Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways* (FHWA's MUTCD 2009 Edition as amended for use in Utah), December 2011.
[6] https://safety.fhwa.dot.gov/uslimits/

5.7 BICYCLE INFRASTRUCTURE

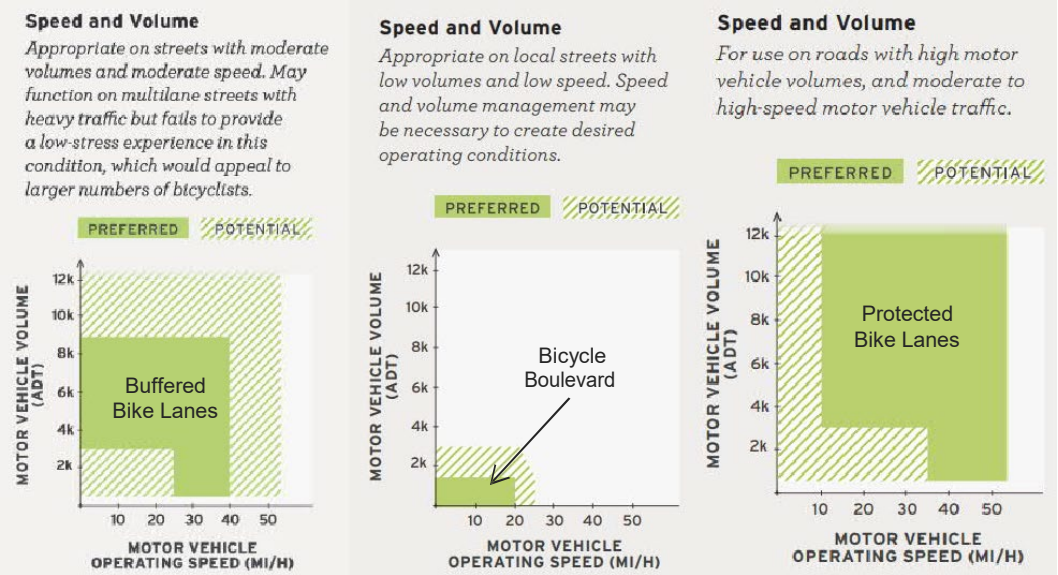
Considerations for active transportation recommendations build on the City's envisioned trail plans[7] and design guidelines in the Federal Highway Administration (FHWA)'s *Small Towns and Rural Multimodal Networks. Small Towns and Rural Multimodal Networks* adapts methodologies and design guidelines for active transportation in urban contexts to small town/rural contexts.

FHWA guidelines encourage designers to consider speed, volume, network, and land use characteristics of a corridor segment. Speed and volume comparisons assess appropriate degrees of separation between motorized and active transportation travel ways at various motorist speed and volume thresholds. For example, in general, the higher speed and volume are on a corridor, the greater the amount of separation is needed between motor vehicle travel ways and active transportation travel ways to maintain a sense of comfort and safety for more vulnerable road user types. Network in the guidebook refers to the functional class of the corridor segment under study. Land use characteristics are called into question to assess the appropriateness of a travel way facility type given adjacent land use and land use intensities. With Nibley City safety priorities and active transportation goals in mind, combined with the desire to make the network accessible to a diverse set of ages and abilities, methodologies for recommending active transportation facilities erred on the side of providing high-comfort facilities where possible with guidance from *Small Towns and Rural Multimodal Networks*. Figure 17 provides an example of speed-volume thresholds in relation to bike lane application for a roadway. The proposed cross-sections within this plan addresses the needs as shown in Figure 17, with many arterial roads with buffered bike lanes and/or off road facilities, and a lower traffic roads with bicycle boulevard option.

While most of the recommended changes provide a high comfort network of bicycle facilities, one street would need to have protected bike lanes instead of buffered bike lanes (Heritage Drive). Protected bike lanes have similar right-of-way requirements as buffered bike lanes, except they provide curbing or other physical barriers or delineation from the travelled way. Buffered bike lanes could be retrofitted to protected bike lanes in the future without requiring additional right-of-way.

[7] Nibley City Parks, Trails, Recreation, and Open Space Master Plan, (September 2017), http://nibleycity.com/images/Nibley_Parks_Trails_Recreation_and_Open_Space_Master_Plan_Digital_Version.pdf

FIGURE 17: EXAMPLE SPEED AND VOLUME THRESHOLDS FOR BIKE LANE FACILITIES[8]



5.8 SIGNALIZATION PLAN

Most future traffic signals will likely be located on state routes, and therefore be under the jurisdiction of UDOT. Cooperative agreements showing future traffic signal locations for US-89/91 is included in Appendix B.

Based on future traffic volumes, two future signals on Nibley City streets are assumed including 3200 South at Heritage Drive and 3200 South at 800 West. Traffic signals will also likely be warranted at intersections in close proximity to railroad crossings including 640 West at 4400 South, 4000 South, 3650 South, and 3200 South.

5.9 CROSS SECTIONS

Several cross sections have been developed to accommodate a range of vehicular, bicycle, and pedestrian traffic. Based on the results of the travel demand forecasts described in Section 4.5, no streets will need to be more than one lane in each direction. Some streets will need a continuous two-way left-turn lane (or other full median), but most streets can handle anticipated demand as a two-lane cross section. Sufficient right-of-way exists for turn lanes to be accommodated as needed at major intersections.

Other elements of the cross sections provided include:

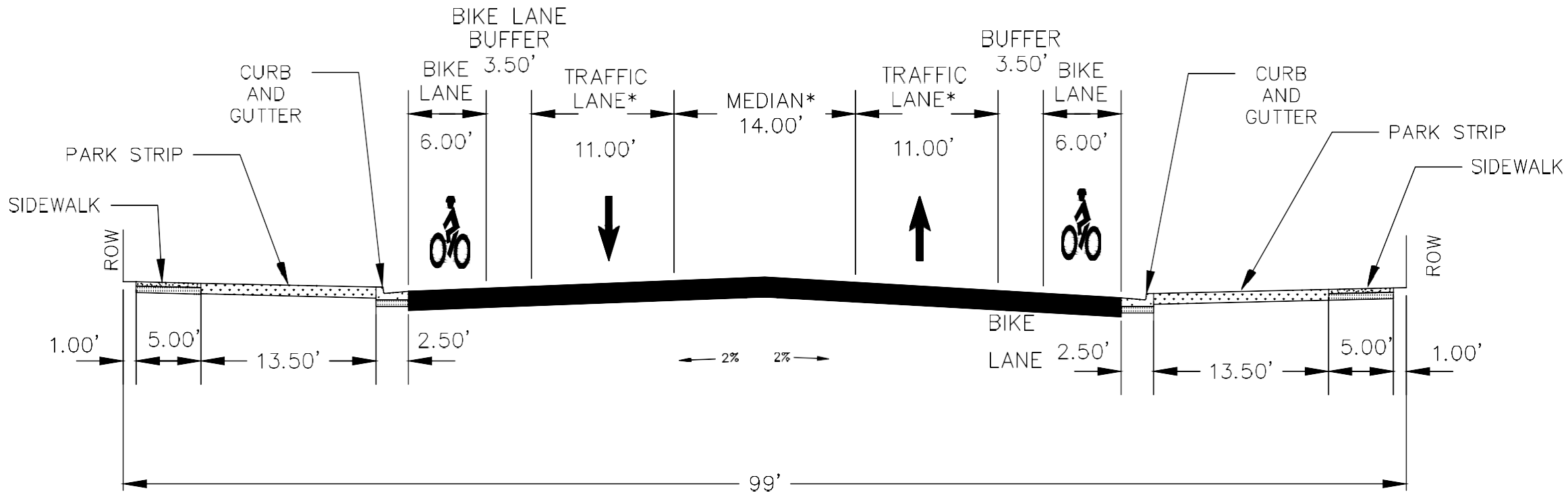
- Curb, gutter, and sidewalk (assumed to be 2.5 feet wide for curb and gutter plus 5-foot sidewalk).
- Multi-use trails (10 feet wide plus 2-foot buffer on each side).
- Buffered bike lanes (most are assumed to be 6 feet wide with a 3.5-foot buffer).

[8] *Small Town and Rural Multimodal Networks*, Federal Highway Administration, December 2016, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

- Drainage swales are optional on all cross sections, assuming sufficient right-of-way exists. Swales shall be designed according to Nibley City Design Standards and approved by the City.

The difference between the right-of-way required for these improvements and the overall available right-of-way as established by the city's right-of-way plan is planned to be used as planting strips between the sidewalk and the edge of the street. This extra space can be used for turning lanes at intersections.

Figure 18 shows the proposed typical sections. The proposed sections are recommendations and the City will need to adopted updated sections into the design standards and/or Nibley City Code. It is recommended that Nibley City evaluate the needs of roads and surrounding future land use. It is also recommended that the City consider Buffered Bike Lanes and a Trail Facility as part of 3200 S with future development of the road and surrounding area.



TS-1: ARTERIAL: 3-LANE STREET, BUFFERED BIKE LANE, 99' ROW

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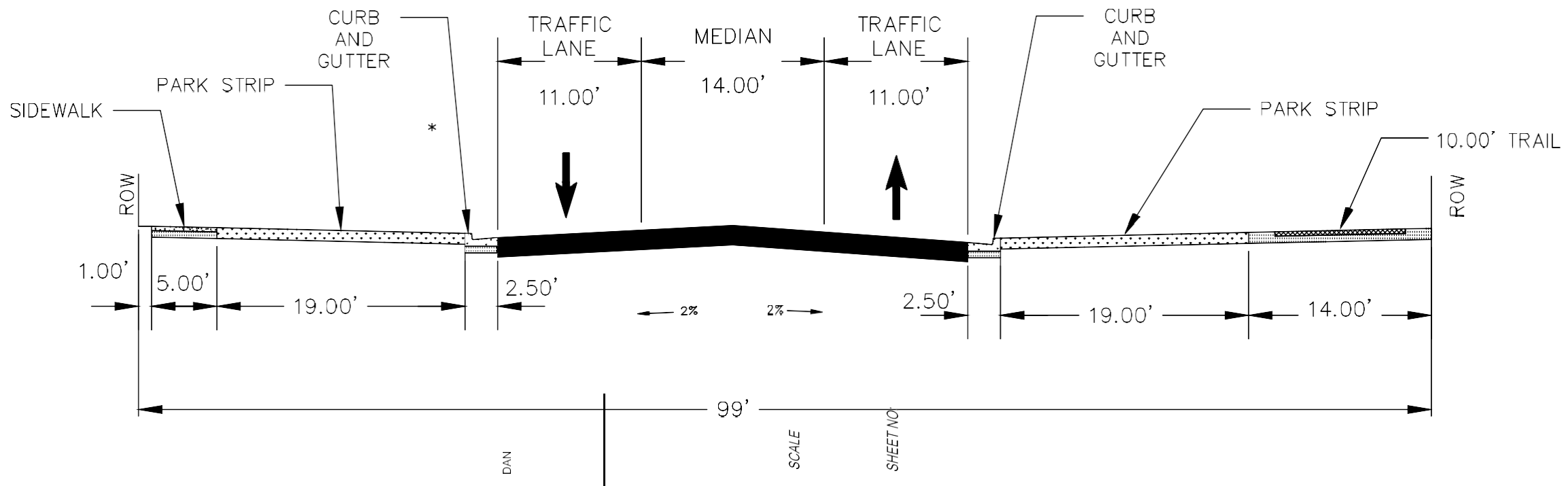
Alternatively, traffic lanes and median can be striped as 12—foot lanes.



TS-2: ARTERIAL: 3-LANE STREET, TRAIL FACILITY, 99' ROW

N.T.S.

Alternatively, traffic lanes and median can be striped as 12-foot lanes. Buffered Bike Lanes may be added.

1

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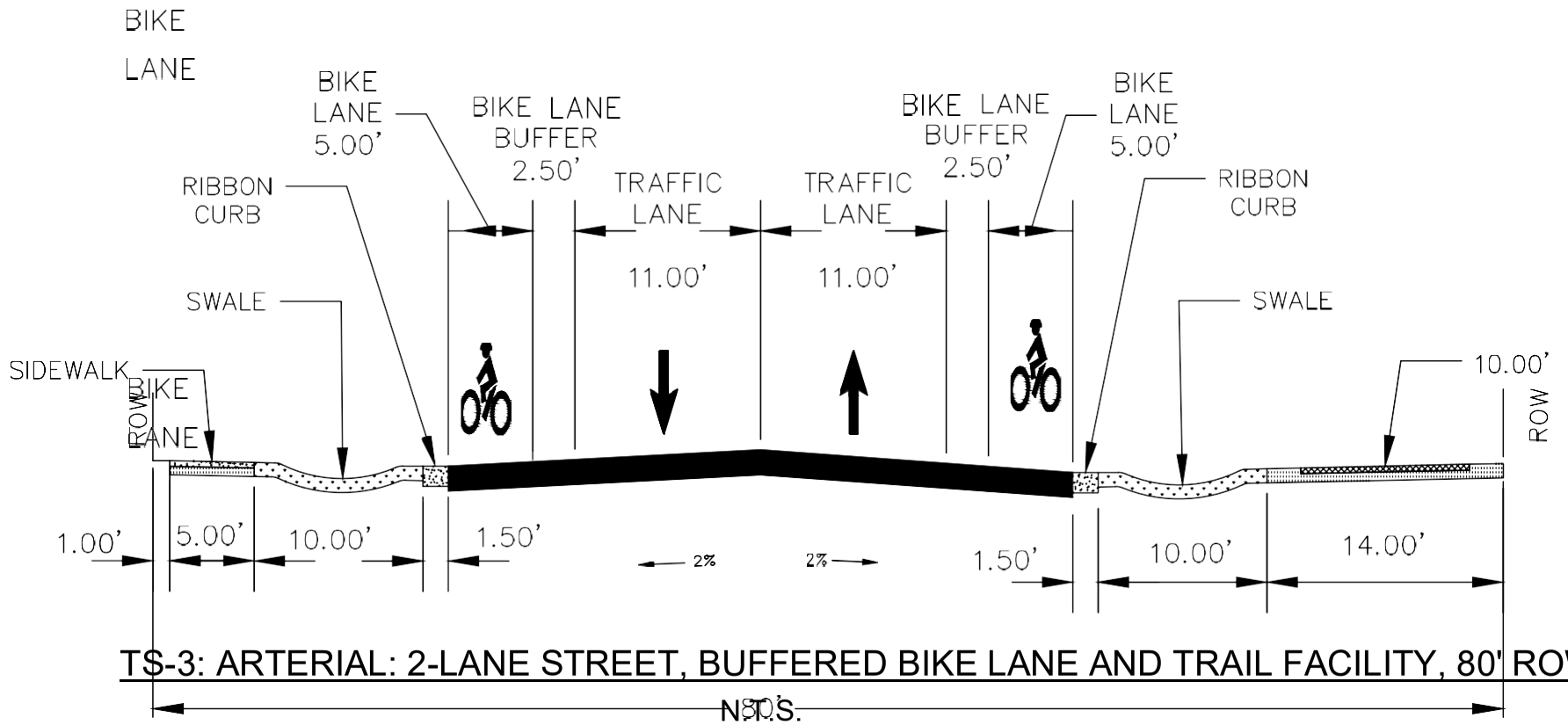

TS-3: ARTERIAL: 2-LANE STREET, BUFFERED BIKE LANE AND TRAIL FACILITY, 80' ROW

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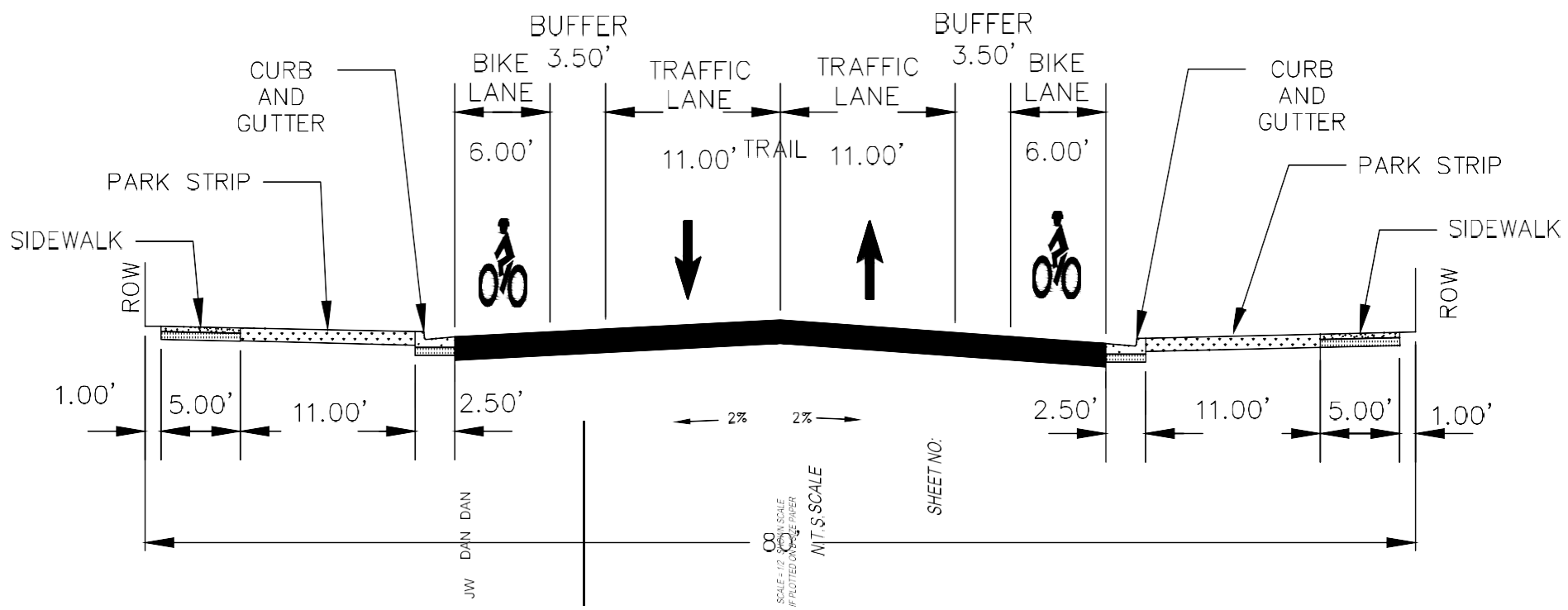

TS-4: ARTERIAL: 2-LANE STREET, BUFFERED BIKE LANE, 80' ROW

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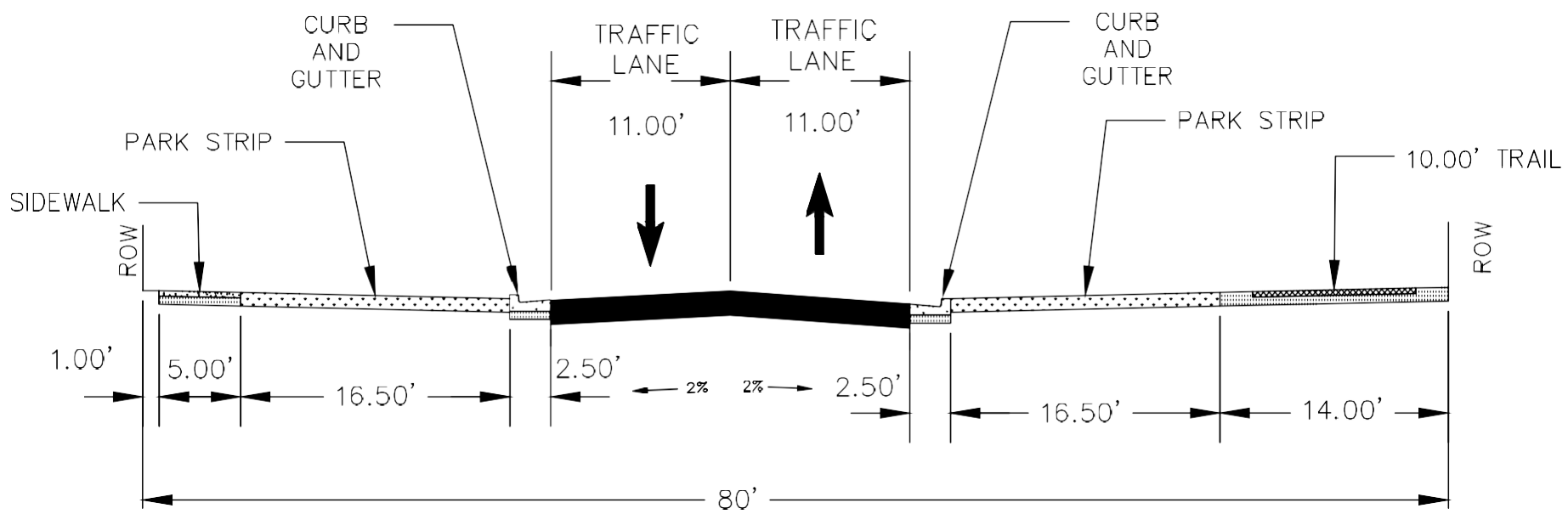

TS-5: ARTERIAL: 2-LANE STREET, TRAIL FACILITY, 80' ROW

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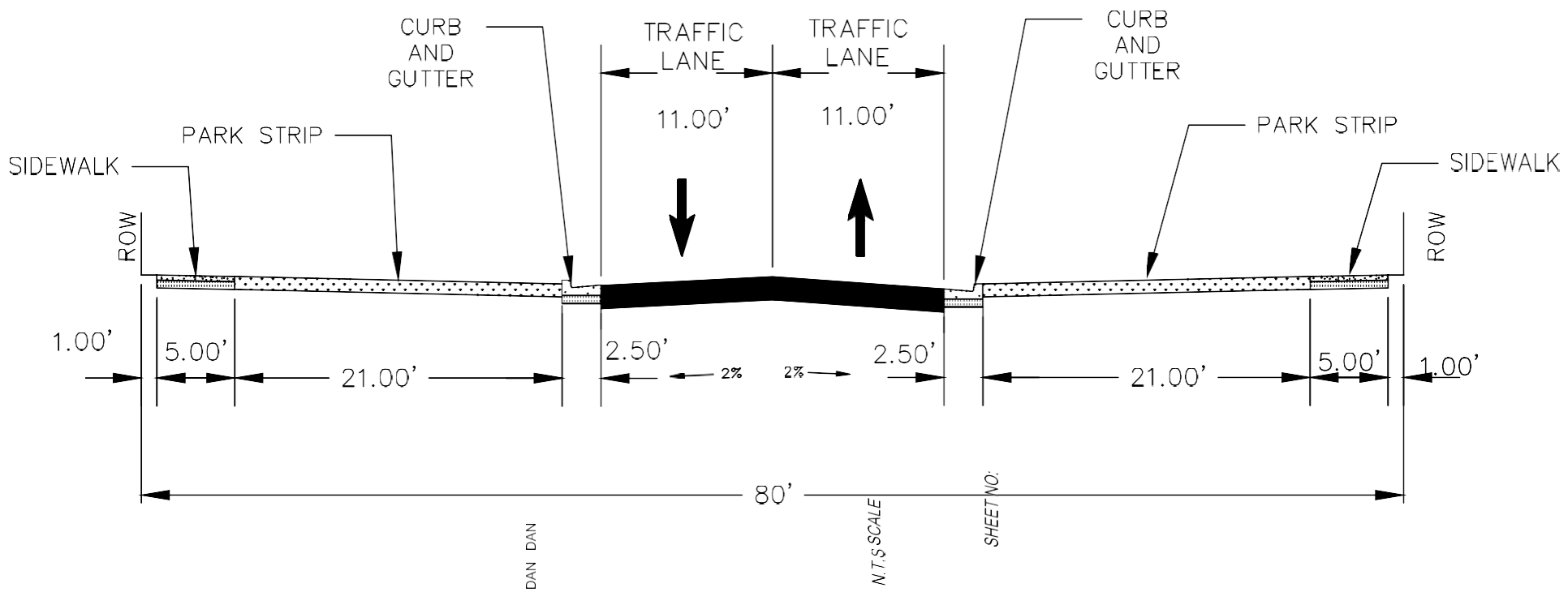

TS-6: ARTERIAL: 2-LANE STREET, NO BIKE FACILITY, 80' ROW

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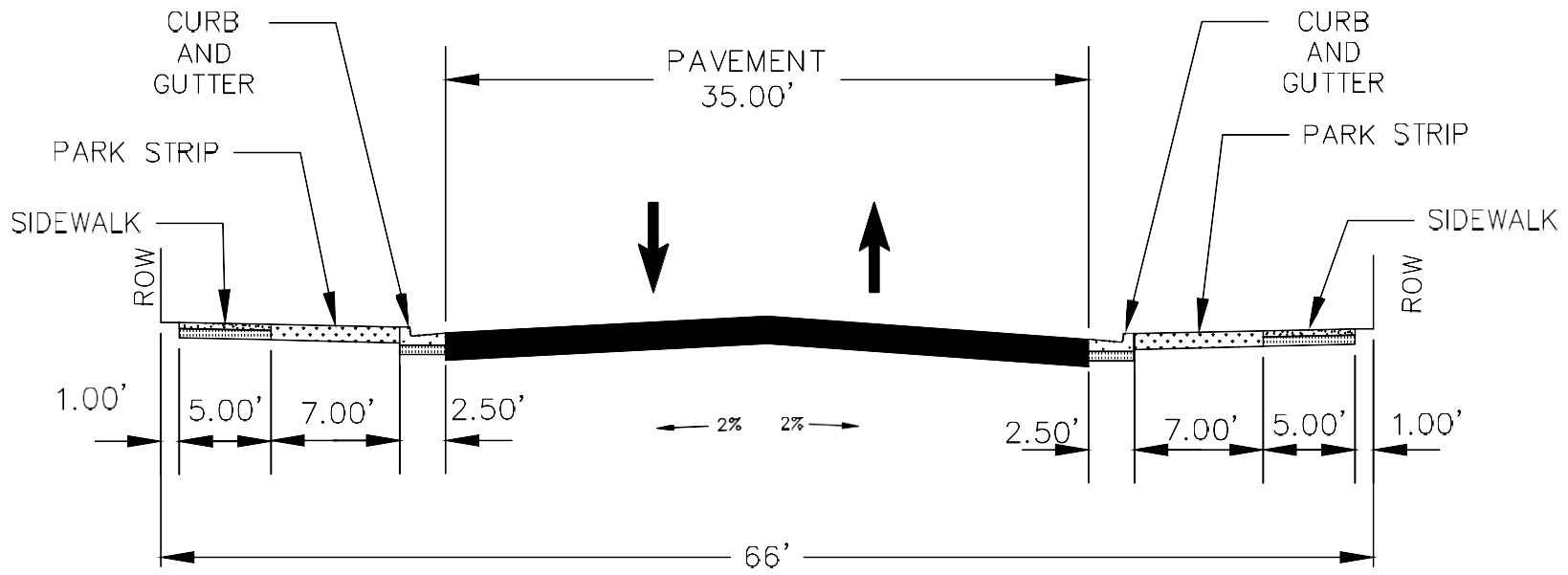

TS-7: COLLECTOR: 2-LANE STREET, ON-STREET PARKING PERMITTED, 66' ROW

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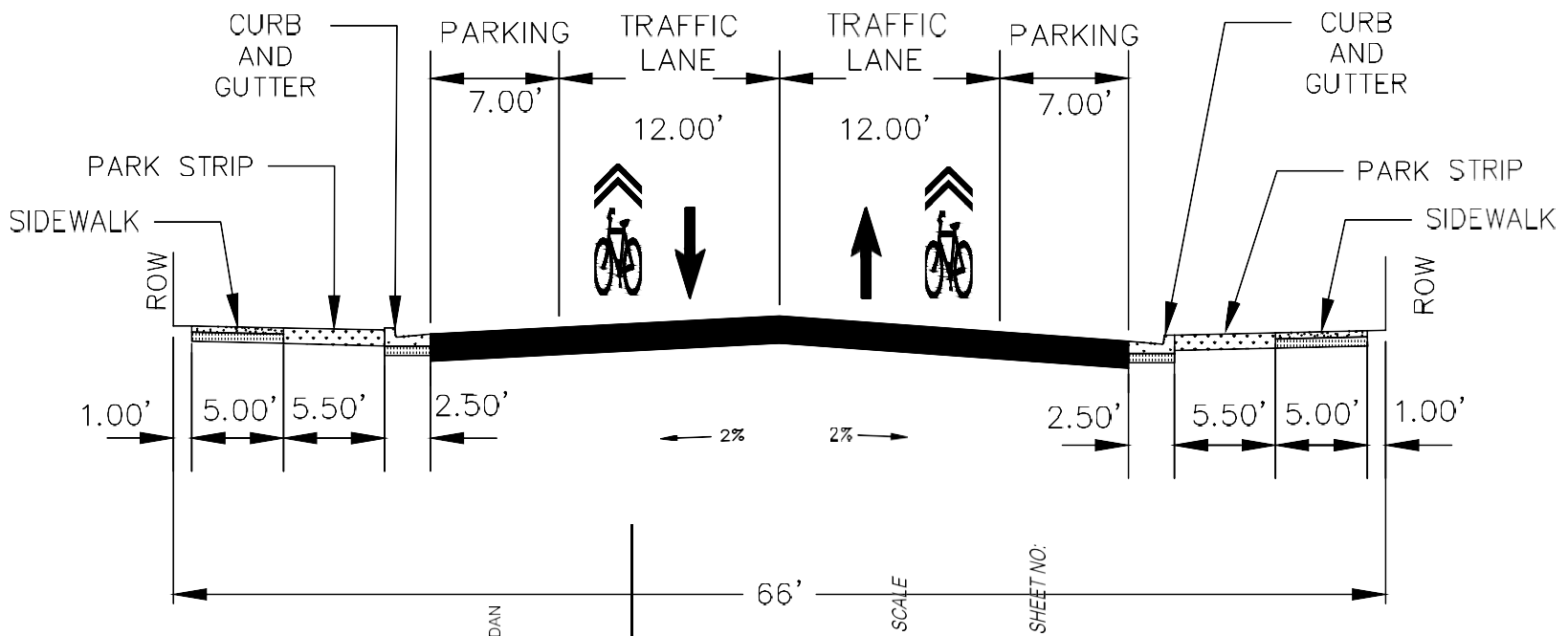

TS-8: COLLECTOR: 2-LANE STREET, BICYCLE BOULEVARD, 66' ROW

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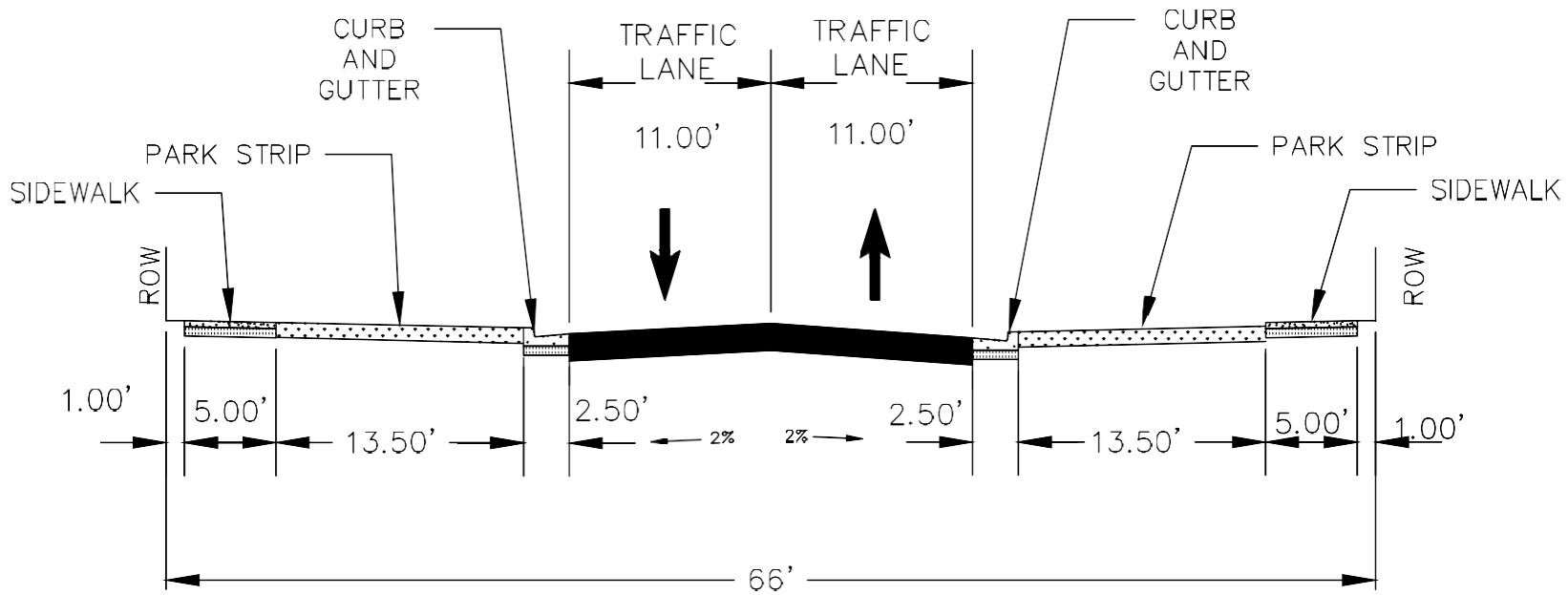

TS-9: COLLECTOR: 2-LANE STREET, NO BIKE FACILITY, 66' ROW

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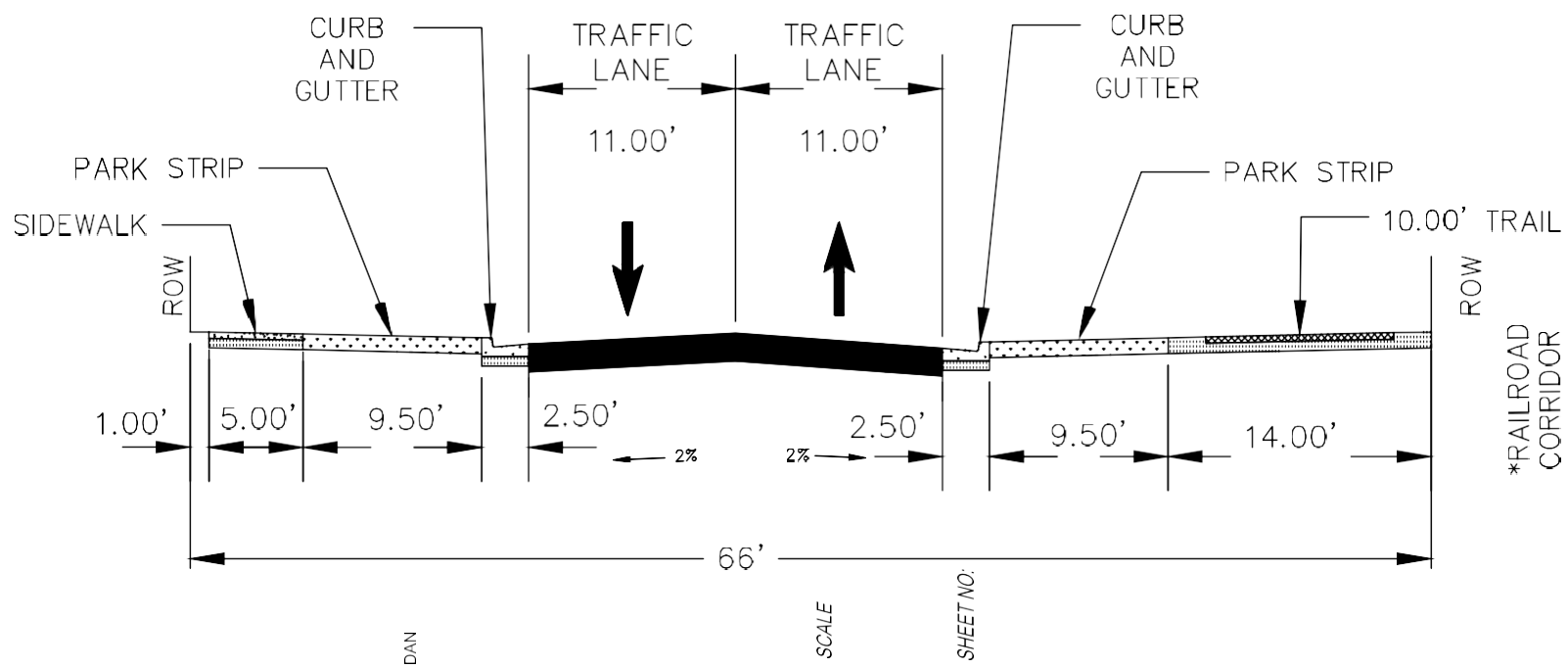

TS-10: COLLECTOR: 2-LANE STREET, TRAIL FACILITY, 66'

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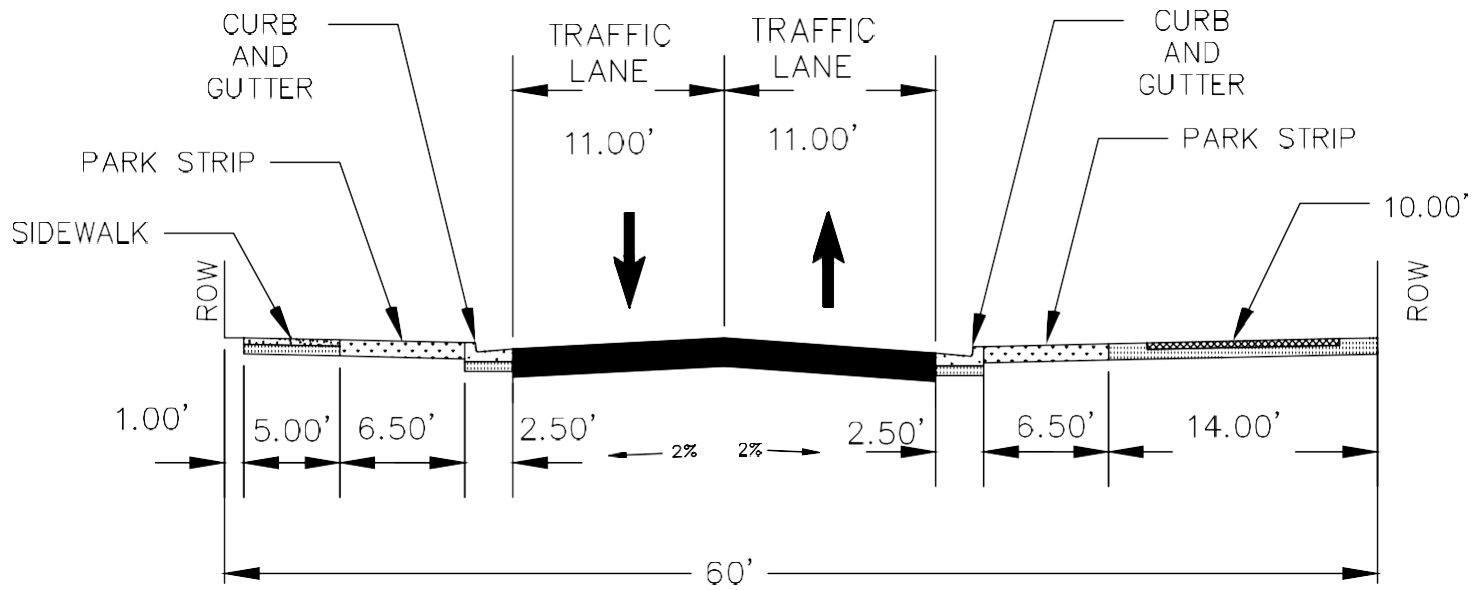

TS-11: LOCAL: 2-LANE STREET, TRAIL FACILITY, 60' ROW

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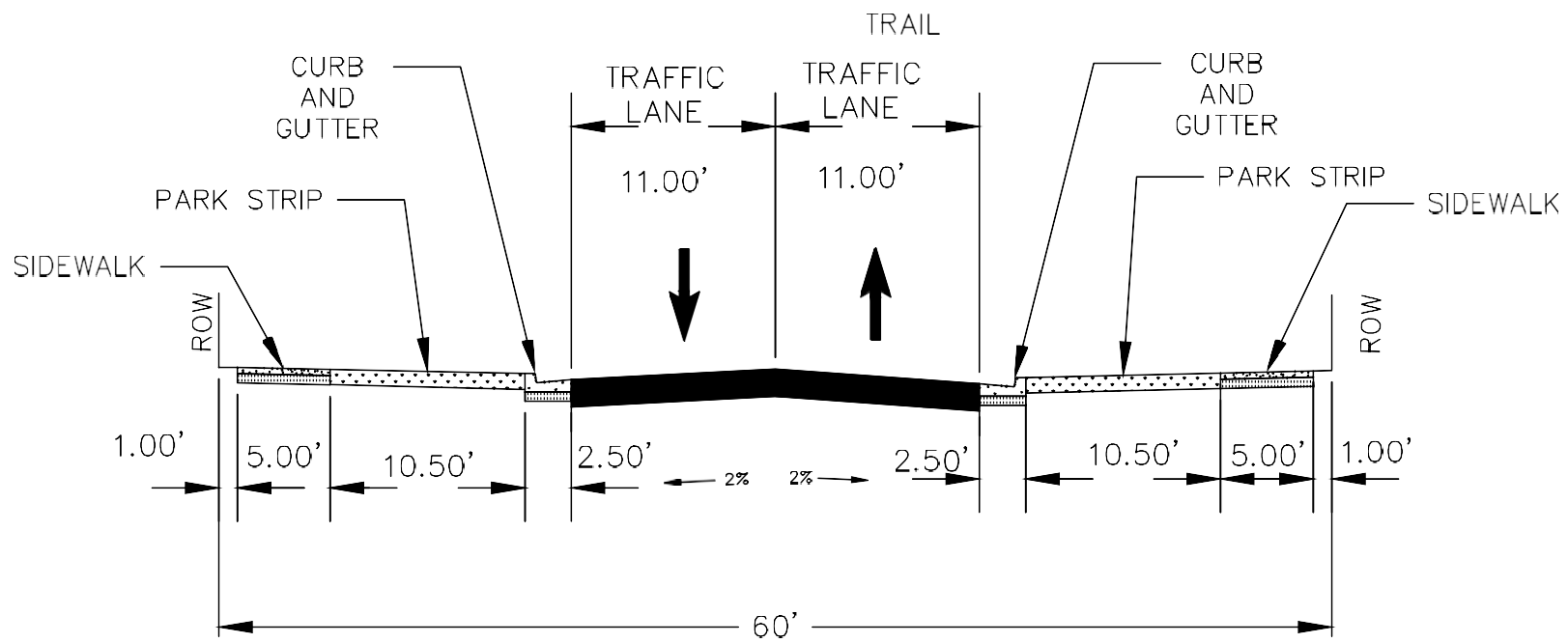

TS-12: LOCAL: 2-LANE STREET, NO BIKE FACILITY, 60' ROW

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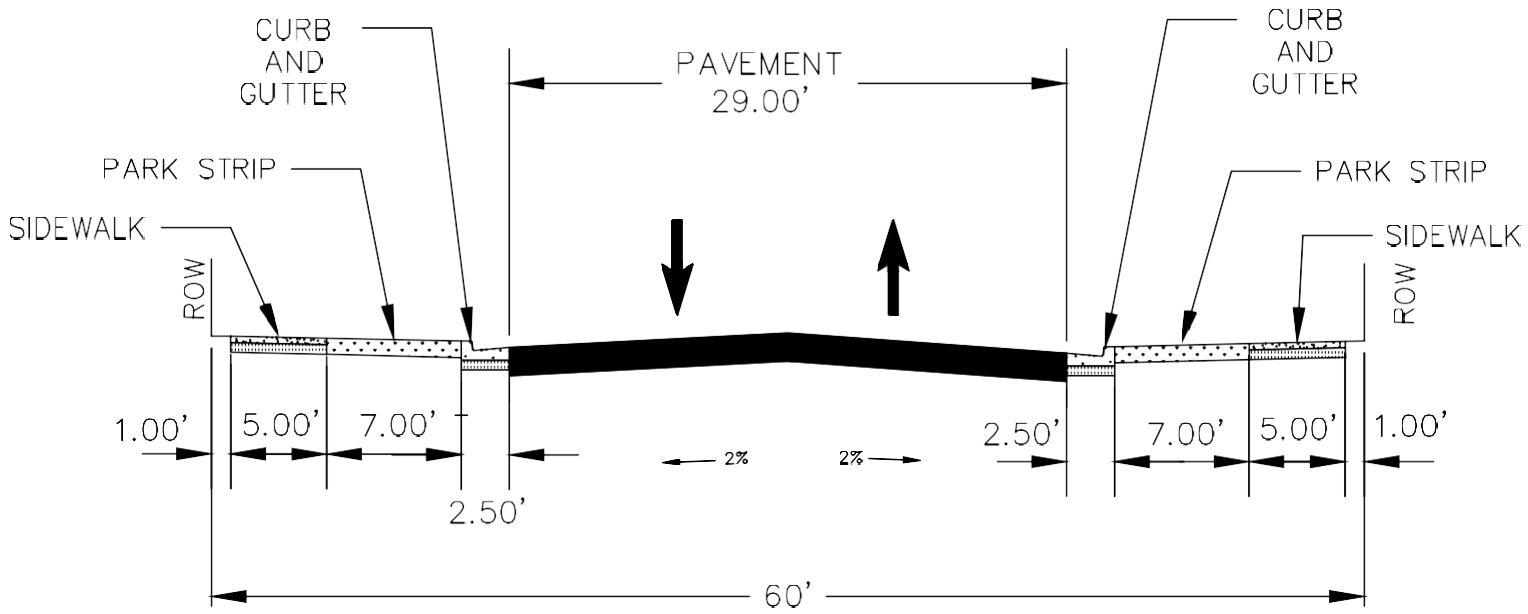

TS-13: LOCAL: 2-LANE LOCAL, 60' ROW

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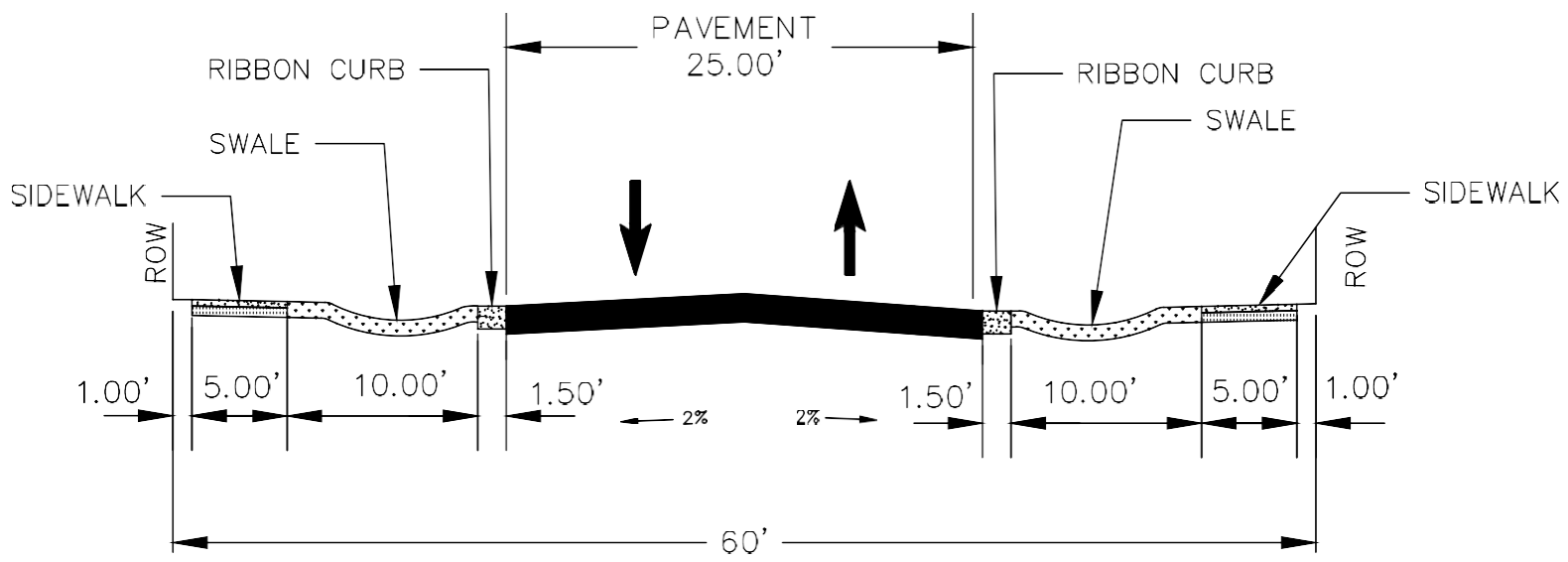

TS-14: LOCAL: 2-LANE LOCAL WITH SWALES, 60' ROW

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TABLE 4: TYPICAL SECTIONS FOR ARTERIAL AND COLLECTOR STREETS

Typical Section	Description	Street Classification	Right-of-way Width (feet)	Applicable Streets
TS-1	3-Lane Street with Buffered Bike Lane	Arterial	99	Heritage Drive, 4400 South,
TS-2	3-Lane Street with Trail Facility	Arterial	99	3200 South
TS-3	2-Lane Street with Buffered Bike Lane And Trail Facility	Arterial	80	2600 South (East of Railroad); 1200 West
TS-4	2-Lane Street with Buffered Bike Lane	Arterial	80	1900 West
TS-5	2-Lane Street with Trail Facility	Arterial	80	4000 South; 2600 South (West of 1200 West)
TS-6	2-Lane Street (No Bike Facility)	Arterial	80	2500 West
TS-7	2-Lane Street with On-Street Parking	Collector	66	1000 West
TS-8	2-Lane Street with Bicycle Boulevard	Collector	66	250 West
TS-9	2-Lane Street (No Bike Facility)	Collector	66	3650 South; Nibley Parkway; 2200 South; 1700 West; 1500 West; 900 West (South of 3200 South); 800 West (2600 South to 900 West); 700 West (South of 4000 South); 250 East
TS-10	2-Lane Street with Trail Facility	Collector	66	800 West (North of 2600 South); 640 West (4000 South to 3200 South)

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6.0 CAPITAL FACILITIES PLAN

Cost estimates were prepared for each of the recommended street projects included in Figure 14 and based on the cross sections shown in Figure 18.

6.1 ASSUMPTIONS

The following assumptions were made for cost estimates.

Right-of-way

Nibley City has previously developed a Master Street Plan, which shows planned right-of-way widths for all future streets (see Figure 19; for convenience, recommended cross sections are shown again in Figure 20). These widths were used to select the appropriate cross section for cost estimating. Table 5 shows assumed right-of-way widths for arterials, since the Master Street Plan indicates that arterials are 80 or 99 feet wide. All collectors are assumed to have a right-of-way width of 66 feet, and local streets have a right-of-way width of 60 feet. For cost estimating purposes, it was assumed that the city already owns all right-of-way.

TABLE 5: MINOR ARTERIAL RIGHT-OF-WAY ASSUMPTIONS

80 Feet	99 Feet
4000 South	4400 South
2600 South	3200 South
2500 West	Heritage Drive
1900 West	
1200 West	

Unit Costs

Unit costs were based on UDOT's average unit bid prices on recent construction projects and are shown in Table 6. Unit costs were obtained from UDOT in May and June 2018.

Pavement

All existing pavement is assumed to be left in place. For locations where streets need to be widened, it was assumed that the edge of the streets would be saw cut and new full-depth pavement added.

Pavement cross section depths were obtained from Nibley City staff. Normally, a 3-4-12 cross section is required, unless a geotechnical report indicates a different

depth is needed.[9] The city may consider building a thicker cross section for 1200 West, 3200 South and 4400 South. However, for purposes of this capital facilities plan, the city standard was used for all streets.

TABLE 6: UNIT COSTS[10]

Description	Unit	Unit Price
Roadway Design Items		
General		
Mobilization	Lump	15.0%
Traffic Control	Lump	7.0%
Survey	Lump	7.0%
Roadway		
SMA - 1/2 Inch (Widening)	Ton	$95.00
HMA - 1/2 Inch	Ton	$85.00
Untreated Base Course (Plan Qty)	cu yd	$45.00
Granular Borrow (Plan Qty)	cu yd	$30.00
Concrete Curb and Gutter Type B1	ft	$25.00
Concrete Sidewalk	sq ft	$6.50
Turf Sod	sq ft	$0.80
Tree - 2 inch Caliper	each	$300.00 - 350.00
Irrigation System	sq ft	$1.50
Traffic Signal	Lump	$150,000
Railroad Crossing Upgrade	Lump	$200,000
New Railroad Crossing	Lump	$600,000
Preliminary Engineering	Lump	8%
Construction Engineering	Lump	10%
Utility Contingency	Lump	6%
GENERAL CONTINGENCY	Lump	20%

[9] See Nibley City Design Standards, May 9, 2016, Section 8.6: Pavement Structural Design.
[10] Source: UDOT unit costs obtained in May and June 2018.

FIGURE 19: NIBLEY CITY MASTER STREET PLAN

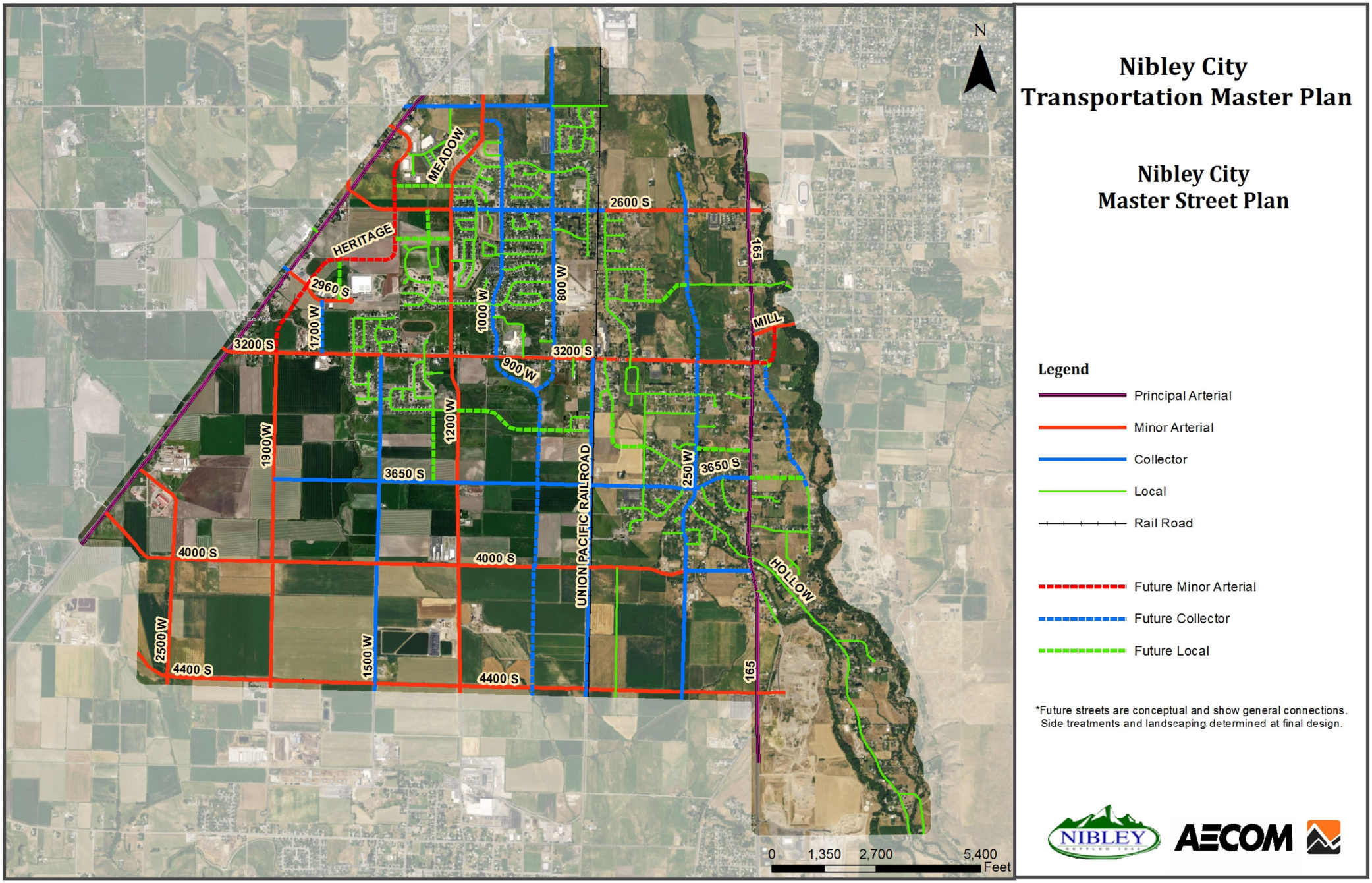
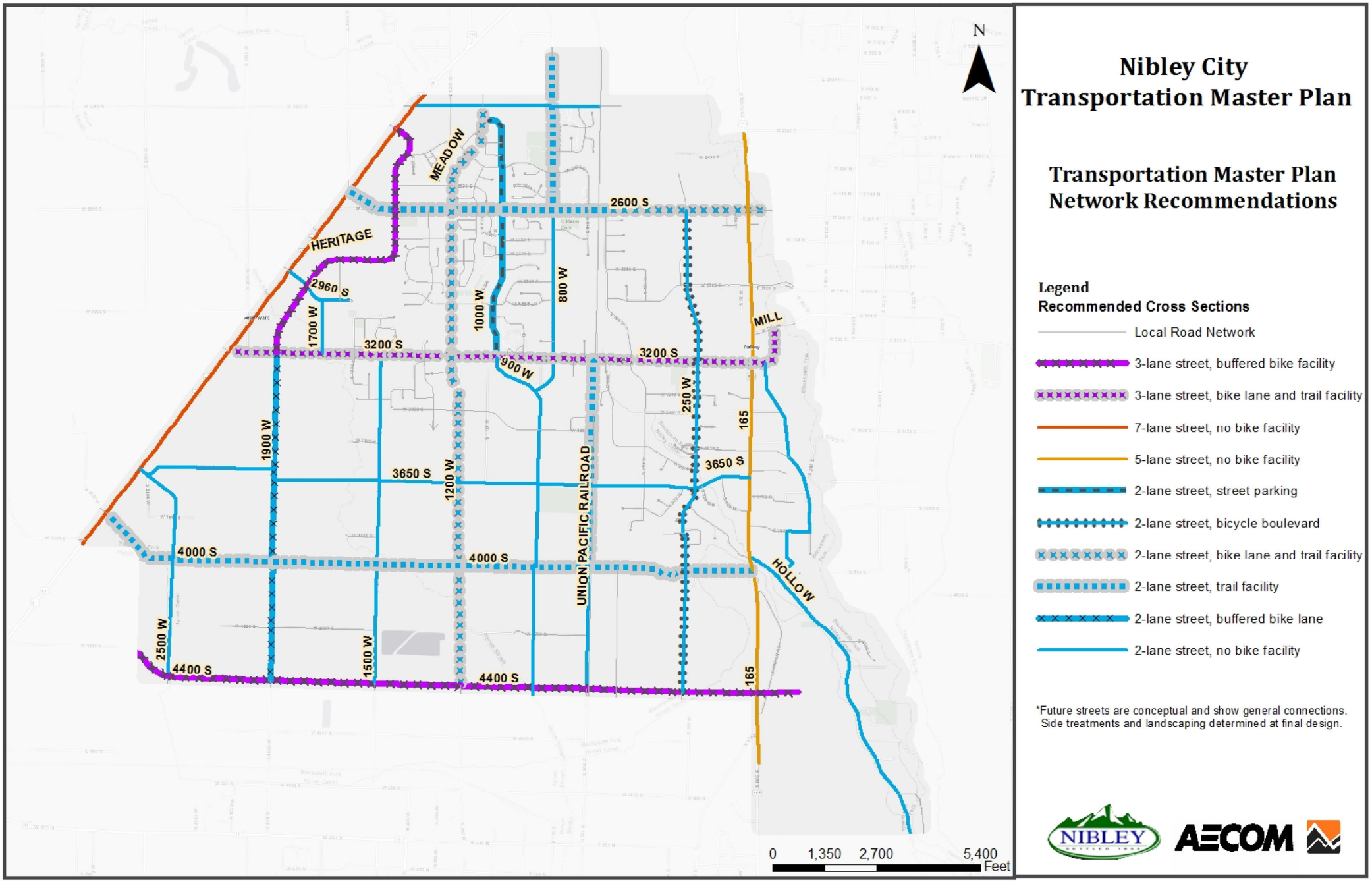


FIGURE 20: RECOMMENDED STREET NETWORK



Reconstruction of Non-paved Roads

All non-paved roads were assumed to be full-depth reconstruction because their existing condition is generally considered to be poor by Nibley City staff.

Roadside Improvements

Typical roadside features are included in Table 7. Design standards were obtained from Nibley City staff.

TABLE 7: TYPICAL ROADSIDE IMPROVEMENTS

Feature	Dimension	Notes
Curb and Gutter	2.5 feet	Each side unless swales are present.
Sidewalk	5 feet	Each side unless a trail is present, in which case there is trail only on the opposite side of the trail.
Trail	10 feet	Plus 2 feet buffer on each side for a total of 14 feet.
Outer buffer	1 foot	Provided behind sidewalk.
Park Strip	Varies	Varies depending on total ROW, pavement width, and other side treatments. Assumed to be turf sod and irrigation system with trees every 50 feet.
Drainage Swales	Varies	10 feet minimum to accommodate drainage. Assumed to be turf sod and irrigation system but no trees in swales.

Utilities

There is a 6% contingency for the utilities. Roadway projects should be coordinated with major utility work.

6.2 COST ESTIMATES

Based on the previously discussed recommendations and assumptions, cost estimates for each road segment are shown in Table 8. Detailed cost estimate sheets are shown in Appendix C.

TABLE 8: COST ESTIMATES (2018 DOLLARS)

Street	Extents	Cost Estimate
Hollow Road	SR-165 to City Boundary	$ 3,109,000
3650/3700 South	2500 West to SR-165	$ 7,077,000
3200 South	US-89/91 to SR-165	$ 5,188,000
2600 South	US-89/91 to SR-165	$ 2,415,000
2200 South	US-89/91 to Railroad	$ 1,779,000
2500 West	4400 South to US-89/91	$ 2,634,000
Heritage Drive	3200 South to US-89/91	$ 3,624,000
1900 West	4400 South to 3200 South	$ 5,394,000
1700 West	3200 South to 2960 South	$ 953,000
1500 West	4400 South to 3200 South	$ 2,923,000
1200 West	4400 South to 2200 South	$ 5,720,000
900/1000 West	4400 South to 1200 West	$ 5,062,000
800 West/3400 South	900 West to 2000 South	$ 2,175,000
640/700 West	4400 South to 3200 South	$ 2,771,000
250 West	4400 South to 2600 South	$ 2,204,000
250 East	3700 South to 3200 South	$ 5,626,000

6.3 PHASING

Project phasing was determined by evaluating short term (2024), interim (2034), and long term (2050) travel demand forecasts, as well as overall connectivity. Street projects that are required to prevent congestion through the short term planning horizon were considered Phase I projects and are recommended to be constructed within the next five years.

Projects that achieve overall connectivity of the main grid system, as well as those projects that prevent longer term congestion, were considered Phase II projects and are recommended to be constructed within 5 to 15 years.

Projects that enhance existing narrower cross sections into full width cross sections are generally considered Phase III projects.

While Phase I projects are prioritized based on more immediate needs, Phase II and Phase III projects are generally prioritized higher if they have a bicycle facility component, and by anticipated future travel demand (streets with higher traffic are prioritized higher). Recommended project phasing is shown in Table 9.

TABLE 9: RECOMMENDED PROJECT PHASING

Priority	Street	Extents
Phase I (0-5 Years)		
1*	***1200 West***	***2450 South to 2200 South***
2*	***2600 South***	***US-89/91 to 1200 West***
3*	***1000 West***	***2450 South to future 1200 West connection***
4	3200 South	US-89/91 to 1500 West
Phase II (5-15 Years)		
5	Mill Road	Realignment east of SR-165
6	Heritage Drive	3200 South to 2600 South
7	4000 South	US-89/91 to 1200 West
8	250 West	4400 South to 2600 South
9	250 East	3650 South to 3200 South
10	3650 South	2500 West to SR-165
11	900 West	4400 South to 3200 South
12	1700 West	3200 South to Nibley Pkwy (2960 South)
13	800 West/3400 South	900 West to 3200 South
14	1500 West	4400 South to 3390 South
15	4400 South	US-89/91 to 1900 West
16	1200 West	4400 South to 2450 South
17	2600 South	1200 West to SR-165
Phase III (15-25 Years)		
18	3200 South	1500 West to SR-165
19	1900 West	4400 South to 3200 South
20	Heritage Drive	2600 South to US-89/91
21	4000 South	1200 West to SR-165
22	700 West	4400 South to 3200 South
23	800 West	3200 South to 2000 South
24	2500 West	4400 South to US-89/91
25	2200 South	US-89/91 to UPRR
26	Hollow Road	SR-165 to City Boundary
27	1500 West	3390 South to 3200 South
28	4400 South	1900 West to SR-165

Denotes impact-fee eligible

A key assumption made for the intermediate year (2024 and 2034) traffic forecasts is that land use develops uniformly and linearly around the city. In reality, growth could occur faster or slower in different parts of the city. Therefore, future street needs could change. Furthermore, some lower phase projects could be constructed earlier than planned with adjacent development, or based on other circumstances that make earlier construction more efficient. This could also

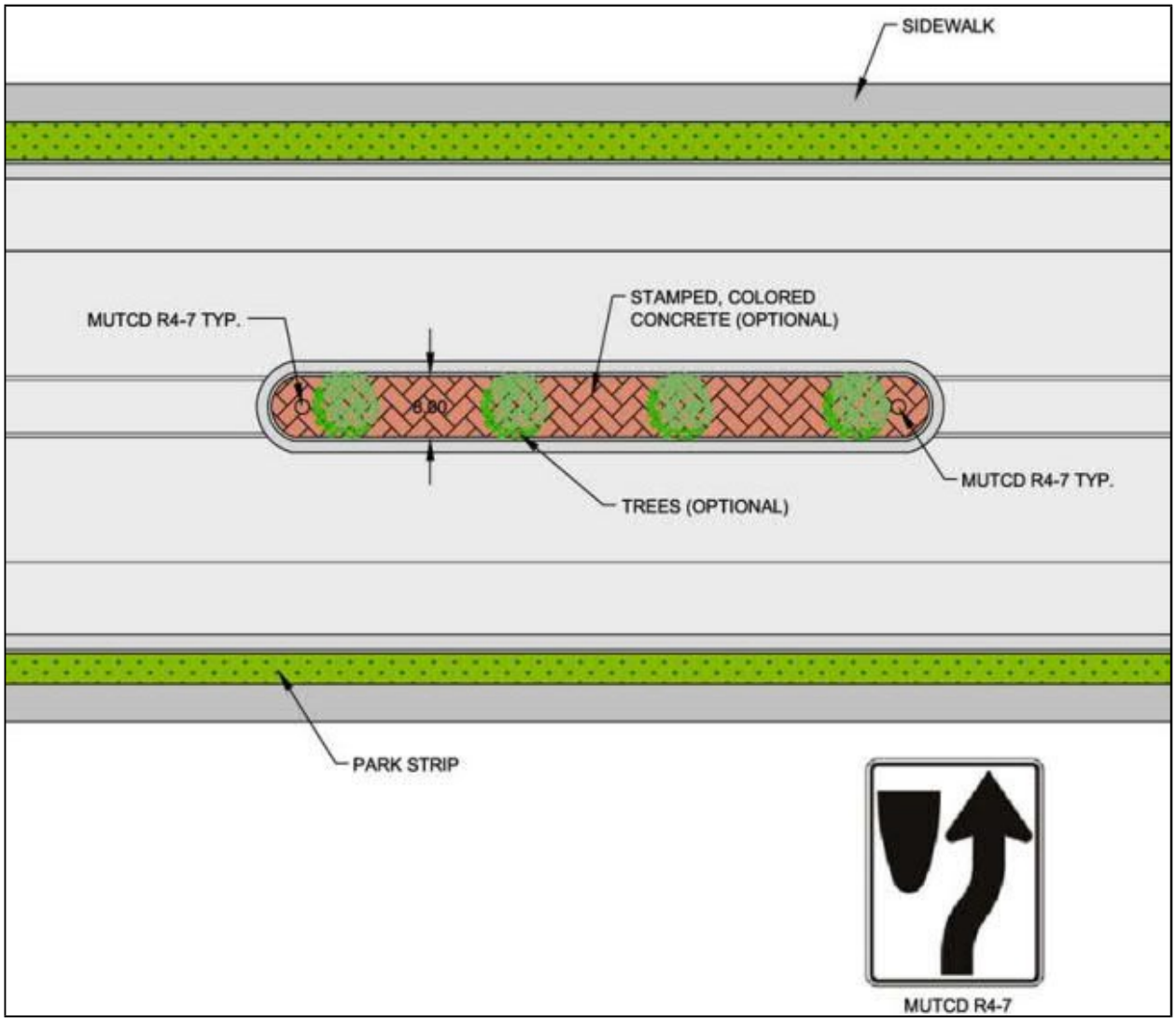
affect phasing of future projects. Therefore, project phasing should be frequently reevaluated.

APPENDIX A. TRAFFIC CALMING DETAILS

Conceptual Traffic Calming Procedures[1]

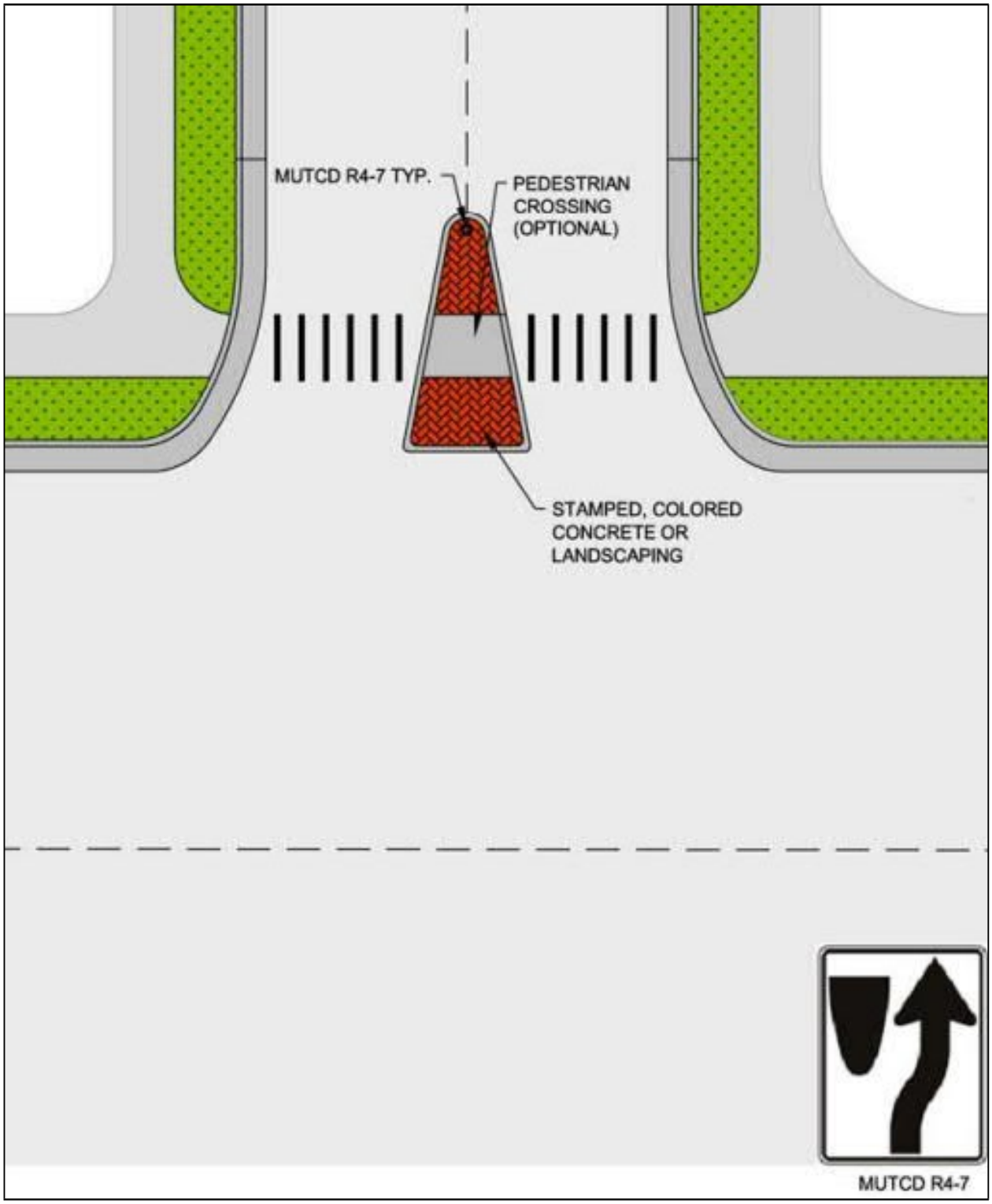
**Not to Scale*

Sample Center Island Detail

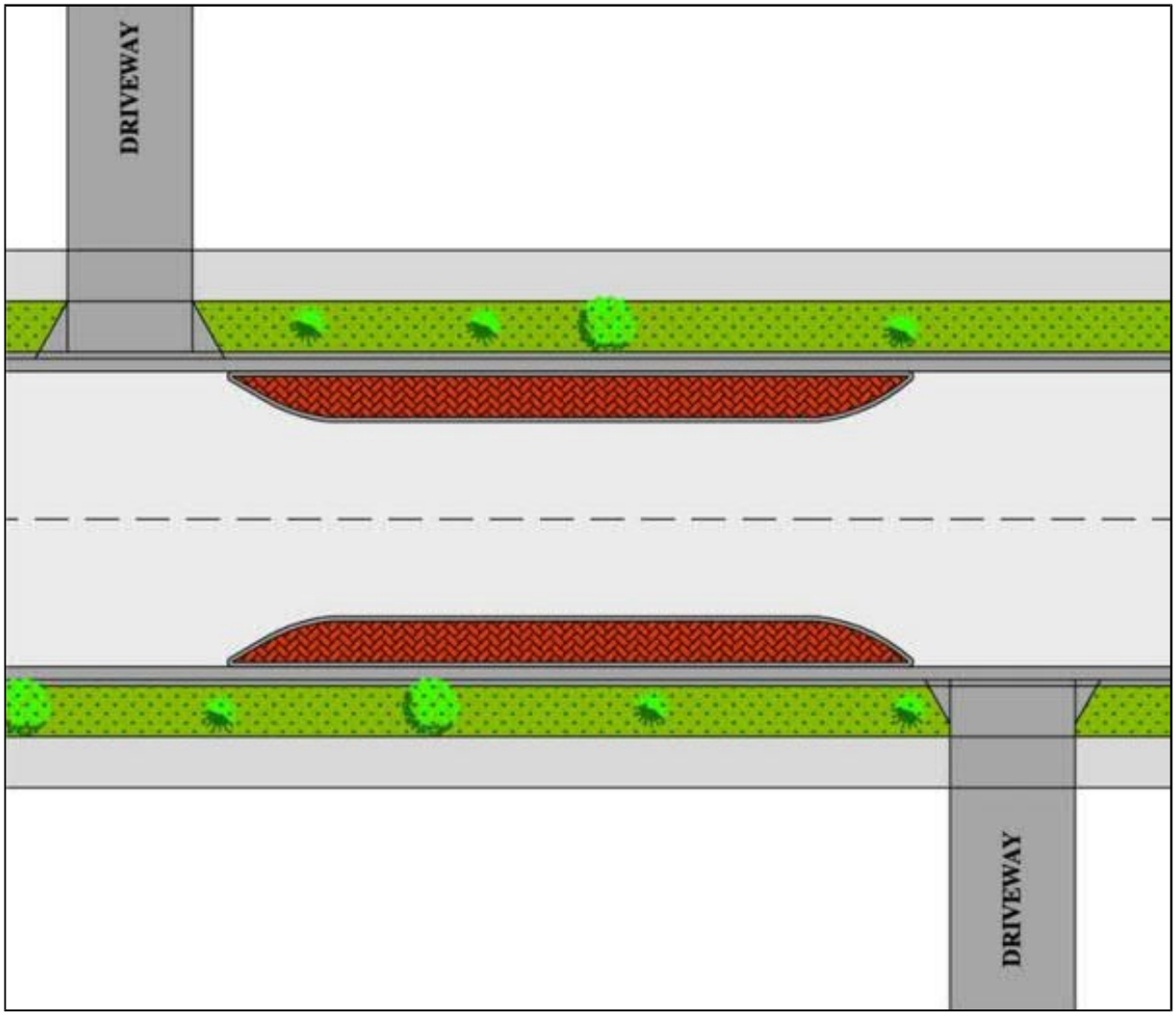


[1] http://cottonwoodheights.utah.gov/UserFiles/Servers/Server_109694/File/Departments/Public%20Works/Traffic%20Calming%20Procedures%20Rev%204_4_29_13.pdf

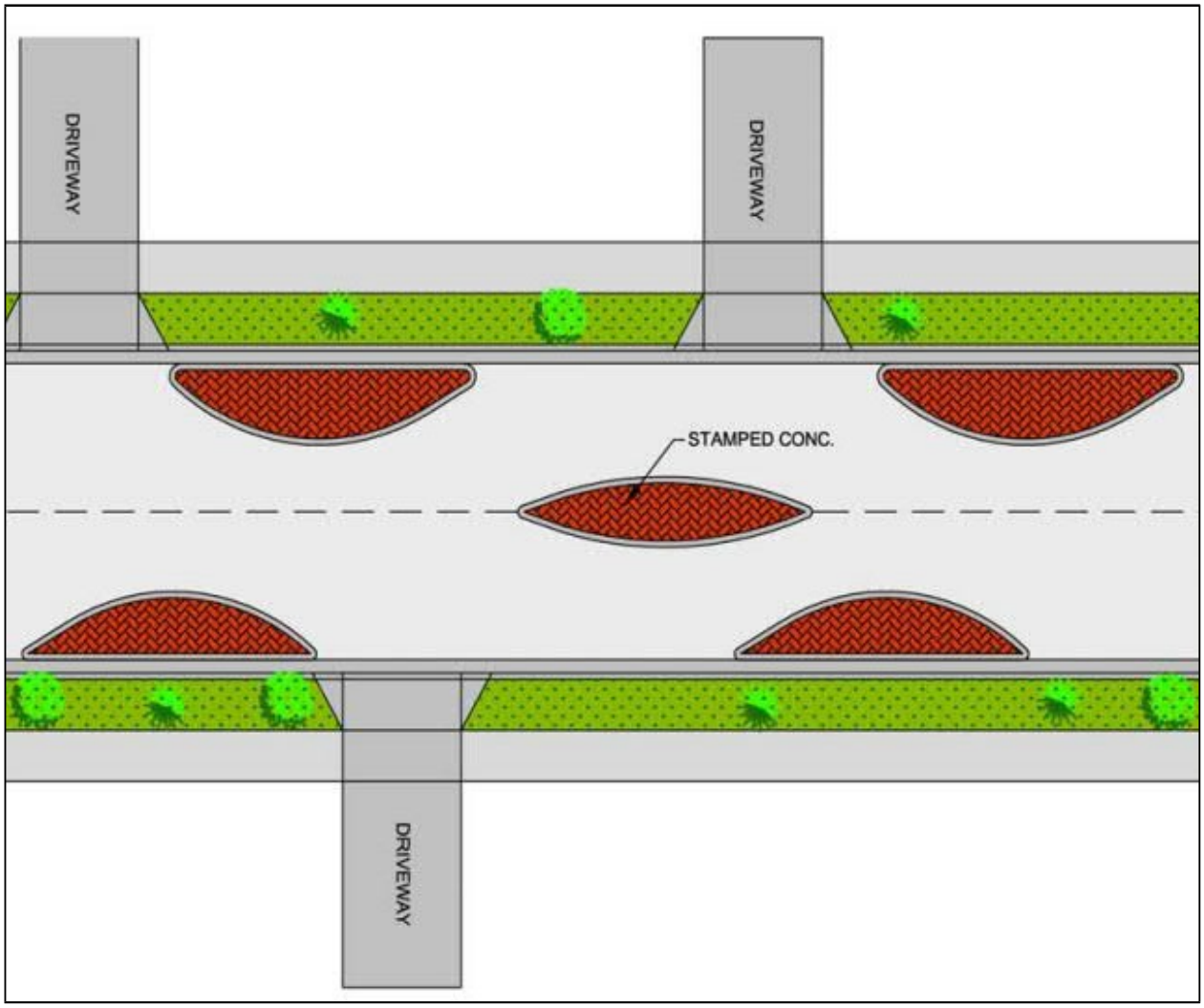
Sample Island Diverter Detail



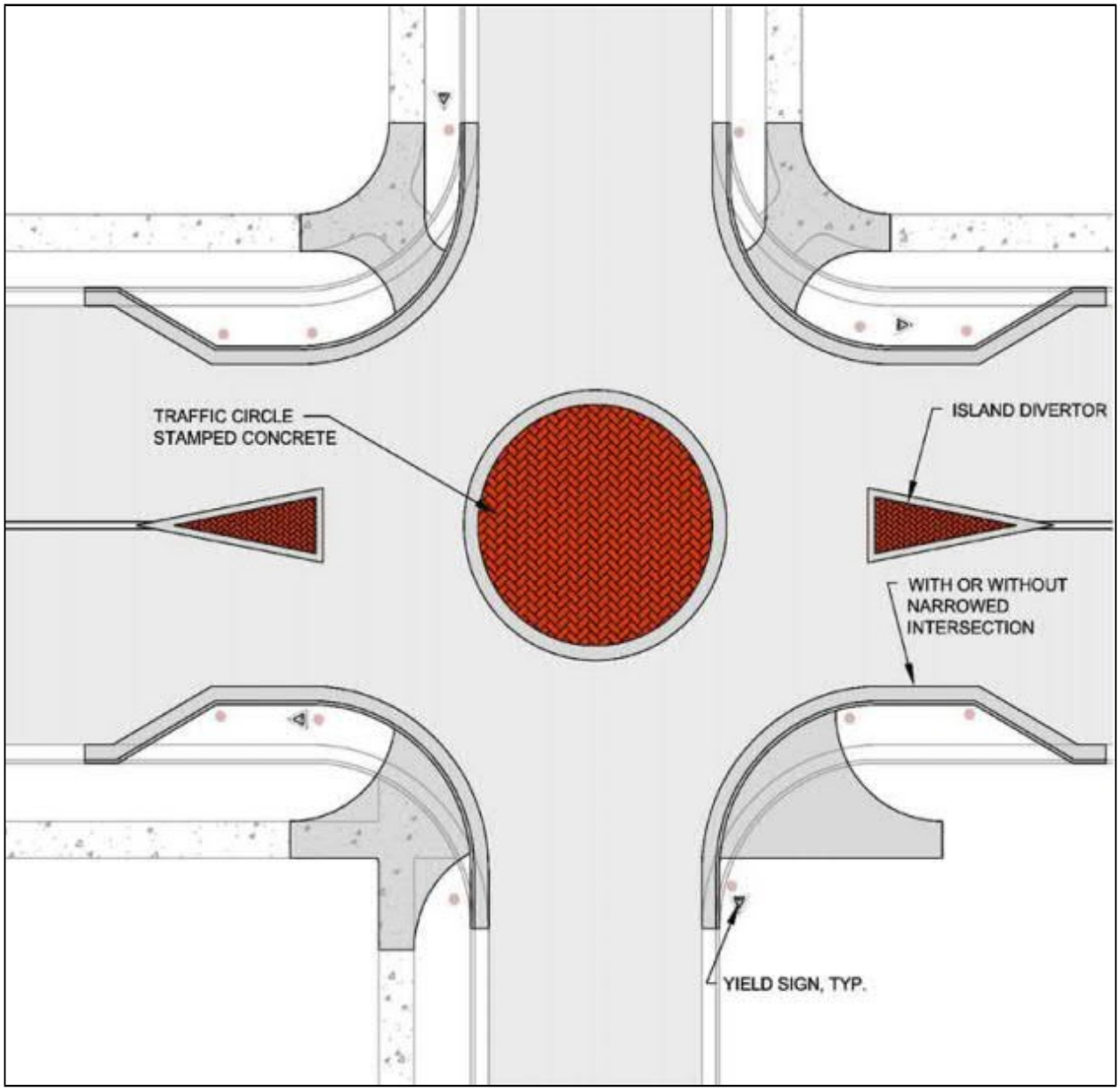
Sample Neck Down/Choker Detail



Sample Chicane Detail



Sample Traffic Circle Detail



APPENDIX B. UDOT TRAFFIC SIGNAL COOPERATIVE AGREEMENT

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4992

COOPERATIVE AGREEMENT

This **COOPERATIVE AGREEMENT** made and entered into this d day of 1::Yb . 2006, bJand between the **UTAH DEPARTMENT OF TRANSPORTATION,** hereinafter referred to as "UDOT," and the cities of **LOGAN, NIBLEY, WELLSVILLE, HYRUM,** and **CACHE COUNIT,** hereinafterreferred to as the "municipalities."'

WITNESSETH:

WHEREAS, based on the findings of the South US-89/91 Transportation Corridor Study, **UDOT and the MUNICIPALITIES** desire to facilitate traffic flow along the US-89/91 Corridor in Cache County, Utah, by identifying and stipulating the locations of existing and future traffic signal installations and access point curb cuts; and

WHEREAS, in order to manage traffic flow and improve safety, other considerations will be necessary within the corridor as described herein; and

WHEREA'S, UDOT and eacJJ, Municipality agree to enter into this **COOPERATIVE AGREEMENT** to accomplish':tiμs common goal; and

WHEREAS, UDOT has determined by formal finding said work on public right-of-way is not in violation of the laws of the State of Utah or any legal contract with the **Municipalities.**

This **COOPERATIVE AGREEMENT** is made to set out the terms and conditions where under said corridor preservation shall be accomplished.

NOW THEREFORE, it is agreed by and between the parties hereto as follows:

1. The Parties hereto agree that the following intersections are identified as locations for existing or future traffic signal installations:

   US-89/91 and 1000 West (future),
   US-89./91 and 3200 South (future),
   US-89/91 and SR-101.

2. The Parties hereto agree that the following intersections are identified for future traffic signals after the signals identified in Part 1. of this agreement are implemented and after faithful pursuit of all other elements identified in this agreement upon mutual agreement between UDOT and the appropriate Municipalities with full land use approval at the subject intersection;

   US-89/91 and Either 2600 South (1600 West) or 2300 South (Single Location),
   US-89/91 and Approximately 4300 South where the Caine Diary Access exists.'

3. The Parties hereto agree that traffic signals will only be installed at those intersections within the US-89/91 South Corridor limits that are listed above subject to meeting minimum traffic signal warrants defined by the *Manual of Uniform Traffic Control Devices* and a UDOT field review and a traffic signal will not be installed at any intersection not listed above.

4. Other intersections on the US-89/91 Corridor south of 1000 West in Logan and within the Municipal jurisdiction of each **Municipality** will not be considered for future signalization.

5. The **Municipalities** acknowledge that, at **UDOT's** discretion, it may become necessary due to compelling public safety concerns to restrict certain types of movements at any and all

unsignalized intersections or access points within the corridor to right in and right out only or similar restrictions based on an engineering study.

6. Ea h **Municipality** agrees to master plan and pursue roadway projects to fulfill the Preferred Options and Key Recommendations as outlined in the above mentioned South US-89/91 Transportation Corridor Study, dated December 30. 2005.

7. The **Municipalities** and **UDOT** acknowledge the benefits and limitations of long range planning and agree to review and update the Cache South US-89/91 Transportation Corridor Study and this Cooperative Agreement based on the results of a comprehensive engineering review of zoning, land use planning, traffic safety, traffic operations, environmental issues, and related technical considerations 15 years from the approval of this agreement.

8. Except for the 15 year update, approval of any amendment to this agreement requires two thirds majority approval of all **Municipalities** and **UDOT.** Any signatory to this agreement can request amendment to elements of this agreement at any time based on appropriate engineering studies. Upon two thirds majority approval of a Technical Advisory Committee {TAC) made up of one voting member appointed from each **Municipality** and **UDOT,** any study required to implement the amendment before the 15 ye updat·e will be funded 60% by **UDOT** and 8% from each **Municipality (subject tp any budgetary a·pprovals require by each Municipality).**

9. Each **Municipality** agrees to support Administrative Rule R930-6 and the Cache Access Management Policy, including revisions based on this agreement, with resP.ect to development occurring within the subject corridor, variance requests which are not defined in this study, and related issues beyond the scope of the Cache South US-89/9i' Transportation Corridor Study. The **Municipalities** acknowledge a willingness to plan for land use consistent with Rule R930-6, which at present, requires at least 1000 foot access spacing on US 89/91 for much of the subject area.

IN **WITNESS WHEREOF,** the parties hereto have caused these presents to be executed by their duly authorized officers as of the day and year first above written.

****

ATTEST:

iLJL
Name

2/22/06
Date

Title
(Impress Seal)

Logan City Corporation,'
a Municipal Corporation of the State of Utah

Title

****

ATTEST:

Name Date

County Clerk
Title
(Impress Seal)

Cache County,
a Municipal Corporation of the State of Utah

Name Date

Title

****

ATTEST:

Name Date

City recorder
Title
(Impress Seal)

Nibley City,
a Municipal Corporation of the State of Utah

Name Date

Mayor
Title

****

ATTEST:

Name

1/18/06
Date

Title
(Impress Seal)

Wellsville City,
a Municipal Corporation of the State of Utah

Name Date

Mayor
Title

****

ATTEST:

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(Impress Seal)

Hyrum City,
a Municipal Corporation of the State of Utah

Dean Howard 1/24/06
Name Date

\LDItjlr(_____
Title

****

RECOMMENDED FORAPPROVAL:

Region Traffic and Safety Engineer 2/27/06 Date

UTAH DEPARTMENT OF TRANSPORTATION

Region One Director 2/27/06 Date

APPROVED AS TO FORM:

As evidenced by the signature below, the Attorney General's Office has reviewed this Agreement pursuant to Utah Code Annotated, Section 11-13-9, and authorizes and approves it.

UTAH ATTORNEY GENERAL
MARK L. SHURTLEFF

Jim,._Beadles,
Assistant Attorney General

Approved:

Cheri Young
JDOT Comptroller's Office,
Contract Administrator

3/1/06
Date

APPENDIX C. COST ESTIMATES

NIBLEY TRANSPORTATION MASTER PLAN (250 E)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price	Total
Roadway Design Items				
General				
Mobilization	1	Lump	15.0%	$ 580,000.00
Traffic Control	1	Lump	7.0%	$ 271,000.00
Survey	1	Lump	7.0%	$ 271,000.00
			General Subtotal	**$ 1,122,000.00**
Roadway				
HMA - 1/2 Inch	4,945	Ton	$ 85.00	$ 420,282.50
Untreated Base Course (Plan Qty)	3,368	cu yd	$ 45.00	$ 151,555.56
Granular Borrow (Plan Qty)	10,104	cu yd	$ 30.00	$ 303,111.11
Concrete Curb and Gutter Type B1	21,400	ft	$ 25.00	$ 535,000.00
Concrete Sidewalk	107,000	sq ft	$ 6.50	$ 695,500.00
Turf Sod	224,700	sq ft	$ 0.80	$ 179,760.00
Tree - 2 inch Caliper	428	each	$ 300.00	$ 128,400.00
Irrigation System	224,700	sq ft	$ 1.50	$ 337,050.00
			Roadway Subtotal	**$ 2,750,659.17**
			CONSTRUCTION SUBTOTAL	**$ 3,872,659.17**
			Preliminary Engineering (8%)	**$ 310,000.00**
			Construction Engineering (10%)	**$ 388,000.00**
			Utility Contingency (6%)	**$ 233,000.00**
			20% CONTINGENCY	**$ 822,000.00**
			Subtotal	**$ 1,753,000.00**
			TOTAL PROJECT COST	***$ 5,626,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (250 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	227,000.00
Traffic Control	1	Lump	7.0%	$	106,000.00
Survey	1	Lump	7.0%	$	106,000.00
			General Subtotal	**$**	**439,000.00**
Roadway					
HMA - 1/2 Inch	2,686	Ton	$ 85.00	$	228,320.63
Untreated Base Course (Plan Qty)	1,830	cu yd	$ 45.00	$	82,333.33
Granular Borrow (Plan Qty)	5,489	cu yd	$ 30.00	$	164,666.67
Concrete Curb and Gutter Type B1	7,800	ft	$ 25.00	$	195,000.00
Concrete Sidewalk	39,000	sq ft	$ 6.50	$	253,500.00
Turf Sod	42,900	sq ft	$ 0.80	$	34,320.00
Tree - 2 inch Caliper	156	each	$ 350.00	$	54,600.00
Irrigation System	42,900	sq ft	$ 1.50	$	64,350.00
			Roadway Subtotal	**$**	**1,077,090.63**
			CONSTRUCTION SUBTOTAL	**$**	**1,516,090.63**
			Preliminary Engineering (8%)	**$**	**122,000.00**
			Construction Engineering (10%)	**$**	**152,000.00**
			Utility Contingency (6%)	**$**	**91,000.00**
			20% CONTINGENCY	**$**	**322,000.00**
			Subtotal	**$**	**687,000.00**
			TOTAL PROJECT COST	***$***	***2,204,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (640 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price	Total
Roadway Design Items				
General				
Mobilization	1	Lump	15.0%	$ 285,000.00
Traffic Control	1	Lump	7.0%	$ 133,000.00
Survey	1	Lump	7.0%	$ 133,000.00
			General Subtotal	**$ 551,000.00**
Roadway				
HMA - 1/2 Inch	225	Ton	$ 85.00	$ 19,103.75
Untreated Base Course (Plan Qty)	153	cu yd	$ 45.00	$ 6,888.89
Granular Borrow (Plan Qty)	459	cu yd	$ 30.00	$ 13,777.78
Concrete Curb and Gutter Type B1	16,350	ft	$ 25.00	$ 408,750.00
Concrete Sidewalk	54,750	sq ft	$ 6.50	$ 355,875.00
Trail (HMA - 1/2 Inch)	1,541	Ton	$ 90.00	$ 138,656.25
Trail (Untreated Base Course)	2,054	Ton	$ 26.00	$ 53,408.33
Turf Sod	106,275	sq ft	$ 0.80	$ 85,020.00
Tree - 2 inch Caliper	327	each	$ 350.00	$ 114,450.00
Irrigation System	106,275	sq ft	$ 1.50	$ 159,412.50
			Roadway Subtotal	$ 1,355,342.50
			CONSTRUCTION SUBTOTAL	**$ 1,906,342.50**
			Preliminary Engineering (8%)	**$ 153,000.00**
			Construction Engineering (10%)	**$ 191,000.00**
			Utility Contingency (6%)	**$ 115,000.00**
			20% CONTINGENCY	**$ 405,000.00**
			Subtotal	**$ 864,000.00**
			TOTAL PROJECT COST	***$ 2,771,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (800 W/3400 S)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	224,000.00
Traffic Control	1	Lump	7.0%	$	105,000.00
Survey	1	Lump	7.0%	$	105,000.00
			General Subtotal	**$**	**434,000.00**
Roadway					
HMA - 1/2 Inch	1,323	Ton	$ 85.00	$	112,465.63
Untreated Base Course (Plan Qty)	901	cu yd	$ 45.00	$	40,555.56
Granular Borrow (Plan Qty)	2,704	cu yd	$ 30.00	$	81,111.11
Concrete Curb and Gutter Type B1	9,650	ft	$ 25.00	$	241,250.00
Concrete Sidewalk	41,750	sq ft	$ 6.50	$	271,375.00
Trail (HMA - 1/2 Inch)	236	Ton	$ 90.00	$	21,206.25
Trail (Untreated Base Course)	314	Ton	$ 26.00	$	8,168.33
Turf Sod	99,075	sq ft	$ 0.80	$	79,260.00
Tree - 2 inch Caliper	167	each	$ 350.00	$	58,450.00
Irrigation System	99,075	sq ft	$ 1.50	$	148,612.50
			Roadway Subtotal	**$**	**1,062,454.38**
			CONSTRUCTION SUBTOTAL	**$**	**1,496,454.38**
			Preliminary Engineering (8%)	**$**	**120,000.00**
			Construction Engineering (10%)	**$**	**150,000.00**
			Utility Contingency (6%)	**$**	**90,000.00**
			20% CONTINGENCY	**$**	**318,000.00**
			Subtotal	**$**	**678,000.00**
			TOTAL PROJECT COST	***$***	***2,175,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (900/1000 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	524,000.00
Traffic Control	1	Lump	7.0%	$	245,000.00
Survey	1	Lump	7.0%	$	245,000.00
			General Subtotal	**$**	**1,014,000.00**
Roadway					
HMA - 1/2 Inch	3,589	Ton	$ 85.00	$	305,043.75
Untreated Base Course (Plan Qty)	2,444	cu yd	$ 45.00	$	110,000.00
Granular Borrow (Plan Qty)	7,333	cu yd	$ 30.00	$	220,000.00
Concrete Curb and Gutter Type B1	22,630	ft	$ 25.00	$	565,750.00
Concrete Sidewalk	90,000	sq ft	$ 6.50	$	585,000.00
Turf Sod	243,000	sq ft	$ 0.80	$	194,400.00
Tree - 2 inch Caliper	360	each	$ 350.00	$	126,000.00
Irrigation System	243,000	sq ft	$ 1.50	$	364,500.00
			Roadway Subtotal	**$**	**2,470,693.75**
			CONSTRUCTION SUBTOTAL	**$**	**3,484,693.75**
			Preliminary Engineering (8%)	**$**	**279,000.00**
			Construction Engineering (10%)	**$**	**349,000.00**
			Utility Contingency (6%)	**$**	**210,000.00**
			20% CONTINGENCY	**$**	**739,000.00**
			Subtotal	**$**	**1,577,000.00**
			TOTAL PROJECT COST	***$***	***5,062,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (1200 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	589,000.00
Traffic Control	1	Lump	7.0%	$	275,000.00
Survey	1	Lump	7.0%	$	275,000.00
			General Subtotal	**$**	**1,139,000.00**
Roadway					
HMA - 1/2 Inch	1,312	Ton	$ 85.00	$	111,541.25
Untreated Base Course (Plan Qty)	894	cu yd	$ 45.00	$	40,222.22
Granular Borrow (Plan Qty)	2,681	cu yd	$ 30.00	$	80,444.44
Concrete Curb and Gutter Type B1	28,750	ft	$ 25.00	$	718,750.00
Concrete Sidewalk	67,500	sq ft	$ 6.50	$	438,750.00
Trail (HMA - 1/2 Inch)	2,737	Ton	$ 90.00	$	246,318.75
Trail (Untreated Base Course)	3,649	Ton	$ 26.00	$	94,878.33
Turf Sod	400,950	sq ft	$ 0.80	$	320,760.00
Tree - 2 inch Caliper	486	each	$ 300.00	$	145,800.00
Irrigation System	400,950	sq ft	$ 1.50	$	601,425.00
			Roadway Subtotal	**$**	**2,798,890.00**
			CONSTRUCTION SUBTOTAL	**$**	**3,937,890.00**
			Preliminary Engineering (8%)	**$**	**316,000.00**
			Construction Engineering (10%)	**$**	**394,000.00**
			Utility Contingency (6%)	**$**	**237,000.00**
			20% CONTINGENCY	**$**	**835,000.00**
			Subtotal	**$**	**1,782,000.00**
			TOTAL PROJECT COST	***$***	***5,720,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (1500 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	302,000.00
Traffic Control	1	Lump	7.0%	$	141,000.00
Survey	1	Lump	7.0%	$	141,000.00
			General Subtotal	**$**	**584,000.00**
Roadway					
HMA - 1/2 Inch	500	Ton	$ 85.00	$	42,521.25
Untreated Base Course (Plan Qty)	341	cu yd	$ 45.00	$	15,333.33
Granular Borrow (Plan Qty)	1,022	cu yd	$ 30.00	$	30,666.67
Concrete Curb and Gutter Type B1	14,015	ft	$ 25.00	$	350,375.00
Concrete Sidewalk	70,075	sq ft	$ 6.50	$	455,487.50
Turf Sod	189,203	sq ft	$ 0.80	$	151,362.00
Tree - 2 inch Caliper	281	each	$ 350.00	$	98,350.00
Irrigation System	189,203	sq ft	$ 1.50	$	283,803.75
			Roadway Subtotal	**$**	**1,427,899.50**
			CONSTRUCTION SUBTOTAL	**$**	**2,011,899.50**
			Preliminary Engineering (8%)	**$**	**161,000.00**
			Construction Engineering (10%)	**$**	**202,000.00**
			Utility Contingency (6%)	**$**	**121,000.00**
			20% CONTINGENCY	**$**	**427,000.00**
			Subtotal	**$**	**911,000.00**
			TOTAL PROJECT COST	***$***	***2,923,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (1500 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	98,000.00
Traffic Control	1	Lump	7.0%	$	46,000.00
Survey	1	Lump	7.0%	$	46,000.00
			General Subtotal	**$**	**190,000.00**
Roadway					
HMA - 1/2 Inch	966	Ton	$ 85.00	$	82,115.31
Untreated Base Course (Plan Qty)	658	cu yd	$ 45.00	$	29,611.11
Granular Borrow (Plan Qty)	1,974	cu yd	$ 30.00	$	59,222.22
Concrete Curb and Gutter Type B1	2,600	ft	$ 25.00	$	65,000.00
Concrete Sidewalk	13,000	sq ft	$ 6.50	$	84,500.00
Turf Sod	54,600	sq ft	$ 0.80	$	43,680.00
Tree - 2 inch Caliper	52	each	$ 350.00	$	18,200.00
Irrigation System	54,600	sq ft	$ 1.50	$	81,900.00
			Roadway Subtotal	**$**	**464,228.65**
			CONSTRUCTION SUBTOTAL	**$**	**654,228.65**
			Preliminary Engineering (8%)	**$**	**53,000.00**
			Construction Engineering (10%)	**$**	**66,000.00**
			Utility Contingency (6%)	**$**	**40,000.00**
			20% CONTINGENCY	**$**	**139,000.00**
			Subtotal	**$**	**298,000.00**
			TOTAL PROJECT COST	***$***	***953,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (1900 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price	Total
Roadway Design Items				
General				
Mobilization	1	Lump	15.0%	$ 556,000.00
Traffic Control	1	Lump	7.0%	$ 260,000.00
Survey	1	Lump	7.0%	$ 260,000.00
			General Subtotal	**$ 1,076,000.00**
Roadway				
HMA - 1/2 Inch	6,298	Ton	$ 85.00	$ 535,328.67
Untreated Base Course (Plan Qty)	4,290	cu yd	$ 45.00	$ 193,041.67
Granular Borrow (Plan Qty)	12,869	cu yd	$ 30.00	$ 386,083.33
Concrete Curb and Gutter Type B1	16,950	ft	$ 25.00	$ 423,750.00
Concrete Sidewalk	84,750	sq ft	$ 6.50	$ 550,875.00
Turf Sod	186,450	sq ft	$ 0.80	$ 149,160.00
Tree - 2 inch Caliper	339	each	$ 350.00	$ 118,650.00
Irrigation System	186,450	sq ft	$ 1.50	$ 279,675.00
			Roadway Subtotal	**$ 2,636,563.67**
			CONSTRUCTION SUBTOTAL	**$ 3,712,563.67**
			Preliminary Engineering (8%)	**$ 298,000.00**
			Construction Engineering (10%)	**$ 372,000.00**
			Utility Contingency (6%)	**$ 223,000.00**
			20% CONTINGENCY	**$ 788,000.00**
			Subtotal	**$ 1,681,000.00**
			TOTAL PROJECT COST	***$ 5,394,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (HERTIAGE DR)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	373,000.00
Traffic Control	1	Lump	7.0%	$	174,000.00
Survey	1	Lump	7.0%	$	174,000.00
			General Subtotal	**$**	**721,000.00**
Roadway					
HMA - 1/2 Inch	5,229	Ton	$ 85.00	$	444,470.31
Untreated Base Course (Plan Qty)	3,562	cu yd	$ 45.00	$	160,277.78
Granular Borrow (Plan Qty)	10,685	cu yd	$ 30.00	$	320,555.56
Concrete Curb and Gutter Type B1	9,600	ft	$ 25.00	$	240,000.00
Concrete Sidewalk	48,000	sq ft	$ 6.50	$	312,000.00
Turf Sod	113,400	sq ft	$ 0.80	$	90,720.00
Tree - 2 inch Caliper	101	each	$ 350.00	$	35,350.00
Irrigataion System	113,400	sq ft	$ 1.50	$	170,100.00
			Roadway Subtotal	**$**	**1,773,473.65**
			CONSTRUCTION SUBTOTAL	**$**	**2,494,473.65**
			Preliminary Engineering (8%)	**$**	**200,000.00**
			Construction Engineering (10%)	**$**	**250,000.00**
			Utility Contingency (6%)	**$**	**150,000.00**
			20% CONTINGENCY	**$**	**529,000.00**
			Subtotal	**$**	**1,129,000.00**
			TOTAL PROJECT COST	***$***	***3,624,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (2500 W)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	271,000.00
Traffic Control	1	Lump	7.0%	$	127,000.00
Survey	1	Lump	7.0%	$	127,000.00
			General Subtotal	**$**	**525,000.00**
Roadway					
HMA - 1/2 Inch	2,193	Ton	$ 85.00	$	186,415.63
Untreated Base Course (Plan Qty)	1,494	cu yd	$ 45.00	$	67,222.22
Granular Borrow (Plan Qty)	4,481	cu yd	$ 30.00	$	134,444.44
Concrete Curb and Gutter Type B1	11,000	ft	$ 25.00	$	275,000.00
Concrete Sidewalk	55,000	sq ft	$ 6.50	$	357,500.00
Turf Sod	82,500	sq ft	$ 0.80	$	66,000.00
Tree - 2 inch Caliper	220	each	$ 350.00	$	77,000.00
Irrigation Pipe	82,500	sq ft	$ 1.50	$	123,750.00
			Roadway Subtotal	**$**	**1,287,332.29**
			CONSTRUCTION SUBTOTAL	**$**	**1,812,332.29**
			Preliminary Engineering (8%)	**$**	**145,000.00**
			Construction Engineering (10%)	**$**	**182,000.00**
			Utility Contingency (6%)	**$**	**109,000.00**
			20% CONTINGENCY	**$**	**385,000.00**
			Subtotal	**$**	**821,000.00**
			TOTAL PROJECT COST	***$***	***2,634,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (2200 S)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	183,000.00
Traffic Control	1	Lump	7.0%	$	86,000.00
Survey	1	Lump	7.0%	$	86,000.00
			General Subtotal	**$**	**355,000.00**
Roadway					
HMA - 1/2 Inch	324	Ton	$ 85.00	$	27,515.56
Untreated Base Course (Plan Qty)	220	cu yd	$ 45.00	$	9,922.22
Granular Borrow (Plan Qty)	661	cu yd	$ 30.00	$	19,844.44
Concrete Curb and Gutter Type B1	8,765	ft	$ 25.00	$	219,125.00
Concrete Sidewalk	43,825	sq ft	$ 6.50	$	284,862.50
Turf Sod	108,810	sq ft	$ 0.80	$	87,048.00
Tree - 2 inch Caliper	162	each	$ 350.00	$	56,700.00
Irrigation Pipe	108,810	sq ft	$ 1.50	$	163,215.00
			Roadway Subtotal	**$**	**868,232.73**
			CONSTRUCTION SUBTOTAL	**$**	**1,223,232.73**
			Preliminary Engineering (8%)	**$**	**98,000.00**
			Construction Engineering (10%)	**$**	**123,000.00**
			Utility Contingency (6%)	**$**	**74,000.00**
			20% CONTINGENCY	**$**	**260,000.00**
			Subtotal	**$**	**555,000.00**
			TOTAL PROJECT COST	***$***	***1,779,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (2600 S)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price	Total
Roadway Design Items				
General				
Mobilization	1	Lump	15.0%	$ 249,000.00
Traffic Control	1	Lump	7.0%	$ 117,000.00
Survey	1	Lump	7.0%	$ 117,000.00
			General Subtotal	**$ 483,000.00**
Roadway				
HMA - 1/2 Inch	1,513	Ton	$ 85.00	$ 128,642.19
Untreated Base Course (Plan Qty)	1,031	cu yd	$ 45.00	$ 46,388.89
Granular Borrow (Plan Qty)	3,093	cu yd	$ 30.00	$ 92,777.78
Concrete Curb and Gutter Type B1	5,895	ft	$ 25.00	$ 147,375.00
Concrete Curb and Gutter Type B3	8,140	ft	$ 12.00	$ 97,680.00
Concrete Sidewalk	44,975	sq ft	$ 6.50	$ 292,337.50
Trail (HMA - 1/2 Inch)	480	Ton	$ 90.00	$ 43,228.13
Trail (Untreated Base Course)	640	Ton	$ 26.00	$ 16,650.83
Turf Sod	116,950	sq ft	$ 0.80	$ 93,560.00
Tree - 2 inch Caliper	126	each	$ 350.00	$ 44,100.00
Irrigation Pipe	116,950	sq ft	$ 1.50	$ 175,425.00
			Roadway Subtotal	**$ 1,178,165.31**
			CONSTRUCTION SUBTOTAL	**$ 1,661,165.31**
			Preliminary Engineering (8%)	**$ 133,000.00**
			Construction Engineering (10%)	**$ 167,000.00**
			Utility Contingency (6%)	**$ 100,000.00**
			20% CONTINGENCY	**$ 353,000.00**
			Subtotal	**$ 753,000.00**
			TOTAL PROJECT COST	***$ 2,415,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (3200 S)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	483,000.00
Traffic Control	1	Lump	7.0%	$	226,000.00
Survey	1	Lump	7.0%	$	226,000.00
			General Subtotal	**$**	**935,000.00**
Roadway					
HMA - 1/2 Inch	1,363	Ton	$ 85.00	$	115,824.19
Untreated Base Course (Plan Qty)	928	cu yd	$ 45.00	$	41,766.67
Granular Borrow (Plan Qty)	2,784	cu yd	$ 30.00	$	83,533.33
Concrete Curb and Gutter Type B1	24,435	ft	$ 25.00	$	610,875.00
Concrete Sidewalk	61,150	sq ft	$ 6.50	$	397,475.00
Trail (HMA - 1/2 Inch)	2,748	Ton	$ 90.00	$	247,297.50
Trail (Untreated Base Course)	3,664	Ton	$ 26.00	$	95,255.33
Turf Sod	261,915	sq ft	$ 0.80	$	209,532.00
Tree - 2 inch Caliper	276	each	$ 350.00	$	96,600.00
Irrigation Pipe	261,915	sq ft	$ 1.50	$	392,872.50
			Roadway Subtotal	**$**	**2,291,031.52**
			CONSTRUCTION SUBTOTAL	**$**	**3,226,031.52**
			Railroad Crossing Upgrade & 2 Traffic Signals	**$**	**500,000.00**
			Preliminary Engineering (8%)	**$**	**259,000.00**
			Construction Engineering (10%)	**$**	**323,000.00**
			Utility Contingency (6%)	**$**	**194,000.00**
			20% CONTINGENCY	**$**	**685,000.00**
			Subtotal	**$**	**1,961,000.00**
			TOTAL PROJECT COST	***$***	***5,188,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (3650/3700 S)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	668,000.00
Traffic Control	1	Lump	7.0%	$	312,000.00
Survey	1	Lump	7.0%	$	312,000.00
			General Subtotal	**$**	**1,292,000.00**
Roadway					
HMA - 1/2 Inch	3,945	Ton	$ 85.00	$	335,332.44
Untreated Base Course (Plan Qty)	2,687	cu yd	$ 45.00	$	120,922.22
Granular Borrow (Plan Qty)	8,061	cu yd	$ 30.00	$	241,844.44
Concrete Curb and Gutter Type B1	26,110	ft	$ 25.00	$	652,750.00
Concrete Sidewalk	130,550	sq ft	$ 6.50	$	848,575.00
Turf Sod	352,485	sq ft	$ 0.80	$	281,988.00
Tree - 2 inch Caliper	523	each	$ 300.00	$	156,900.00
Irrigation Pipe	352,485	sq ft	$ 1.50	$	528,727.50
			Roadway Subtotal	**$**	**3,167,039.60**
			CONSTRUCTION SUBTOTAL	**$**	**4,459,039.60**
			Railroad Crossing	**$**	**600,000.00**
			Preliminary Engineering (8%)	**$**	**357,000.00**
			Construction Engineering (10%)	**$**	**446,000.00**
			Utility Contingency (6%)	**$**	**268,000.00**
			20% CONTINGENCY	**$**	**946,000.00**
			Subtotal	**$**	**2,617,000.00**
			TOTAL PROJECT COST	***$***	***7,077,000.00***

Programmed Amount

NIBLEY TRANSPORTATION MASTER PLAN (HOLLOW RD)

Cost Estimate

15-Oct-18

Description	Quantity	Unit	Unit Price		Total
Roadway Design Items					
General					
Mobilization	1	Lump	15.0%	$	320,000.00
Traffic Control	1	Lump	7.0%	$	150,000.00
Survey	1	Lump	7.0%	$	150,000.00
			General Subtotal	**$**	**620,000.00**
Roadway					
HMA - 1/2 Inch	0	Ton	$ 85.00	$	-
Untreated Base Course (Plan Qty)	0	cu yd	$ 45.00	$	-
Granular Borrow (Plan Qty)	0	cu yd	$ 30.00	$	-
Concrete Curb and Gutter Type B1	17,140	ft	$ 25.00	$	428,500.00
Concrete Sidewalk	85,700	sq ft	$ 6.50	$	557,050.00
Turf Sod	179,970	sq ft	$ 0.80	$	143,976.00
Tree - 2 inch Caliper	343	each	$ 350.00	$	120,050.00
Irrigation Pipe	179,970	sq ft	$ 1.50	$	269,955.00
			Roadway Subtotal	**$**	**1,519,531.00**
			CONSTRUCTION SUBTOTAL	**$**	**2,139,531.00**
			Preliminary Engineering (8%)	**$**	**172,000.00**
			Construction Engineering (10%)	**$**	**214,000.00**
			Utility Contingency (6%)	**$**	**129,000.00**
			20% CONTINGENCY	**$**	**454,000.00**
			Subtotal	**$**	**969,000.00**
			TOTAL PROJECT COST	***$***	***3,109,000.00***

Programmed Amount