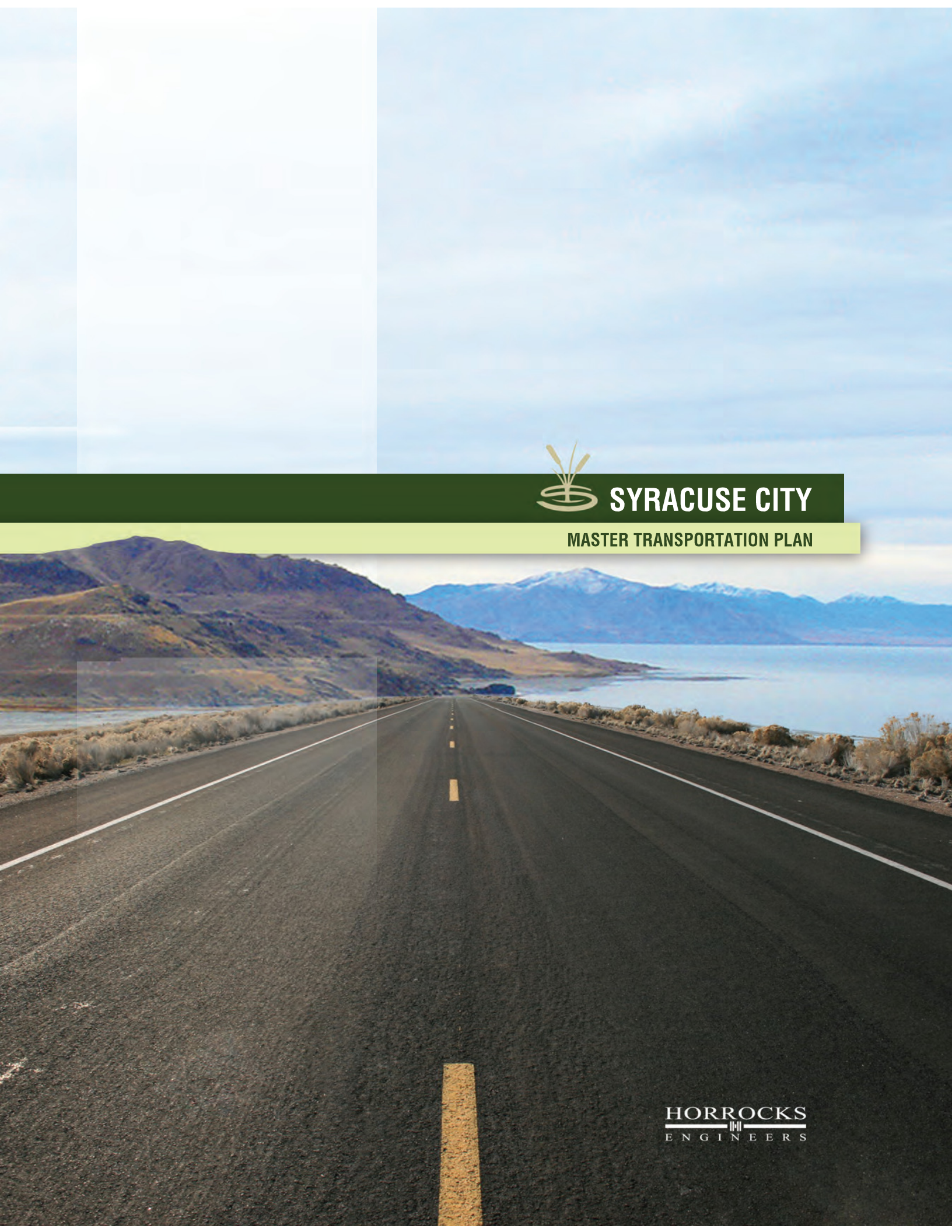
SYRACUSE CITY

MASTER TRANSPORTATION PLAN



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EXECUTIVE SUMMARY

Syracuse City, founded in 1950, has experienced significant growth and development in recent years with growth of approximately 25,000 residents since 1990. With Syracuse City committed to continued growth, it is projected that the population in 2040 will be above 59,000. A Transportation Master Plan (TMP) has been implemented so the transportation system can accommodate the projected growth in the City for the year 2040.

As part of the plan, the current roadway network was assessed using current traffic volumes. Current traffic volumes were projected through the year 2040 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 Syracuse City. The following sections are included in the Syracuse City TMP.

Existing and Future Roadway Network

In order to have an effective transportation system, the city requires a connected street system. A connected system improves traffic congestion, commute times, emergency response times, etc. Roadways share two functions: mobility and land access. These two functions share an inverse relationship, meaning a roadway with high mobility has minimal land access points and a roadway with low mobility has frequent land access points. Roadway classifications are implemented in a connected roadway network to designate the amount of mobility and land access the roadway will have. The following roadway classification is used in Syracuse City: Freeway, Arterial, Minor Arterial, Collector, and Local Street. These classifications range from most mobile and least land access points (Freeway) to least mobile with frequent land access points (Local Street), creating a hierarchy in the roadway system. Intersections are used in the roadway system to allow for the progression from high mobility to low mobility and frequent land access points. Freeways connect with Arterial Streets, which connect with Collector Streets, which connect with Local Streets. Correct use of all roadway functional classifications within the city allows for a successful, connected roadway system.

To measure the performance of a roadway segment, Level of Service (LOS) is used. LOS is defined by the Federal Highway Administration (FHWA) to determine the level of congestion on a roadway segment or intersection. To measure LOS, a letter grade is assigned a letter grade A through F where A represents free flowing traffic and F represents grid lock. LOS is measured on a roadway segment using its daily traffic volume and at an intersection based on the average delay per vehicle. The LOS of a roadway segment or intersection is used to determine if capacity improvements are necessary. In Syracuse City, a standard of LOS C or better was adopted as an acceptable LOS.

As part of the TMP, data was collected for the existing roadway network and a LOS was determined for each roadway segment and intersection. The existing traffic volumes were projected to 2040 using the Wasatch Front Regional Council (WFRC) travel demand model. The WFRC is a collaboration of local government and community members from Salt Lake, Weber, Tooele, Morgan and Box Elder counties in Utah to plan future growth. This model includes West Davis Corridor. Other adjustments to the WFRC

travel demand model were made based on socioeconomic data and the City's land use plan. Projected 2040 traffic was first modeled for the no-build scenario. Typically, the no-build scenario acts as a guide for roadway capacity inefficiencies that will need to be improved by 2040. Using the no-build scenario as a base for roadway capacity improvements, the projected 2040 traffic was modeled using the West Davis Corridor WFRC model. The segments with LOS D or worse with the 2040 projected traffic volumes will undergo capacity improvements to achieve acceptable LOS.

Alternative Modes of Transportation

This TMP discusses alternative modes of transportation. Currently, the transit service in Syracuse City is operated by the Utah Transit Authority (UTA). UTA offers services such as commuter rail, light rail, bus, bus rapid transit (BRT), ski buses, and van share. Currently, transit service in Syracuse City is limited to bus services. The WFRC long range model calls for more transit service in Syracuse City as it continues to develop.

Non-motorized modes of transportation include pedestrians and bicycles. Included in this TMP are discussions for safe pedestrian and bicycle facilities as outlined in the Trails Master Plan published on the City's website at ***www.syracuseut.com***.

Other Elements of the Transportation Master Plan

This section is a discussion of the other elements included in the TMP. There is a discussion describing using a Traffic Impact Study (TIS) prior to development. A TIS assesses the impacts to the roadway system due to new development, which helps the City prepare for the impacts to the roadway network caused by the development. Another discussion included in the TMP is Intelligent Transportation Systems (ITS). ITS refers to the increased use of technology and communication methods to improve traffic operations. Specifically, the use of ITS to improve traffic signal performance. The City's traffic calming requirements are also discussed in this document and can be found on the City's website at ***www.syracuseut.org***. The other elements discussed in this section are Access Management, Travel Demand Management, Safety and Corridor Preservation.

Capital Facilities Plan

A Capital Facilities Plan outlines all improvements necessary to provide Syracuse City with an adequate roadway system in 2040 based on the projected 2040 traffic volumes. This plan is updated by the City as project scopes change and development occurs. As part of the TMP, a Transportation Improvement Plan (TIP) is included that outlines all the projects necessary to accommodate future traffic volumes. It is expected that the total cost of necessary roadway improvements for Syracuse City is approximately **$34,710,000**.

Impact Fee Facilities Plan

Utah law requires that communities prepare an Impact Fee Facilities Plan (IFFP) prior to preparing an impact fee analysis and establishing an impact fee. An impact fee is a fee based on the impact of future development caused to the roadway system. An IFFP includes projects for a 10 year period. By law, all impact fees collected for the roadway improvements during this period of time must be spent within six years of collection. Only capital improvements are included in the IFFP, meaning all other maintenance and operation costs are assumed to be covered through the City's General Fund. All projects included in

the IFFP are listed in this TMP. It is expected that the total cost of necessary roadway improvements for Syracuse City is approximately **$15,030,000**.

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INTRODUCTION

Overview

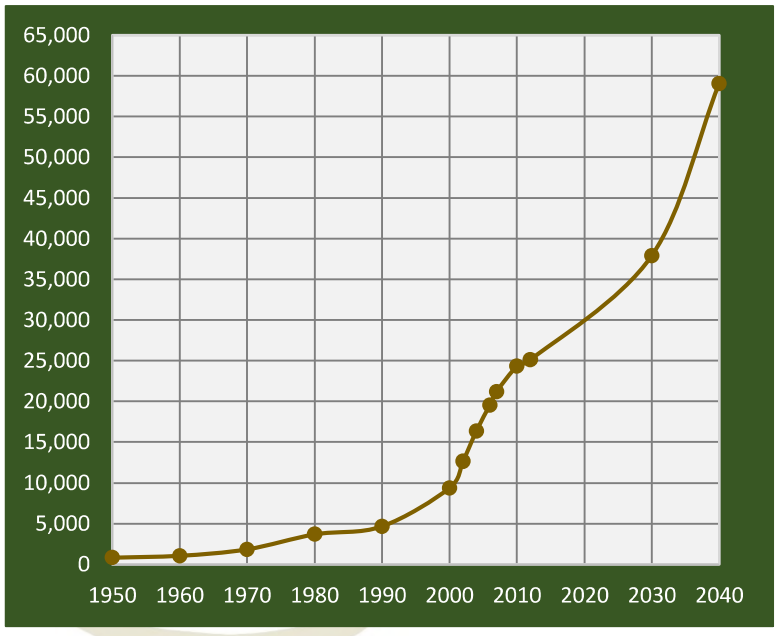
Syracuse City is a rapidly growing community located in the northwestern portion of Davis County. Syracuse is bordered on the north by West Point; on the south by unincorporated Davis County; on the east by Clearfield and Layton; and on the west by the Great Salt Lake. Within the City there is a mix of residential, commercial, and industrial development as well as undeveloped land. Syracuse City provides easy access to local and regional transportation facilities. With a short 15 minute drive to I-15, Syracuse City is located in close proximity to a major freeway facility. A map of Syracuse City and the surrounding area is shown in **Figure 2**.

Syracuse and the surrounding communities have experienced a significant amount of growth and development over the last several years, and this growth is expected to continue in the future, as shown in **Figure 1**. According to the United States Census Bureau, the population of Syracuse was just over 4,500 in 1990. The population in 2007 was 21,158, resulting in an increase of about 370 percent. The population in 2012 was slightly over 25,000. By the year 2040 the population is projected to be close to 60,000 people. **Table 1** shows the existing population numbers from the year 1950 to the projected population year of 2040. In order to keep pace with the projected population growth, a comprehensive transportation plan must be developed and regularly maintained. The purpose of this plan is to incorporate the goals of Syracuse City regarding the transportation systems within their jurisdiction including regional facilities maintained by the Utah Department of Transportation (UDOT), Utah Transit Authority (UTA), Davis County, and all neighboring communities.

Table 1: Population Data

Year	Population
1950	837
1960	1,061
1970	1,843
1980	3,702
1990	4,658
2000	9,398
2002	12,639
2004	16,368
2006	19,562
2007	21,198
2010	24,331
2012	25,118
2030	37,941
2040	59,048

Figure 1: Syracuse City Population Projection



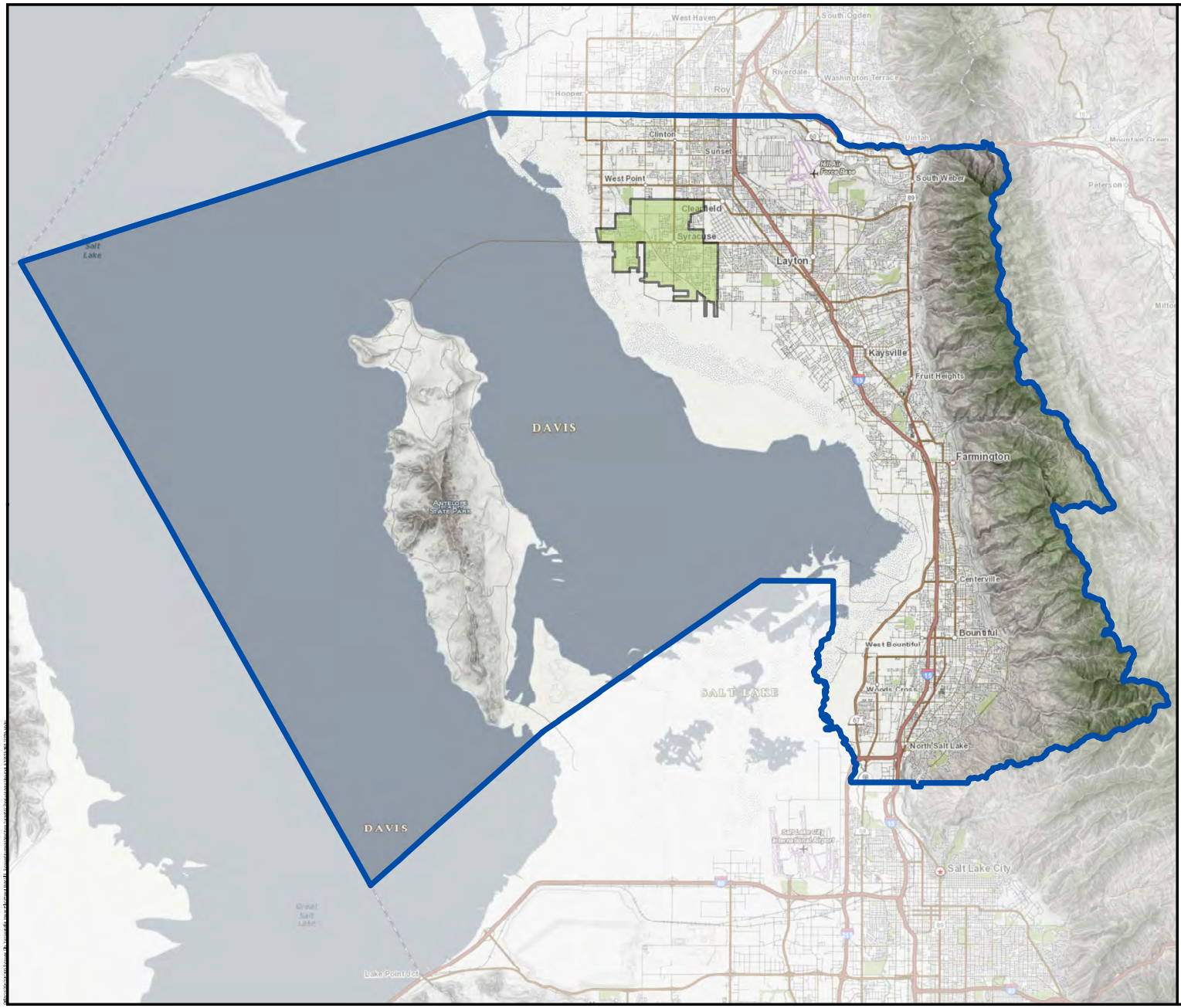


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Figure 2: Syracuse Area Map

Legend

Boundaries

- Davis County
- Syracuse City

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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 2040. Any major UDOT projects and proposed improvements within the City, including the West Davis Corridor, are reflected in this future network. 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 be given to aid Syracuse City in planning for future transportation projects within the City as well as working with other agencies such as UDOT, the Wasatch Front Regional Council (WFRC) or neighboring cities. This TMP is intended to be a useful tool to aid Syracuse City in planning and maintaining the overall transportation network within the City. Utilizing a previously adopted Road Impact Fee Enactment Plan prepared by Horrocks Engineers in 1997, this plan will build from the socioeconomic and roadway information given in the 1997 Plan with additional updates using the most recent and best available data from Syracuse City and the WFRC.

Syracuse History

The Syracuse area became available for settlement through the Homestead Act of 1862. The first settler in the area was David Cook, who began plowing the ground in 1876. In 1884, the Hooper Canal brought water from the Weber River which attracted more settlers to the area. By the year 1896, most of the land was under cultivation. As more settlers began to occupy the area, the land became popular for fruit farming. Artesian wells with cement holding ponds and the Hooper Canal provided irrigation for several hundred acres of apples, pears, peaches and plums. By 1900, the Syracuse area became the largest producer of fruit in Davis County.

William Galbraith, a salt maker in the Syracuse area used the name Syracuse on his salt bags. He acquired the name from a salt company he knew of in Syracuse, New York. Daniel C. Adams also opened the Syracuse Bathing Resort. The Union Pacific Railroad constructed the Ogden and Syracuse Railway in 1887. The name “Syracuse” was subsequently adopted as the name of the City.

Syracuse has always been a farming community. With irrigation, new row crops were introduced such as sugar beets, potatoes, tomatoes and peas. In 1898, the Syracuse Canning Factory opened, allowing canning of new crops and fruit they produced in the City. With irrigation spread throughout the area, Syracuse began to grow, building graveled roads linking Syracuse to nearby communities.

In 1909, permission was given to open a North Davis High School in Syracuse as an extension of an old, red brick school. In 1925, school buses began hauling students to Davis High School after the old high school was closed.

World War II also brought changes; jobs were plentiful, many farmers worked in their farms part-time, taking full-time jobs at Hill Air Force Base or the Naval Supply Depot. One-hundred and twenty Syracuse young men served in the armed forces.

In 1935, Syracuse formed a Town Board with Thomas J. Thurgood as the first Town Board President. On September 13, 1950, Utah Governor J. Bracken Lee signed a proclamation which entitled Syracuse to become a third-class city with a population of 837 residents. Alma O. Stoker was the Board President at the time and became the first mayor of Syracuse. The first city service offered was culinary water. Other

services offered included a garbage pickup service, natural gas, sewer lines, as well as police and fire protection.

Syracuse became linked with Antelope Island State Park in 1969 with the construction of a causeway. The causeway to Antelope Island brought many tourists through the heart of Syracuse. Today, Syracuse is rapidly changing from a farming community to an urban community.

EXISTING ROADWAY NETWORK

A thorough documentation of the City's existing conditions was performed in order to evaluate the transportation system and to address current and future needs within the City. The existing roadway network in Syracuse City is found in **Figure 3**. The data collected for this TMP update includes:

- Key Roadway Traffic Volumes
- Socioeconomic Conditions
- Land Use and Zoning
- Roadway Classifications/Widths/Cross Sections
- Public Transit Routes
- Bicycle/Pedestrian Trails

This data forms the basis for analyzing the existing transportation system, as well as providing the foundation to project future traffic conditions.

Existing Socioeconomic Conditions

Socioeconomic data used in the transportation analysis was obtained from the City and Wasatch Front Regional Council (WFRC). The WFRC is a unified plan for Salt Lake, Davis, Weber, Tooele, Morgan, and Box Elder Counties. The WFRC regional travel demand model was modified to more accurately estimate the travel demand within the City. To estimate for the largest travel demand in Syracuse City, all modeling was completed in line with the West Davis Corridor travel demand model.

Street System

Streets provide for two distinct and very different functions: mobility and land access. Both functions are vital and no trip is made without both. In Syracuse City, street facilities are classified by the relative amounts of through and land-access service they provide. There are four primary classifications, with detailed descriptions in **Table 2**:

Local Streets – *Local facilities primarily serve land-access functions. Local Street design and control facilitates the movement of vehicles onto and off the street system from land parcels. Through movement is difficult and is discouraged by both the design and control of this facility.*

Collectors – *Collector facilities, the "middle" classification, are intended to serve both through and land-access functions in relatively equal proportions. For long through trips, such facilities are usually inefficient, nevertheless they are frequently used for shorter through movements associated with the distribution and collection portion of trips.*

Arterials – *Arterial facilities are provided to primarily serve through-traffic movement. While some land-access service may be accommodated, it is clearly a minor function. All traffic controls and the facility design are intended to provide efficient through movement.*

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

Roadway functional classification does not define the number of lanes required for each roadway. For instance a collector street may have two or four lanes, whereas an arterial street may have up to nine lanes. The number of lanes is a function of the expected traffic volume on the roadway and serves as the greatest measure of roadway capacity.

Table 2: Street Functional Classification

Characteristic	Functional Classification			
	Freeway and Expressway	Arterial	Collector	Local Street
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
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	Approximately 1 Mile	Approximately ½ Mile	Per 8.10.070	Per 8.10.070
Speed Limit	55-75 mph	40-50 mph in fully developed areas	30-40 mph	25 mph
Parking	Prohibited	Discouraged	Limited	Allowed
Comments	Supplements capacity of arterial street system & provides high-speed mobility	Backbone of Street System		Through traffic should be discouraged

Roadway Cross Sections

Syracuse City has currently adopted cross sections that will be used for all future roadway projects. The cross section dimensions are found in the Syracuse Standard Drawings. The updated versions of the standard drawings, adopted February 11, 2014, is included in **Appendix A – Syracuse City Standard Drawings**. The standard drawings are updated periodically and the most current version of the drawings can be found online on Syracuse City's website: ***www.syracuseut.com***. **Table 3** lists the functional classifications along with number of lanes, roadway width, and right-of-way (ROW) width associated with the standard drawings. Each functional Classification is color coded in **Figure 3** based on **Table 3**.

Table 3: Functional Classifications in Syracuse City

Functional Classification	Number of Lanes	Roadway Width (ft.)	ROW Width (Ft.)
Arterial	5	86	110
Minor Arterial	3	61	84
Collector	3	45	66
Local	2	35	60

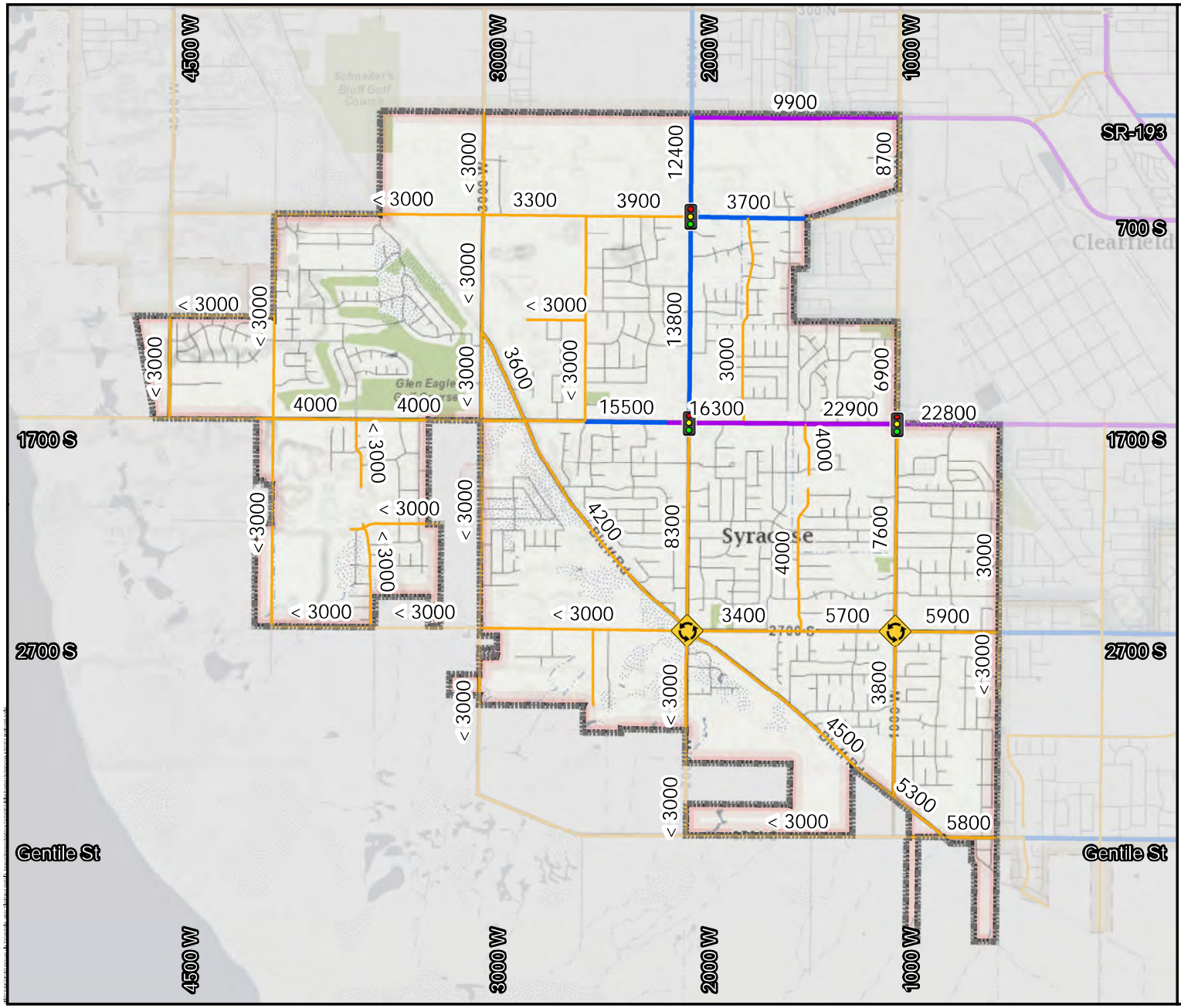

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Figure 3: Existing Roadway Network

Legend

Intersection

- Existing Roundabout
- Existing Signal

Existing Network

- Freeway
- Major Arterial (5 Lanes)
- Minor Arterial (3 Lanes)
- Collector (2 Lanes)
- Syracuse Boundary

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Traffic Volumes and Level of Service

For this TMP, the WFRC travel demand model was used. The WFRC travel demand model compiles all the socioeconomic data from the region and generates trips based on the data. Traffic counts are used in order to calibrate the model to best simulate existing traffic conditions. Using the existing traffic conditions based on the WFRC travel demand model, existing count data, and roadway functional classification, the existing roadway capacity deficiency within the City can be measured using a metric called Level of Service (LOS). The following sections describe the process of collecting traffic volume data and calculating LOS.

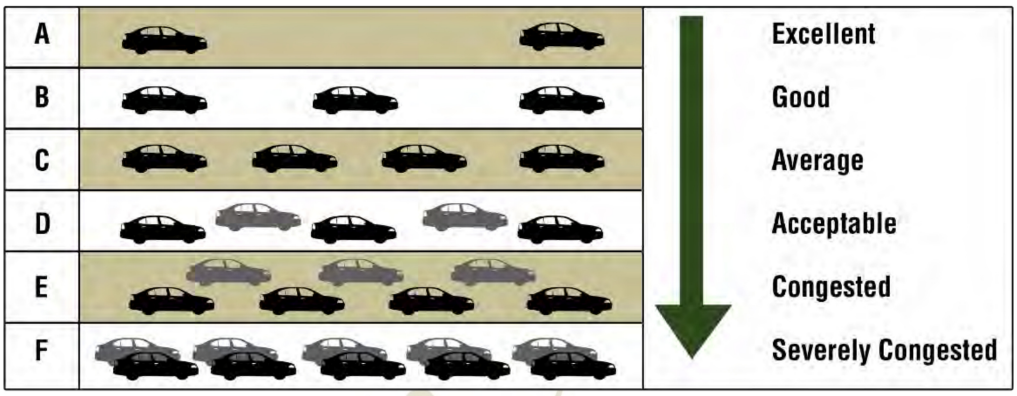
Traffic Volume Data

An extensive data collection effort was performed in conjunction with the TMP. This included collected data from the City, UDOT, and new daily traffic counts on many of the City roads. These volume data form the basis of the travel demand model calibration and serve to show any capacity deficiencies that may exist today. **Figure 5** shows the locations around the City where 24 hour traffic data was collected. The numbers shown are average weekday traffic volumes and refer to a normal day (Tuesday-Thursday) where no special events or construction activity may contribute to abnormal traffic conditions.

Level of Service

Level of Service (LOS) is a term defined by the Federal Highway Administration (FHWA) to determine the level of congestion on a roadway segment or intersection. LOS is measured using a letter grade A through F, where A represents free flowing traffic with absolutely no congestion and F represents grid lock; a comparison chart is shown in **Figure 4**. Syracuse City has adopted an acceptable standard of LOS C for its street network and intersections.

Figure 4: Roadway Level of Service Representation



Roadway segment LOS and intersection LOS differ in the way they are measured. Roadway segment LOS relates directly to the number of lanes in the segment and is determined by a volume/capacity ratio. For example, a roadway LOS F occurs when the number of vehicles traveling on a roadway exceeds the number of vehicles that can be reasonably accommodated by the roadway without undue speed reduction.

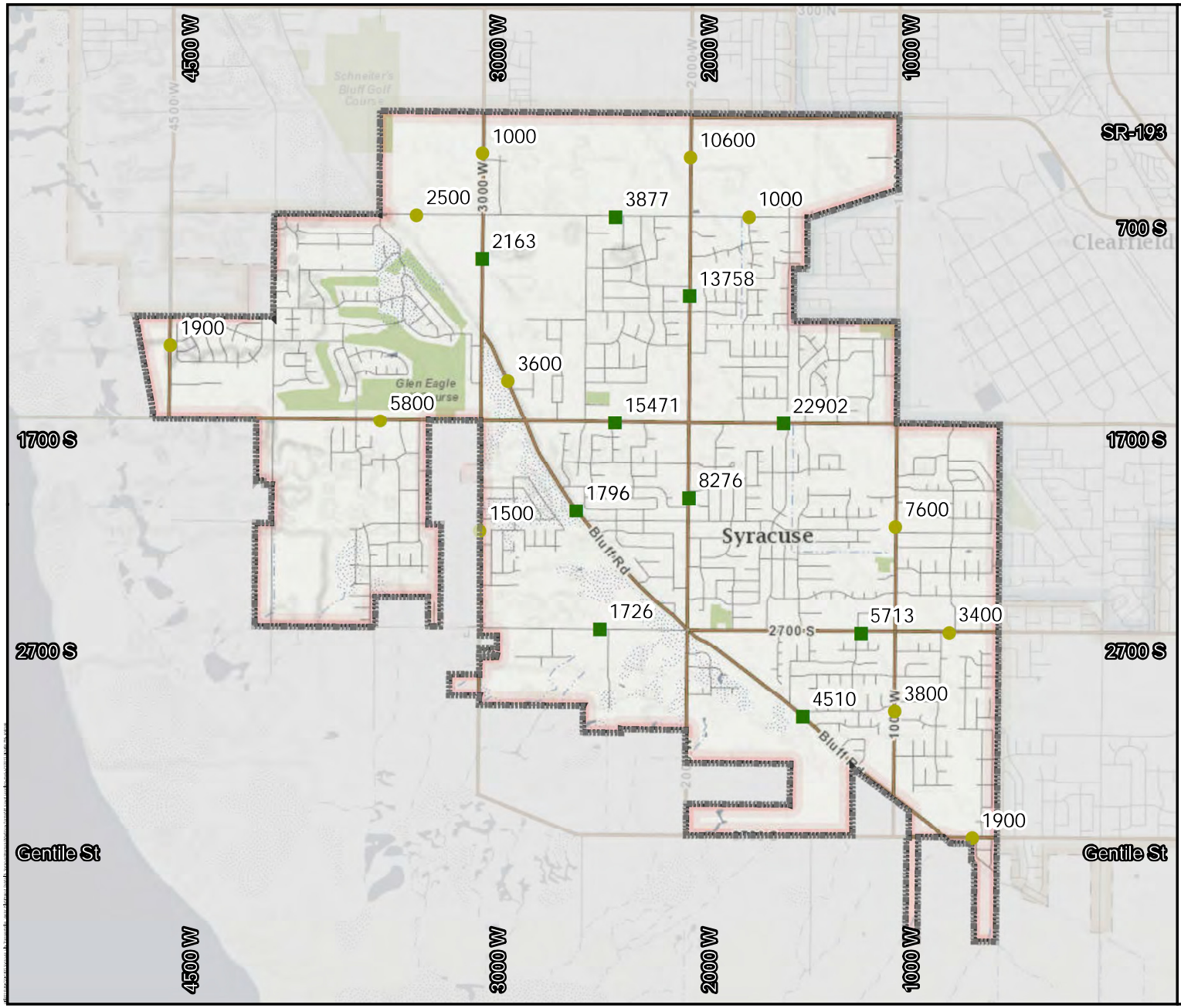


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Figure 5: Count Locations

Legend

Count Source

- UDOT
- Horrocks
- Syracuse Boundary

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For intersections, LOS is related to the length of time the average vehicle will have to wait at a signal before proceeding through the intersection. LOS F is seen where an average vehicle must wait longer than 80 seconds to proceed through a signalized intersection.

Intersection and roadway segment LOS problems must be solved independently as the treatment required to mitigate the congestion is different in each case. Roadway segment LOS can be mitigated with geometry improvements, additional lanes, two-way-left turn lanes, and access management. Intersection problems may be mitigated by adding turn lanes, improving signal timing, and improving corridor signal coordination.

Roadway LOS is used as a planning tool to quantitatively represent the ability of a particular roadway to accommodate the travel demand. Table 4, Table 5, and Table 6 summarize major roadway LOS conditions within the City. These values are based on the Highway Capacity Manual (HCM) principles and regional experience.

Table 4: Suburban Freeway LOS Capacity Criteria in Vehicles per Day

Lanes	LOS C	LOS D	LOS E
4	60,000	70,000	89,000
6	95,000	110,000	140,000

Table 5: Suburban Arterial LOS Capacity Criteria in Vehicles per Day

Lanes	LOS C	LOS D	LOS E
3	11,500	13,000	16,500
5	26,500	30,500	39,000
7	40,000	46,000	59,000

Table 6: Suburban Collector LOS Capacity Criteria in Vehicles per Day

Lanes	LOS C	LOS D	LOS E
2	9,700	12,100	14,500
3	10,800	13,400	16,100

LOS C is approximately 70 percent of a roadway's capacity and is a common goal for urban streets during peak hours. A standard LOS C for system streets (collectors and arterials) is acceptable for future planning. LOS C suggests that for most times of the day, the roadways will be operating well below capacity. The peak times of day will likely experience moderate congestion characterized by a higher vehicle density and slower free flowing speeds.

From Table 4, Table 5, and Table 6, roadway capacity decreases as ease of access increases. Collector roads, designed for lower speeds and easy access, have lower capacities than freeways where ease of access is limited. Capacity also depends on the number of lanes. An additional lane increases the roadway capacity based on the functional class of the roadway. For example, the additional daily capacity per lane for collector roads (1,300) is significantly less than an additional freeway lane (40,000).

Existing traffic volumes along with the parameters in **Table 4**, **Table 5** and **Table 6** were used to determine the LOS for each roadway segment in Syracuse City, as shown in **Figure 6**. The following roadway segments are currently experiencing unacceptable levels of service:

- **2000 West:** *700 South to 1700 South*
- **1700 South:** *2000 West to 3500 South*

FUTURE ROADWAY NETWORK

Future traffic patterns and the resulting operating conditions of a roadway network are directly related to land use planning and socioeconomic conditions. As traffic is not restricted to the Syracuse area and many of the roadways within the city act as regional roads linking communities north and south of the City, the socioeconomic and land use data in the neighboring cities must also be considered when projecting future traffic conditions within the City. Thus, socioeconomic information for the entire Wasatch Front was used to project future travel demand.

Future Socioeconomic Conditions

The majority of the projected socioeconomic data used in this study comes from the WFRC travel demand model, which is based on the best available statewide data provided by the Governor's Office of Planning and Budget (GOPB). This data was supplemented and verified using the data provided by the City in the form of the adopted Land Use Plan (see **Figure 7**). The information given is considered the best available for predicting future travel demand. 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 particularly when it comes to localized intersections and roadways.

Transportation planning in the region is a cooperative effort of state and local agencies. The WFRC is responsible for coordinating this transportation planning process in the Salt Lake and Ogden/Layton 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 (WFRC or Regional Council) as the Metropolitan Planning Organization for the Salt Lake and Ogden Areas in 1973.

Future Land Use

In the Land Use Plan, the City has sites planned for general commercial and commercial II; very high, high, medium, low, and very low density housing; professional office and research park; as well as public facilities, parks and open land, agriculture open space, sensitive overlay, and industrial facilities. **Figure 7** shows the latest General Plan (updated November 26, 2013) for Syracuse City; with the most current version found at ***www.syracuseut.com***.

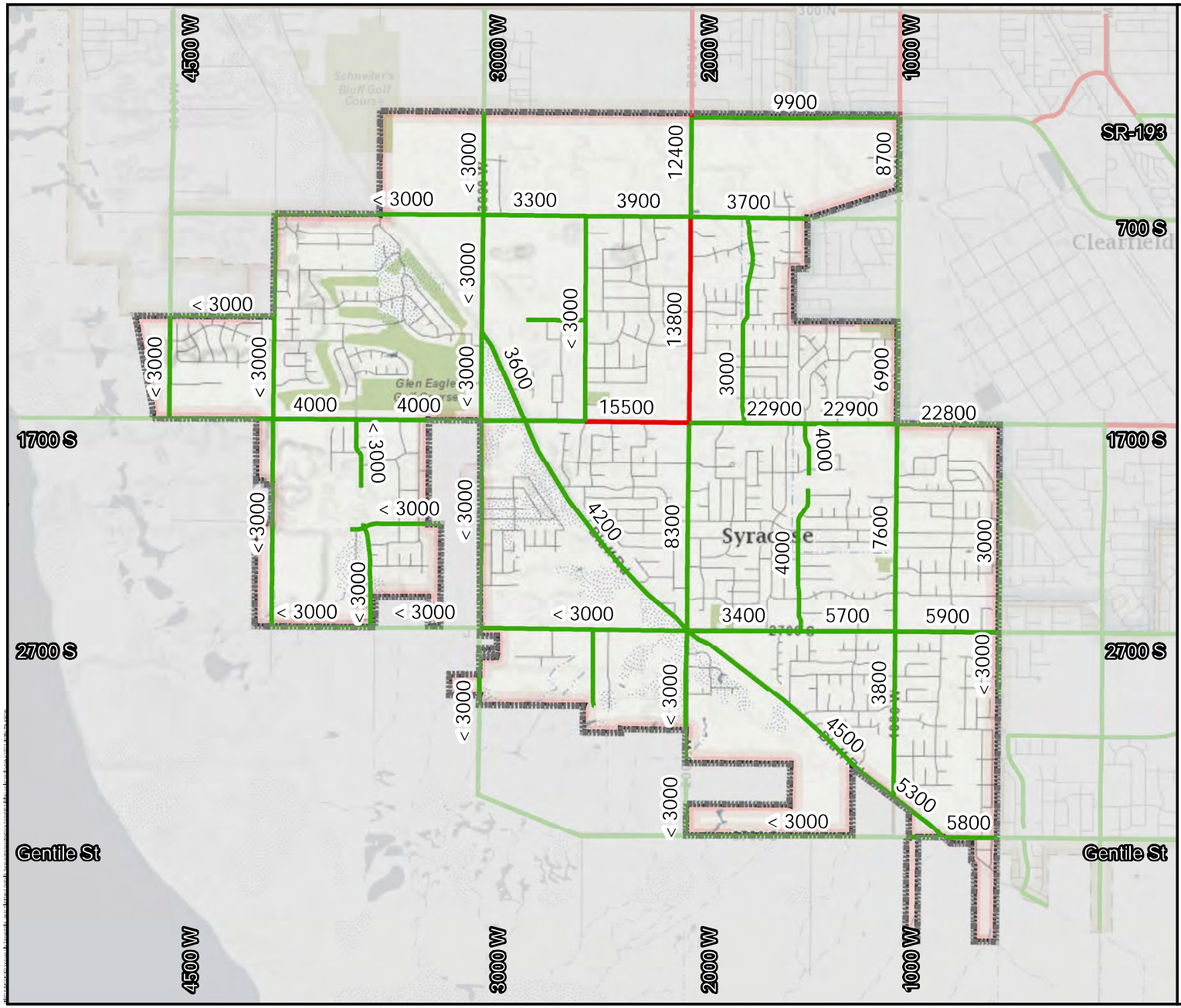

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Figure 6: Existing Level of Service

Legend

Existing Level of Service

- Acceptable (LOS C or Better)
- Unacceptable (LOS D or Worse)
- Syracuse Boundary

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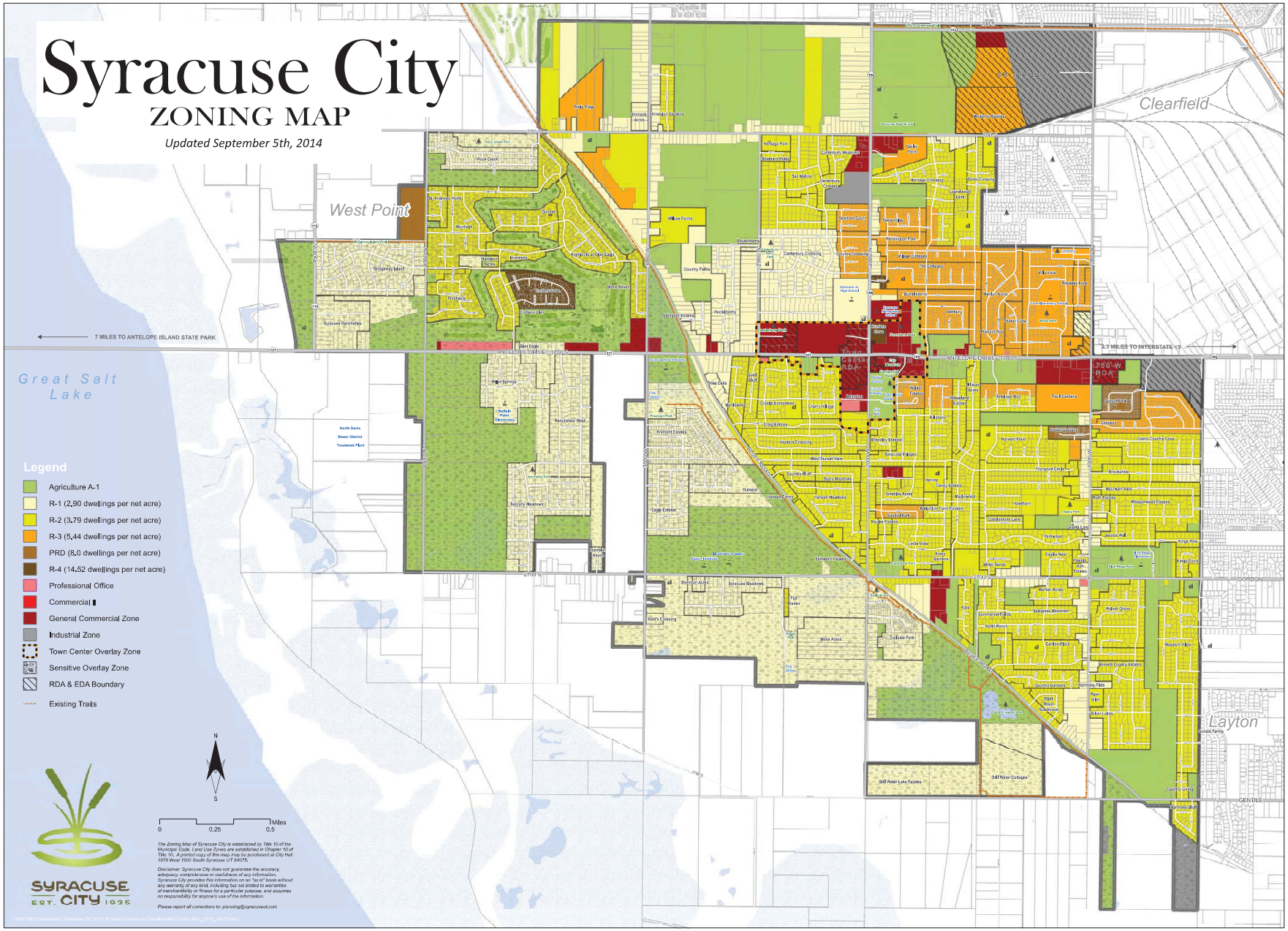
Syracuse City

ZONING MAP

Updated September 5th, 2014



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The Zoning Map of Syracuse City is established by Title 10 of the Municipal Code. Land Use Zones are established in Chapter 10 of Title 10. A printed copy of this map may be purchased at City Hall: 1979 West 1900 South Syracuse UT 84075.

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Please report all corrections to: planning@syracuseut.com

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Travel Model Development

Future traffic volumes were projected using the Wasatch Front Regional Travel Demand Model. This tool has been used for many years to determine regional travel demand along the entire Wasatch Front. The projected traffic volumes were used to identify areas in the City where new roads will be required and where existing facilities should be improved to provide more capacity. A horizon year of 2040 was selected for planning purposes to align with WFRC long range planning. The traffic projections include the addition of the West Davis Corridor (WDC).

No Build Network

A no-build scenario is intended to show what the roadway network would be like in the future if no action was taken to improve the City roadway network. Typically, the no-build scenario acts as a guide for roadway capacity inefficiencies that will need to be improved by 2040. With the West Davis Corridor alignment passing through Syracuse City, the no-build scenario as well as development around the WDC alignment was used as a basis for roadway capacity improvements for 2040.

For Syracuse City, The WFRC Travel Demand Model was used to predict this condition by applying the future growth and travel demand to the existing roadway network. Applying the projected traffic volumes to the no-build scenario, all roadways are expected to increase in traffic volume with an additional section of 1700 South performing at an unacceptable LOS when comparing to the existing LOS model as shown in **Figure 8**. The following roadways will perform at an unacceptable LOS in the 2040 no -build scenario:

- **2000 West:** *Northern Border to 2700 South*
- **1700 South:** *Eastern Border to 1500 West; 2000 West to 2500 West*

2040 Roadway Network

The goal of the TMP is to provide a transportation network which will accommodate traffic at an acceptable LOS through the year 2040. In order to accomplish this, several roadways and intersections in the City will need to be improved. The proposed 2040 roadway network and LOS are shown in **Figure 9** and **Figure 10**, respectively. The following sections describe other aspects of the proposed network including connectivity, jurisdiction, and capacity improvements.

Connectivity

Syracuse City requires a connected street system for all new developments, minimizing the use of cul-de-sacs. Infill parcels will be required to provide future street stubs to adjacent parcels with the potential for development. Retail and office development must provide cross access easements to create circulation patterns to adjacent properties, to eliminate multiple access points to the major street system. Consequently, this will reduce travel time and congestion by allowing drivers to make shorter and more direct trips. In addition, connectivity will allow the option of walking or bicycling, due to shorter routes to schools, parks and businesses. Emergency vehicles including police, fire trucks, and ambulances will similarly benefit from connectivity, by use of alternate routes if one is blocked. Overall fuel consumption and pollution will also result by shortening trips through connectivity.

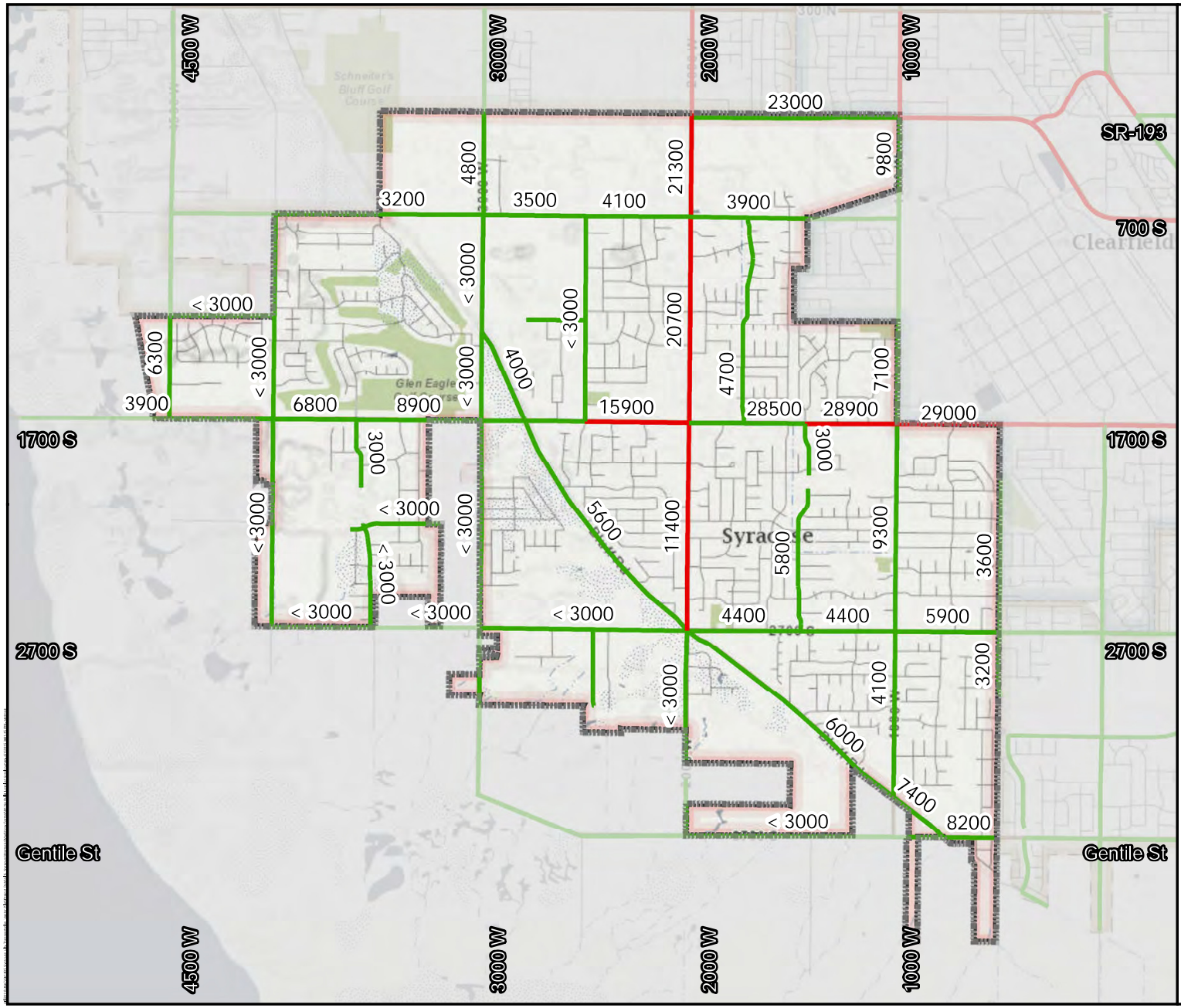

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Figure 8: 2040 No Build Level of Service

Legend

No Build Level of Service

- Acceptable (LOS C or Better)
- Unacceptable (LOS D or Worse)
- Syracuse Boundary

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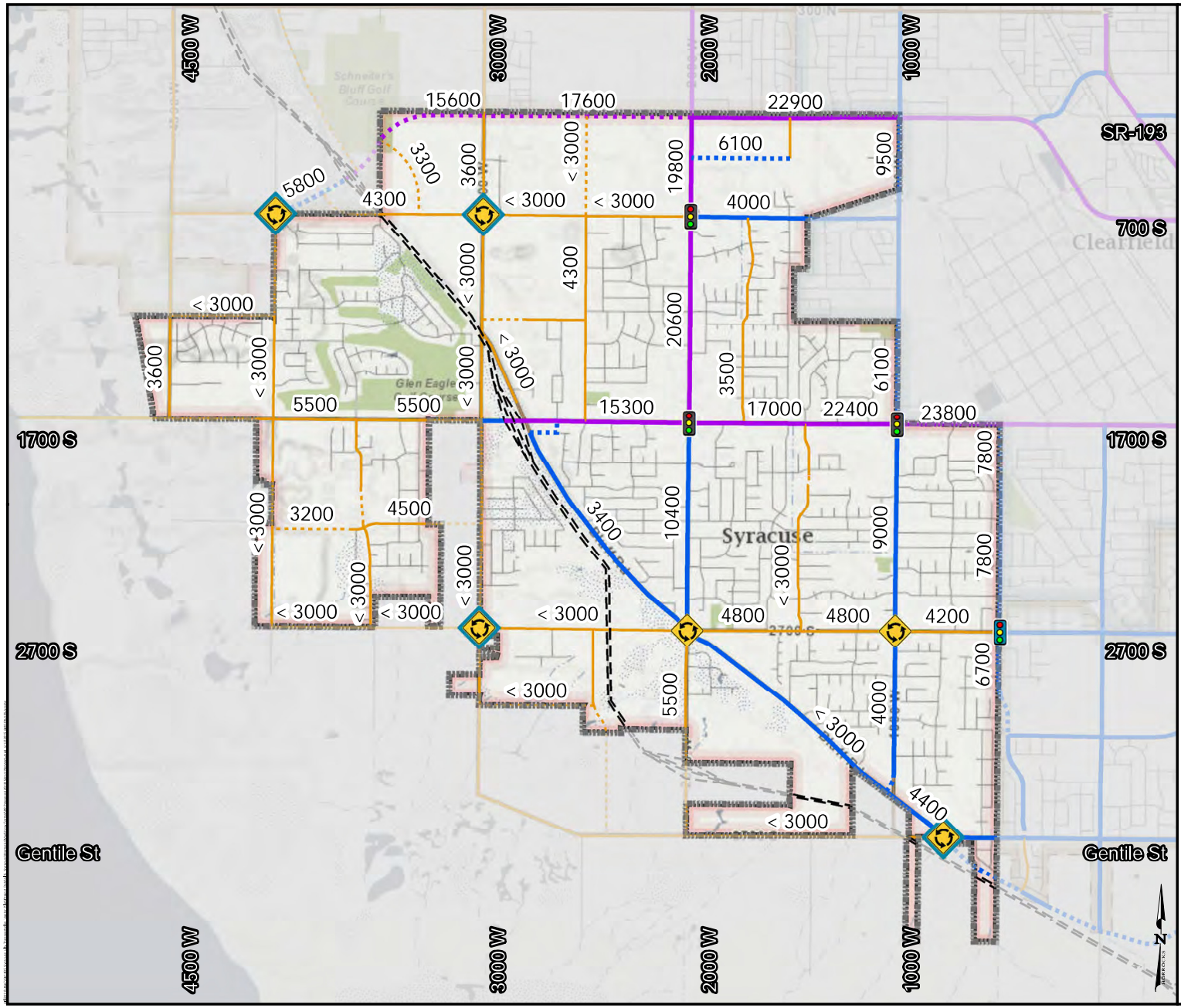

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Figure 9: Proposed 2040 Street Network

Legend

Intersection

- Existing Roundabout
- Future Roundabout
- Existing Signal
- Future Signal

Future Roadway Network

- Freeway
- New Freeway
- Major Arterial (5 Lanes)
- New Major Arterial (5 Lanes)
- Minor Arterial (3 Lanes)
- New Minor Arterial (3 Lanes)
- Minor Collector (2 Lanes)
- New Minor Collector (2 Lanes)
- Syracuse Boundary

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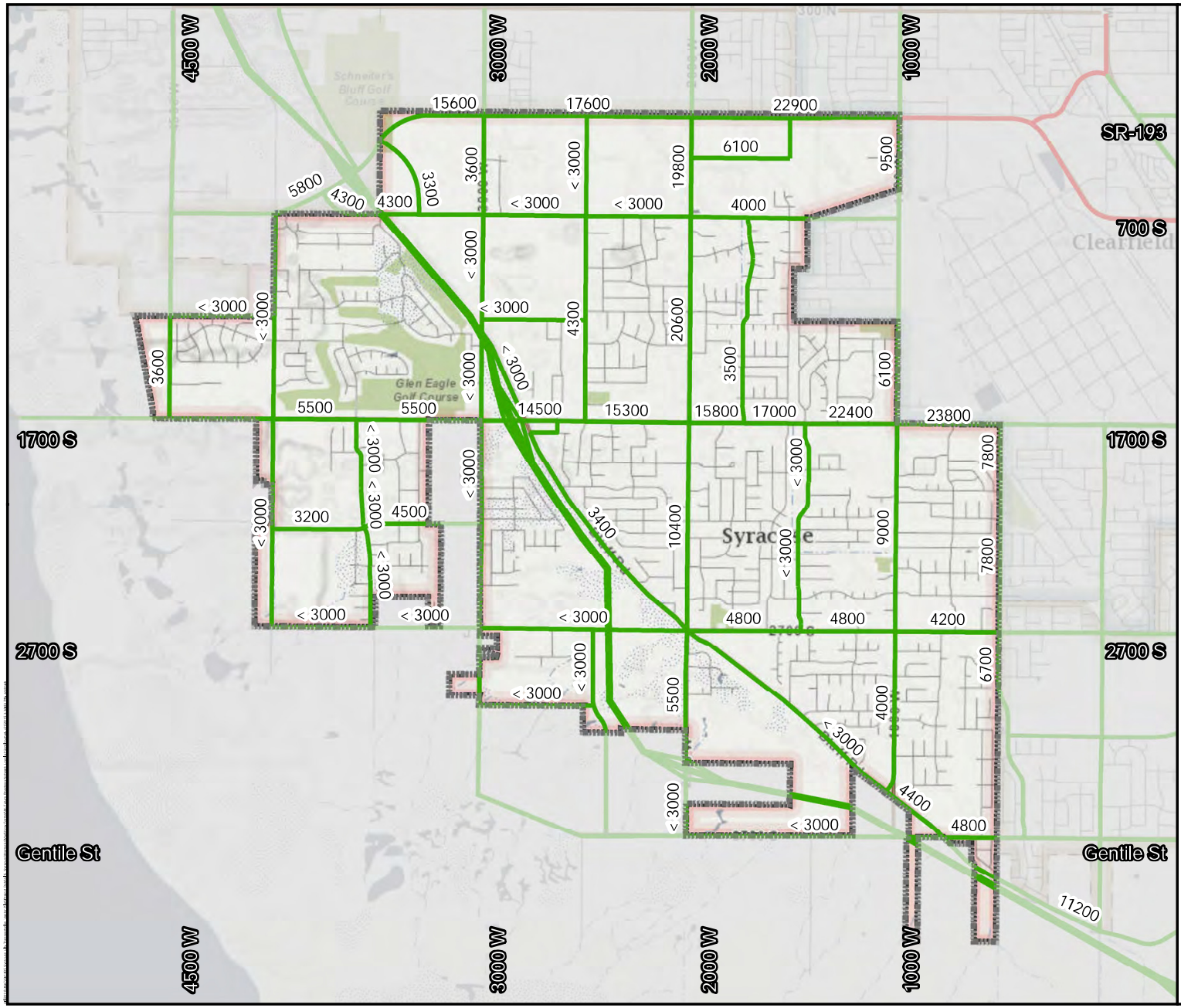
HORROCKS ENGINEERS

0.5 0 0.5 Miles



SYRACUSE EST. CITY 1935

Master Transportation Plan

Figure 10: Proposed 2040 Street Network Level of Service

Legend

Future Level of Service

- Acceptable (LOS C or Better)
- Unacceptable (LOS D or Worse)
- Syracuse Boundary

N

HORROCKS ENGINEERS

0.5 0 0.5 Miles

Street Jurisdiction

Syracuse City does not have financial responsibility for roadway improvements on UDOT roads. This means that the City has no control whether or not UDOT implements the improvements indicated on this TMP. Furthermore, the WFRC awards funding opportunities every year for projects in Salt Lake, Davis, Weber, Tooele, Morgan and Box Elder Counties. Only projects on the UDOT Functional Classification map that are not UDOT owned are eligible for WFRC funding. According to the UDOT Functional Classification map, many of the roadways in the City are eligible for WFRC funding.

Although it is not guaranteed UDOT will update the roadways or receive funding from the WFRC for projects included in this TMP, it will encourage UDOT and the WFRC to include these projects in their long range planning. **Figure 11** shows the UDOT, WFRC and City roadways. A list of the UDOT owned and WFRC eligible roadways in Syracuse City are shown below:

UDOT Owned Roadways

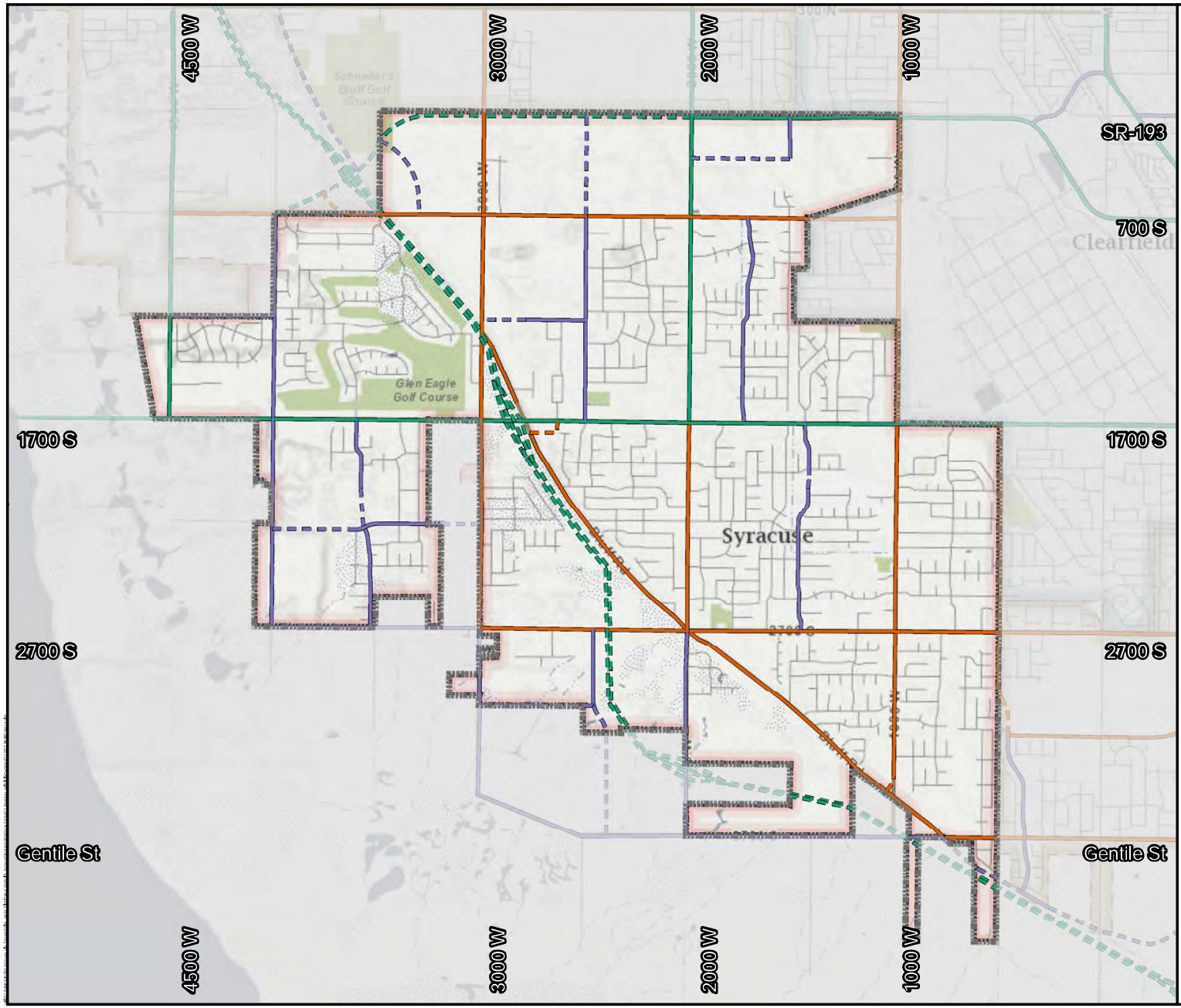
- **1700 South (SR-127):** *Eastern Boarder to Western Border*
- **4500 West (SR-110):** *1700 South to Northern Border*
- **2000 West (SR-108):** *1700 South to Northern Border*
- **SR-193:** *Eastern Border to 2000 West (4000 West by 2040)*

Roadways Eligible for WFRC Funding

- **1000 West:** *Bluff Street to Northern Border*
- **3000 West:** *2700 South to Northern Border*
- **Bluff Street:** *Gentile Road to 3000 West*
- **2700 South:** *Eastern Border to 3000 West*
- **700 South:** *Eastern Border to 4500 West*

Roadway Capacity Improvements

New roadways will be built to provide connectivity and service new development, specifically in the areas surrounding West Davis Corridor. These roadways are indicated with a dashed line in **Figure 9**. For existing roadways, more lanes are needed on roadways where capacity improvements are necessary. Capacity improvements do not always require cross-section widening, although this is often the case. Other methods to improve capacity are to stripe additional lanes where existing pavement width can accommodate, eliminate on street parking, create narrower travel lanes, and add two-way left turn lanes. UDOT roads are included in the analysis and care has been taken to refer to the planning efforts of WFRC to align Syracuse's plan with other regional plans. The following paragraphs outline some of the highlights of the proposed street network.



SYRACUSE EST. CITY 1935

Master Transportation Plan

Figure 11: Roadway Jurisdictions

Legend

Jurisdiction

- UDOT - Existing
- UDOT - New
- WFRC - Existing
- WFRC - New
- City - Existing
- City - New
- Syracuse Boundary

N

HORROCKS

HORROCKS ENGINEERS

0.5 0 0.5 Miles

West Davis Corridor – *The West Davis Corridor is a proposed freeway that will alleviate future traffic congestion. Currently, it is proposed to have two interchanges in Syracuse at 2000 West and 1700 South. Another interchange is in close proximity to Syracuse City at SR-193 in West Point City.*

1700 South: 2000 West to West Davis Corridor – *Currently, 1700 South is a 5 Lane Arterial from the eastern border of the City to 2000 West. With the addition of the West Davis Corridor, this roadway will need to be widened to a 5 lane arterial to the interchange.*

2000 West: Northern Border to 2700 South – *Traffic volumes in 2040 will exceed capacity on 2000 West. From the northern border to 1700 South, the current 3 lane arterial roadway will need to be widened to 5 lanes and the current 2 lane collector from 1700 South to 2700 South will need to be widened to a 3 lane arterial.*

SR-193 Extension to West Davis Corridor – *With the addition of the West Davis Corridor, SR-193 will be extended to accommodate traffic from the future interchange in West Point City. SR-193 runs along the northern border of the City.*

Bluff Street Connection with Layton Parkway – *Layton Parkway is an arterial with access to I-15 in Layton City. By 2040, Layton City is planning to extend Layton Parkway to 2700 West. In corporation with Layton City, Syracuse will fund 100% of the project that connects Bluff Street to Layton Parkway. The agreement can be found in* **Appendix B – Layton Parkway Connection Agreement.**

Intersection Improvements

Any type of potential intersection improvement, including additional turn lanes on existing roadways, traffic signals, roundabouts, and geometrical improvements will be considered. The City of Syracuse must approve the recommended improvements on city streets prior to creating any specific improvements. This plan indicates the places where intersection improvements may be made but does not specify the type of improvement. Multiple options will likely be feasible at each location and each location should be studied and analyzed individually. Right-of-Way requirements and widening will depend on the type of treatment selected for each intersection. **Figure 9** shows the only potential intersection improvement as a roundabout at 3000 West and 700 South. As a part of this TMP, all types of intersection improvements, such as traffic signals, roundabouts, and stop-controlled intersections will be discussed.

Traffic Signals as Intersection Improvements

Traffic signals may be warranted at the intersection of any two roadways depending upon the signal warrants outlined in the Manual on Uniform Traffic Control Devices (MUTCD). The design of the traffic signal depends primarily on the amount of traffic passing through the intersection during the peak times of day. Design parameters that are essential to a well-designed signalized intersection include lane configuration, turn radii, turn pocket lengths and taper lengths. Each of these parameters are a function of the road classification, peak hour volume, and design speed. Traffic signals in Syracuse City are only considered at intersections along arterial roadways. All arterials in the City are UDOT owned and maintained, as a result UDOT is responsible to improve all intersections in Syracuse City. The following section discusses the guidelines for installing new traffic signals.

Traffic Signal Warrants in the Manual on Uniform Traffic Control Devices

The need for new traffic signals will be based on warrants contained in the Manual on Uniform Traffic Control Devices (MUTCD) and any additional warrants established by the National Committee on Uniform Traffic Control Devices. Traffic progression is important in determining the location of a new signal. Generally, a minimum spacing of one-half mile for all signalized intersections should be maintained. The one-half mile spacing is usually desirable to achieve decent speed, capacity, and optimum signal progression. The one-half mile signal spacing standard may be relaxed on lower volume collector streets where an engineering study shows traffic progression can be maintained. The signal cycle split assumptions must consider pedestrian movements and clearance. To provide flexibility for existing conditions and ensure optimum two-way signal progression, an approved traffic engineering analysis must be made to properly locate all proposed access points that may require signalization. The section of roadway to be analyzed for signal progression will be determined by the City and will include all existing and future signalized intersections.

A traffic control signal should only be installed if and when the warrant criteria outlined in Chapter 4C of the MUTCD are met. It is possible to predict where traffic control signals may be warranted in the future based on projected traffic volumes and roadway functional classifications. A traffic control signal may be warranted at intersections containing at least one arterial and one collector street. They are rarely warranted where two collector streets meet and almost never warranted where local streets connect. Traffic signals are typically not warranted when other traffic control devices such as modern roundabouts or mini-roundabouts are recommended.

Signal Timing

Although **Figure 9** does not show any traffic signal improvements for 2040, it does not eliminate other mitigation methods to improve the LOS at a traffic signal. One method that will need to be maintained regularly is traffic signal timing. As traffic volumes continue to increase, the signal timing can be improved to optimize the performance of the traffic signal. Since all signals in Syracuse City are UDOT owned and operated, coordination with UDOT is essential to assure that all traffic signal timing is updated regularly to maintain adequate traffic flow.

Queuing Analysis

A 95th percentile (using Poisson's distribution) queue length will be used as the basis of storage length design and verification of the adequacy of existing storage lengths. Alternative methodologies, such as Synchro 95th percentile length calculations may be used with city approval. At signalized intersections, a background cycle length of 120 seconds will be assumed. Green times for specific movements will be based on the movement's proportion of the critical lane volume, subject to phase minimums. Minimum greens will be assumed to be 10 seconds for through movements and 4 seconds for left turns. Yellow change and red clearance intervals will be assumed to be 3 seconds and 1 second, respectively, for left turn movements and 4 seconds and 1 second, respectively, for through movements. For lane groups that have multiple lanes, a lane utilization factor, in accordance with the HCM methodology, shall be applied to the calculation of queue lengths.

Deceleration Lanes for Right Turning Vehicles

A right turn deceleration lane is required when any one or more of the following criteria is met:

- *Where the design hour volume of the right turn into the access is less than five and the outside lane volume exceeds 250 on 45 to 55 mph roadways, 400 on 35 to 40 mph roadways, or 600 on a 25 to 30 mph roadway, a right turn lane may be required due to high traffic volumes or other unique site specific safety considerations.*
- *When the access volume meets or exceeds 25 design hour volume for roadways with speeds of 25 to 40 mph or 20 design hour volume for roadways with speeds in excess of 40 mph, a right turn deceleration lane will be required.*

Roundabouts as Intersection Improvements

(Reference: "Roundabouts: An Informational Guide", U.S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-RD-00-067). According to FHWA, many international studies have found that one of the most significant benefits of a roundabout installation is the improvement in overall safety performance. Specifically in the United States, it has been found that single-lane roundabouts are safer for drivers than two-way stop-controlled intersections. The frequency of crashes might not always be lowered at roundabouts, but the injury rates and severity of crashes are reduced. On a planning level, it can be assumed that roundabouts will provide higher capacity and lower delays than all-way stop control, but less than two-way stop control if the minor movements are not experiencing operational problems. A single-lane roundabout may be assumed to operate within its capacity at any intersection that does not exceed peak-hour volumes warranted for signals. A roundabout that operates within its capacity will generally produce lower delays than a signalized intersection operating with the same traffic volumes and right-of-way limitations.

Mini-roundabouts are a type of roundabout characterized by a small diameter and traversable islands (central island and splitter islands). Mini-roundabouts offer most of the benefits of regular roundabouts with the added benefit of a smaller footprint. As with roundabouts, mini-roundabouts are a type of intersection rather than merely a traffic calming measure, although they may produce some traffic calming effects. According to the published Federal Highway Administration (FHWA) technical summary (FHWA-SA-10-007), there are three applications for mini roundabouts:

- **Space Constrained locations with reasonable approach speeds (30 mph or less):** *Since mini-roundabouts require less space than larger roundabouts, they may be a solution when a larger roundabout does not fit, provided that incoming speeds are reasonable*
- **Residential environments:** *Mini-roundabouts offer a low-speed, low-noise intersection option that requires little ongoing maintenance*
- **Intersections with high delay:** *A mini-roundabout can be an ideal application to reduce delay at stop-controlled intersections that do not meet signal warrants*

Mini-roundabouts are common in the United Kingdom (U.K.) and France and are emerging in the United States (including states such as Maryland and Michigan), Germany, and other countries. Syracuse City will consider the application of mini-roundabouts in the future according to the guidelines given by the FHWA.

Stop-Control as Intersection Improvements

Wherever possible the City is encouraged to use roundabouts to control traffic on low to medium volume roadways. In cases where this is not feasible due to financial restraints or sight distance concerns, stop-control may be an appropriate intersection treatment. 4-way stop control should be avoided on collector

streets and prohibited on arterial streets where possible. In all cases stop controlled intersections should follow the guidelines and warrants set forth in the MUTCD.

ALTERNATIVE TRANSPORTATION MODES

Alternative transportation modes are an important part of the overall transportation system. A complete transit system may include bus, bus rapid transit (BRT), light rail, commuter rail, and van share facilities. Non-motorized traffic includes pedestrians, bicyclists, hikers, horseback riders, and joggers/walkers. These modes of transportation are very important and should be accommodated in a vibrant and sustainable transportation system.

Transit

The Utah Transit Authority (UTA) is the provider of public transportation throughout the Wasatch Front. It operates fixed route buses, express buses, Bus Rapid Transit (BRT) lines, ski buses, light rail, and commuter rail. In this capacity, UTA is responsible for the operation of the transit network in the city of Syracuse. It is the responsibility of the City and UTA to work cooperatively to provide transit planning to accommodate alternative transportation options to its residents as demand increases.

Existing Transit Service

Currently, Route 626 is the only bus route that services Syracuse City. This route originates at the Weber State Davis Campus in Clearfield, UT and ends at 5500 South and 3500 West in Hooper, UT. There are no other types of transit serving the City at this time.

Future Transit Service

The combined efforts of UTA, UDOT, WFRC, and the City will largely dictate the nature of a future expanded transit system. The City should be actively involved in supporting transit as a viable and attractive alternative transportation mode in the City. These planning and lobbying efforts will assist in procuring the necessary funding and support to develop, implement, and maintain a sustainable transit system. The UTA bus system is versatile, as routes and stops can be adjusted as the demand and other factors occur.

Local Bus Routes

In **Figure 12**, the WFRC's Long Range Plan calls for enhanced bus service on 1700 South in Syracuse City. There are many opportunities for transit service enhancements in Syracuse. As new roads are built and the population expands, it will be necessary for UTA to provide service to these new corridors.

It is recommended that more frequent and additional bus routes be considered and that the City meet with UTA to decide bus stop locations, frequency, better signage, and shelter alternatives. Attention should also be given to ensure that bus stops are in compliance with the Americans with Disabilities Act (ADA).

Bus Rapid Transit

Other enhancements to bus service will be through the implementation of Bus Rapid Transit (BRT). BRT is a way to provide a higher level of service similar to that of a rail system without the high capital costs of a rail system. There are a number of ways in which a BRT system can be implemented and by which bus service is made more efficient by reducing travel time and delay. One of the simplest forms of BRT is to provide transit priority at traffic signals. Through this technology, the traffic signal timing is adjusted by extending the green phase for approaching buses so there is a greater chance for the bus to make it through the intersection without stopping. Another BRT enhancement is to provide queue jumper lanes for buses. These are essentially right turn lanes that are available for through buses to use. The bus can then travel past the queue in the through lanes to the stop bar. This is typically used in conjunction with transit priority at the traffic signal, in which the bus can proceed through a green light before other vehicles, so the bus can get a head start.

More advanced BRT systems include exclusive bus-only travel lanes, similar to a light rail system. The system has regularly spaced bus stations and operates just like a rail system. With lower construction costs and lack of a fixed guide way, these systems are more flexible than traditional light rail.

Pedestrians and Bicycles

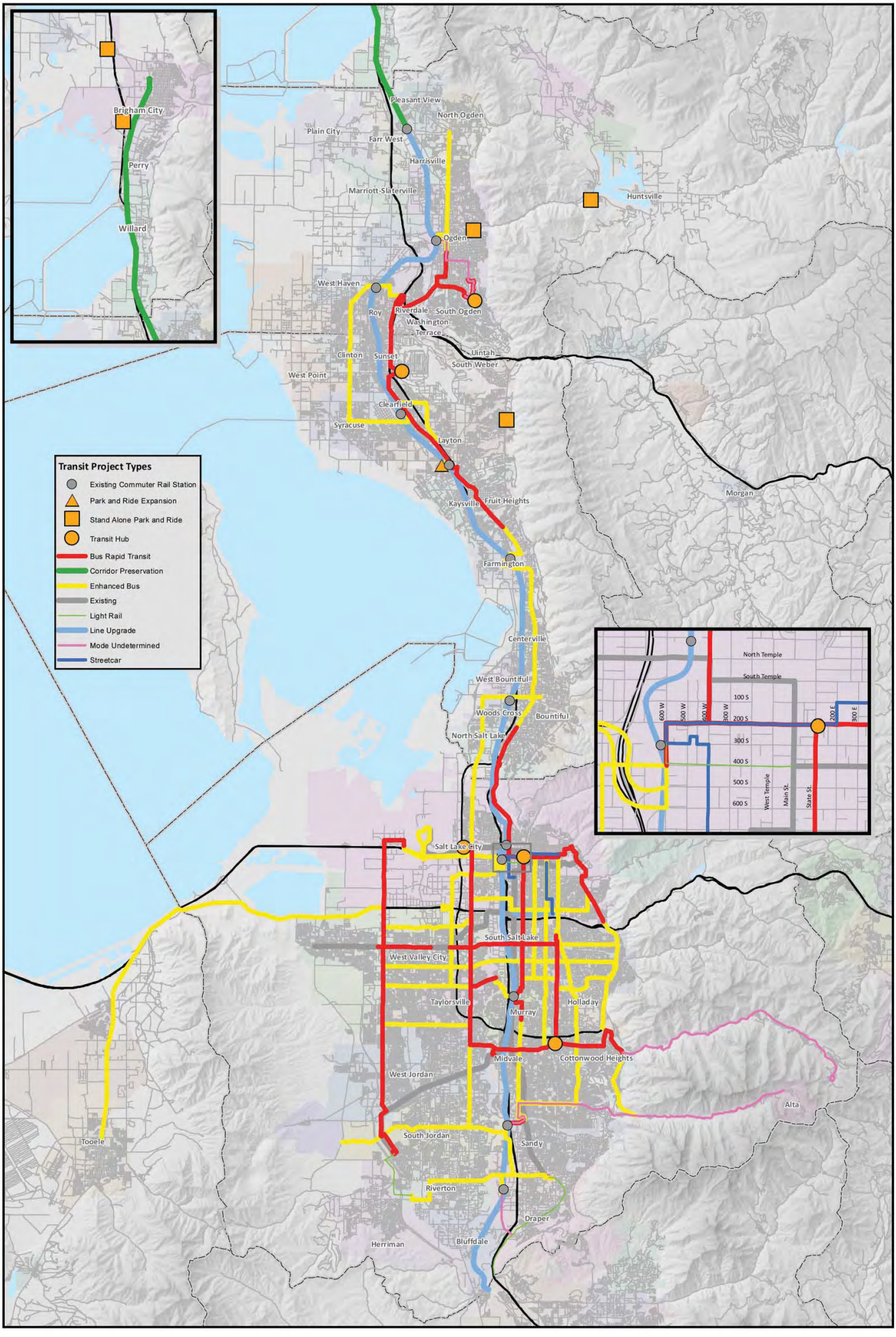
Pedestrian and bicycle safety is an important feature of any transportation master plan. People will be more inclined to walk or ride their bicycle when the experience is pleasant, perceived safe, and distances are reasonable. Each of the standard cross-sections shown in the Syracuse City Standard Drawings includes a four-foot sidewalk coupled with a three-foot to eleven-foot parkstrip to provide a buffer between pedestrians and vehicular traffic. Syracuse City Trail System Master Plan is a long-term guide to future planning, design and implementation for a citywide system of trails to be utilized for commuter travel, health and fitness, and recreational purposes throughout the City. The master plan adopted March 14, 2012 can be found in **Appendix C – Trails Master Plan** and the most current version is found on the City's website: ***www.syracuseut.com***.

WFRC Long Range Plan

The Long Range Plan of the Wasatch Front Regional Council includes a map of existing and future bicycle paths throughout Davis County. This map is shown in **Figure 13**. The map shows shared use paths (Class I), bike lanes (Class II) and signed shared roadway (Class 3) facilities throughout the city.

Recommended Bike Paths

All of the proposed arterial and collector street cross-sections allow for the addition of bicycle lanes. Before a bicycle lane can be installed on a roadway, the roadway itself must be complete along the entire extent of the bicycle path. Missing shoulders and incomplete segments pose a serious hazard to bicyclists. Bicycle facilities are an integral part of any connected transportation system and should be encouraged where feasible.



WASATCH FRONT REGIONAL COUNCIL

Figure 12

Transit Project Type

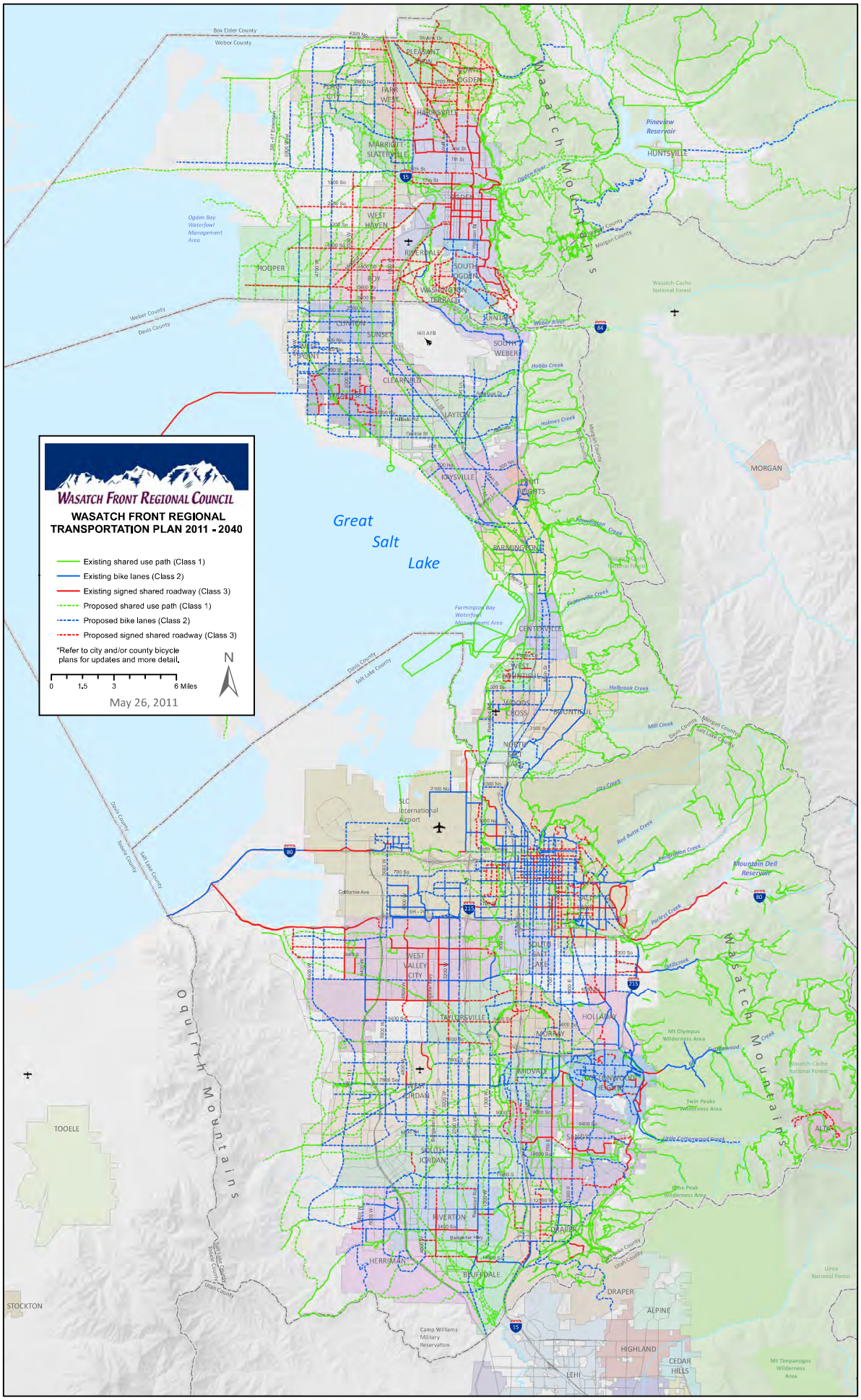

WASATCH FRONT REGIONAL COUNCIL
WASATCH FRONT REGIONAL TRANSPORTATION PLAN 2011 - 2040
Existing shared use path (Class 1)
Existing bike lanes (Class 2)
Existing signed shared roadway (Class 3)
Proposed shared use path (Class 1)
Proposed bike lanes (Class 2)
Proposed signed shared roadway (Class 3)
*Refer to city and/or county bicycle plans for updates and more detail.
0 1.5 3 6 Miles
N
May 26, 2011
Great Salt Lake
Wasatch Mountains
Oquirrh Mountains
Pineview Reservoir
Mountain Dell Reservoir
Ogden Bay Waterfowl Management Area
Farmington Bay Waterfowl Management Area
Box Elder County
Weber County
Davis County
Salt Lake County
Tooele County
Morgan County
Utah County
PLEASANT VIEW
NORTH OGDEN
HARRISVILLE
MARRIOTT-SLATERVILLE
OGDEN
WEST HAVEN
RIVERDALE
HOOPER
SOUTH OGDEN
WASHINGTON TERRACE
UINTAH
HUNTSVILLE
CLINTON
SUNSET
SYRACUSE
CLEARFIELD
LAYTON
SOUTH WEBER
KAYSVILLE
SOUTH WEBER
FARMINGTON
CENTERVILLE
WOODS CROSS
BOUNTIFUL
NORTH SALT LAKE
MORGAN
SLC International Airport
WEST VALLEY CITY
TAYLORSVILLE
MURRAY
SOUTH SALT LAKE
HOLLADAY
MIDVALE
COTTONWOOD HEIGHTS
WEST JORDAN
SANDY
SOUTH JORDAN
RIVERTON
DRAPER
HERRIMAN
BLUFFDALE
ALPINE
HIGHLAND
CEDAR HILLS
LEHI
ALTA
TOOELE
STOCKTON
Camp Williams Military Reservation
Mt Olympus Wilderness Area
Twin Peaks Wilderness Area
Lone Peak Wilderness Area
Mt Timpanogos Wilderness Area
Wasatch-Cache National Forest
Uinta National Forest

Figure 13

OTHER ELEMENTS OF THE TRANSPORTATION MASTER PLAN

Traffic Impact Studies

As growth occurs throughout the City, the City will evaluate the impacts of proposed developments on the surrounding transportation networks prior to giving approval to build. This will be accomplished by requiring a Traffic Impact Study (TIS) to be performed for any 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 will assist 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 Traffic Engineer on a case by case basis.

Each TIS will be conducted by a qualified Traffic Engineer chosen by the developer at their cost and approved by the City. A scoping meeting will be required by the developer/Traffic Engineer with the City Engineer to determine the scope of each TIS. Syracuse Traffic Impact Study Requirements are included in **Appendix D – Traffic Impact Study Guidelines** of this report.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) refers to the increased use of technology and communication methods to improve traffic operations. Pavement detectors, traffic cameras and weather sensors are used to gather constant information about traffic flow conditions along corridors or at intersections. This information may be relayed to a traffic control center where operators can change traffic signal timing plans or post messages on variable message signs. All of the traffic signals located on arterial streets in Syracuse are connected to the UDOT and Davis County Traffic Operations Center by the use of fiber optic cable or radio antennas.

Traffic Signal Coordination

Traffic signal coordination is another ITS method that is used to improve traffic operations and efficiency. Traffic signal timing and phasing improvements generally improve all traffic flow but can also be used to favor high-occupancy vehicles or buses. Some ways in which signal timing can be used to favor transit include transit pre-emption and priority. Transit pre-emption means that as a transit vehicle approaches an intersection the signal timing is interrupted to accommodate the transit vehicle. This interrupts the signal coordination of a corridor or network and as such is generally not recommended. Transit priority allows traffic signals to adjust their phasing to give priority to transit vehicles without interrupting the overall traffic signal timing plan.

Access Management

Access management is a term that refers to providing and managing access to land development while maintaining traffic flow and being attentive to safety issues. It includes elements such as driveway spacing, signal spacing, and corner clearance. Access management is a key element in transportation planning, helping to make transportation corridors operate more effectively and to carry more traffic without costly road widening projects. Access management offers local governments a systematic approach to decision-making applying principles uniformly, equitably, and consistently throughout the jurisdiction.

An access management program must address the balance between access and mobility. While the functional classification of roads implies the priority of access versus mobility, access management does much the same thing. Freeways move vehicles over long distances at high speeds with very controlled access and great mobility. Conversely, residential streets offer higher level of access but at low speeds and with little mobility. Access management standards must account for these different functions of various facilities. The access management standards followed by the City are based on the FHWA access guide.

UDOT Coordination

Salem City must be an integral player in developing and conforming to access management standards on state highways. The reason for this is that UDOT controls the design and related standards on the state highway system while Syracuse controls the land uses that abut the state highway system. It is inappropriate for the City to approve a site plan for a given land use on a state highway within Syracuse City only to have UDOT deny the curb cuts identified as access points in the site plan. Per 17-27a-5-508, Syracuse City is required to give UDOT notice of proposed subdivisions along high priority corridors, where subdivisions are subject to a 45-day waiting period. In this example, as in actual developments, there is an overlap of approvals between UDOT's curb cut permit and the City's site plan approval.

Corridor Preservation

Corridor preservation is an important transportation planning tool that agencies should use and apply to all future transportation corridors. There are several new transportation facilities that have been identified in the Transportation Master Plan. In planning for these future facilities, corridor preservation techniques should be employed. The main purposes of corridor preservation are to:

- *Preserve the viability of future options,*
- *Reduce the cost of these options, and*
- *Minimize environmental and socio-economic impacts of future implementation.*

Corridor preservation seeks to preserve the right-of-way needed for future transportation facilities and prevent development that might be incompatible with these facilities. This is primarily accomplished by the community's ability to apply land use controls, such as zoning and approval of developments. Adoption of the Transportation Master Plan by the City of Syracuse is a commitment to citizens and future leaders in the community that the identified future corridors will be the ultimate location for transportation facilities.

Perhaps the most important elements of corridor preservation are ensuring that the corridors are preserved in the correct location and that they meet the applicable design and right-of-way standards for the type of facility being preserved. As the master plan does not define the exact alignment of each future corridor, it becomes the responsibility of the City to make sure that the corridors are correctly preserved. This will need to be accomplished through the engineering and planning reviews done within the City as development and annexation requests are approved that involve properties within or adjacent to the future corridors.

UDOT High Priority Corridor Preservation

As part of the many UDOT owned highways throughout the state, there is a list of high priority corridor preservation highways. As mentioned in 17-27a-5a-508 of the Utah Code, any future land use applications that are related to land located within the boundaries of a high priority corridor, the City is required to notify the UDOT Executive Director. SR-108 from Syracuse City to SR-126 in West Haven City is on the high priority corridor preservation List. The roadways in Syracuse City designated as SR-108 are 1700 South from the eastern border of the City to 2000 West and 2000 West from 1700 South to the northern border of the City. More information on UDOT corridor preservation can be found in **Appendix E – UDOT Corridor Preservation Process**.

Corridor Preservation Techniques

Some examples of specific corridor preservation techniques that may be most beneficial and easily implemented include the following:

- **Developer Incentives and Agreements** – *Public agencies can offer incentives in the form of tax abatements, density credits, or timely site plan approvals to developers who maintain property within proposed transportation corridors in an undeveloped state.*
- **Exactions** – *As development proposals are submitted to the City for review, efforts should be made to exact land identified within the future corridors.*
- **Fee Simple Acquisitions** – *This is a voluntary transaction full ownership of a land parcel, including the underlying title, transferred from the owner to the City via either purchase or donation.*
- **Transfer of Development Rights and Density Transfers** – *Government entities can provide incentives for developers and landowners to participate in corridor preservation programs using the transfer of development rights and density transfers. This is a powerful tool in that there seldom is any capital cost to local governments.*
- **Land Use Controls** – *This method allows government entities to use its policing power to regulate intensity and types of land use. Zoning ordinances are the primary controls over land use and the most important land use tools available for use in corridor preservation programs.*
- **Purchase of Options and Easements** – *Options and easements allow government agencies to purchase interests in property that lie within highway corridors without obtaining full title of the land.*
- **Annexation** – *The City of Syracuse may require right-of-way for roadways to be dedicated to the City during the annexation process. This becomes part of the annexation agreement and is an effective and efficient way to procure needed right-of-way for future expansion.*

Travel Demand Management

Travel Demand Management (TDM) programs are designed to reduce the traffic volume on streets by increasing the number of occupants in a vehicle or by reducing or changing travel patterns and behavior. TDM programs use incentives and disincentives on automobile users to promote these changes in behavior. There are many myths and misconceptions about various TDM programs, what their specific goals are and how effective they may be. It is important to understand the facts behind each type of program and what each may be expected to accomplish prior to the selection and implementation of such strategies so that the benefits of the program may be maximized. Travel Demand Management measures can be divided into three categories: Improved Alternatives, Incentives and Disincentives, and Alternative Work Arrangements. The information in this section about Travel Demand Management has been summarized from a reference manual produced by the Institute of Transportation Engineers (ITE) called *Implementing Effective Travel Demand Management Measure*[1].

It is not possible to include all of the information found in the reference manual in this report. A brief summary of each measure is given here but this reference manual should be referred to directly in order to obtain a more comprehensive understanding of TDM programs.

Safety

One of the main goals of the TMP and long term transportation planning in general is to estimate traffic growth and provide for adequate facilities as the need arises. The safe traffic operations of these future facilities are of equal importance. As a result, all of these facilities should be constructed and maintained to applicable design and engineering standards such as those set forth by Syracuse City ordinances, AASHTO "Policy on Geometric Design of Highways and Streets," and the Manual on Uniform Traffic Control Devices (MUTCD). This includes implementing applicable Americans with Disabilities Act (ADA) standards and school zone treatments.

Traffic Calming

Traffic calming provides many benefits to pedestrians and to the creation of livable neighborhoods.

Traffic calming and slower traffic enhances pedestrian safety by:

- *Decreasing the chances of a car-pedestrian collision*
- *Reducing the severity of injuries should a collision occur*
- *Making it easier and less intimidating for pedestrians to cross streets*

Traffic calming and slower traffic encourage more walking and bicycling by improving the ambiance of the neighborhood and more livable streets by:

- *Producing less traffic noise*
- *Reducing the level of air pollution*

Street patterns are typically developed 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

[1] *Implementing Effective Travel Demand Management Measures: A Series on TDM*, Institute of Transportation Engineers, Washington D.C. June 1993.

with wide and often long, straight roads can result in excessive speeds. For that reason, traffic calming measures (TCM) can be implemented to reduce speeds on residential roadways. Traffic calming is, however, still applicable to many neighborhood or local streets and may be given consideration on the City's local and residential streets on a case-by-case basis upon request.

Traffic calming may be applied to existing city streets when requested by the neighborhood but should always be considered during the development of new neighborhood streets and subdivisions. Syracuse City has adopted the Neighborhood Traffic Calming Program (NTCP) that addresses the desire of residents and city leaders to organize a method for addressing high speeds through residential neighborhoods. The NTCP adopted December 23, 2008 is found in **Appendix F – Traffic Calming** and the most current version is found on the city's website ***www.syracuseut.org***.

ITE has established a definition for traffic calming that reads, *"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 of speeds, reducing aggressive driving, and increasing respect for non-motorized street users.

Types of Traffic Calming Measures

There are several types of TCM that can be grouped into three categories, depending on the level of control or the effect on traffic flow and speeds. Several factors can influence the choice of TCM used, including the location, street classification, street geometry, adjacent land uses, public transit needs, budget, climate, aesthetics, and community preferences. Level I measures are the least restrictive, while Level II is the most dramatic. The measures used for each level are outlined below.

Level I Measures

Level I measures would emphasize to residents important traffic safety issues and give instructions for driving safely in accordance with the rules of the road. The following list outlines Level I measures:

- *Neighborhood Education Brochure*
- *Neighborhood Traffic Safety Campaign*
- *Signage*
- *Pavement Markings*
- *Brush Trims*
- *Target Enforcement*
- *Neighborhood Speed Watch*
- *Radar Speed Trailer*

Level II Measures

Level II measures indicate physical measures to reduce traffic volumes and traffic speed. As a part of traffic calming practices, Syracuse City does not use the following measures:

- *Stop Signs*
- *Children at Play Signs*
- *Speed Humps*
- *Rumble Strips*

Although there are speed humps in the city, they are no longer used for traffic calming. See the NTCP for further details. Level II measures are separated into two categories for volume and speed control and are explained below.

Volume Control Measures

The primary purpose of volume control measures is to discourage or eliminate cut-through traffic. The following are volume control measures:

- *Half Street Closures*
- *Median Barriers*
- *Force Turn Islands*

Speed Control Measures

The primary purpose of speed control measures is to reduce vehicle speed. The following are speed control measures:

- *Speed Cushions (Temporary Only)*
- *Raised Sidewalks/Speed Tables*
- *Raised Intersections*
- *Roundabouts*
- *Traffic Circles*
- *Center Island Narrowing*
- *Chokers*

Streetscaping

Streetscaping includes the planning and placement of items, such as street furniture, lighting, art, trees, landscaping, and side treatments along streets and intersections. Although streetscaping can be implemented without traffic calming, TCMs need a certain element of streetscaping to be functional. Streetscaping enhances the aesthetics of roundabouts and constrictions, etc. Landscaping and other roadside treatments make street closures more effective and safer by highlighting the presence of the measure.

Installation of Traffic Calming Measures

When a request is submitted to the City, an evaluation is completed by Syracuse City staff. The evaluation includes a site visit and collection of data such as traffic volumes and traffic speeds. An index score will be assigned based on the following guidelines:

- *Speed*
- *Volume*
- *Crashes*
- *Emergency Response Route*
- *Fatalities*
- *Bike Route*
- *Pedestrian Generators*
- *Sidewalks*
- *Traffic Calming*
- *Street Width*
- *Posted Speed Limit*

- *Length of Street*
- *Street Classification*

With a score of 80 or greater, eligibility for a Level I traffic calming measure is implemented. If the results are accepted by residents, a neighborhood report is written. If the results are not accepted, a petition for a Level II traffic calming measure is completed. Once the Level II Measure has funding approval from the City Council, it is implemented. **Figure 14** is a flowchart showing the process of implementing Level I and Level II traffic calming measures.

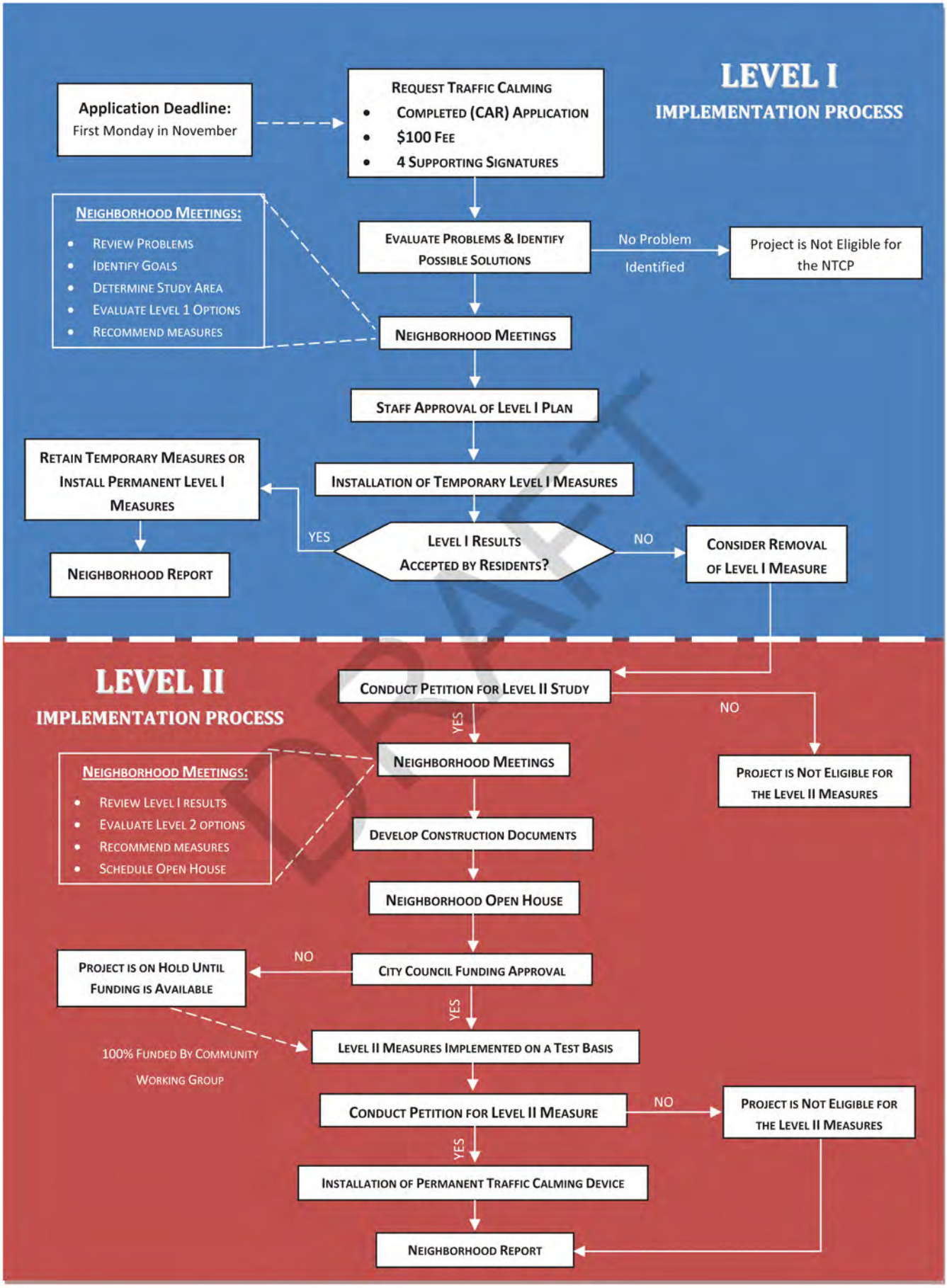

LEVEL I
IMPLEMENTATION PROCESS
Application Deadline:
First Monday in November
Request Traffic Calming
Completed (CAR) Application
$100 Fee
4 Supporting Signatures
Neighborhood Meetings:
Review Problems
Identify Goals
Determine Study Area
Evaluate Level 1 Options
Recommend measures
Evaluate Problems & Identify Possible Solutions
No Problem Identified
Project is Not Eligible for the NTCP
Neighborhood Meetings
Staff Approval of Level I Plan
Installation of Temporary Level I Measures
Level I Results Accepted by Residents?
YES
NO
Retain Temporary Measures or Install Permanent Level I Measures
Neighborhood Report
Consider Removal of Level I Measure
LEVEL II
IMPLEMENTATION PROCESS
Conduct Petition for Level II Study
YES
NO
Project is Not Eligible for the Level II Measures
Neighborhood Meetings:
Review Level I results
Evaluate Level 2 options
Recommend measures
Schedule Open House
Neighborhood Meetings
Develop Construction Documents
Neighborhood Open House
City Council Funding Approval
NO
Project is on Hold Until Funding is Available
YES
100% Funded By Community Working Group
Level II Measures Implemented on a Test Basis
Conduct Petition for Level II Measure
NO
Project is Not Eligible for the Level II Measures
YES
Installation of Permanent Traffic Calming Device
Neighborhood Report

Figure 14

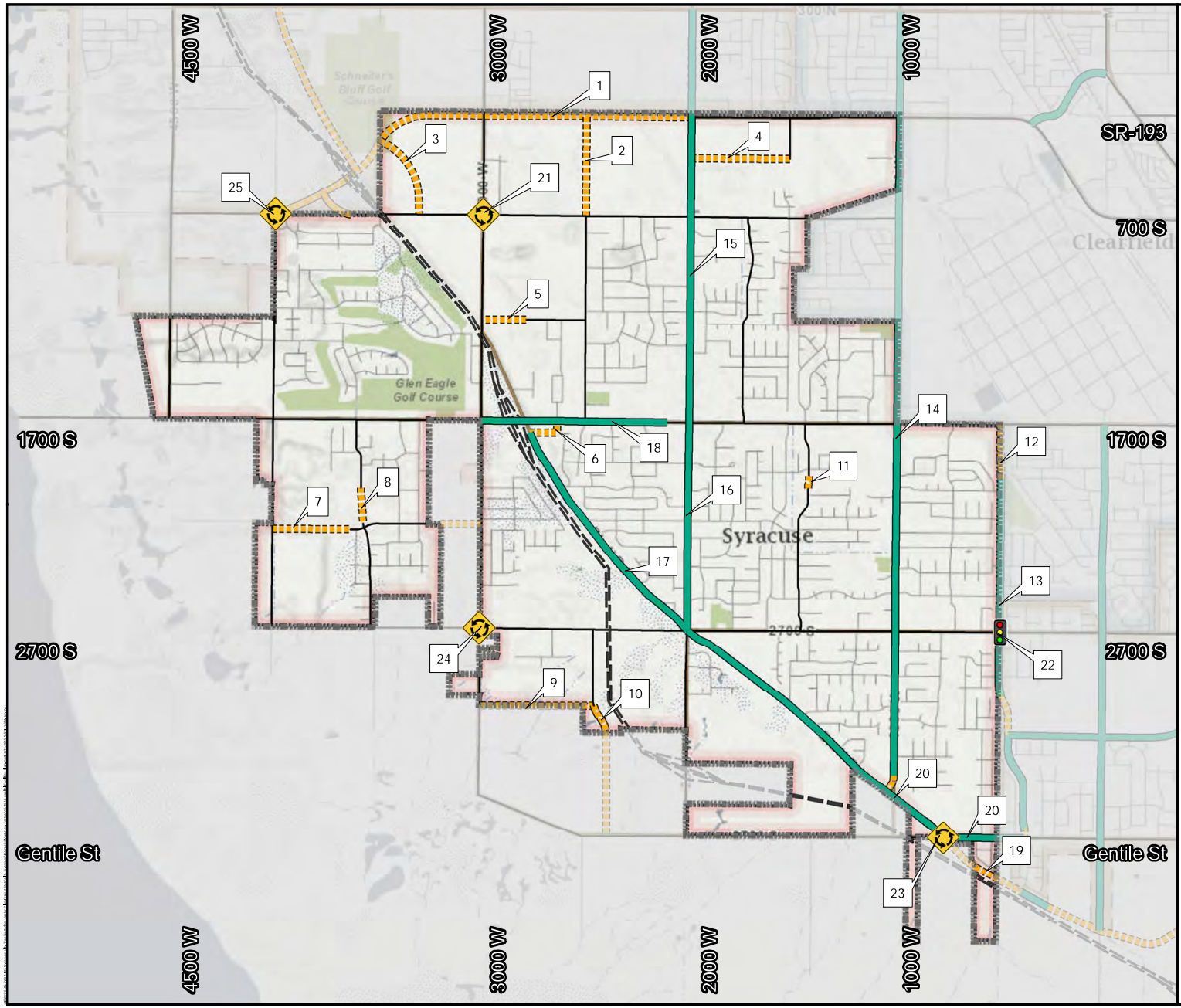
Capital Facilities Plan

As shown and discussed in Section 4, the City will need to construct new roads, widen existing transportation corridors, and make spot intersection improvements to provide future residents of the City with an adequate transportation system. A concept plan for future growth between the planning years of 2012-2040 is provided in **Figure 15**.

Transportation Needs as a Result of New Development

The specific transportation needs resulting from short term future growth throughout the City are identified in **Table 7** and **Figure 15**. **Table 7** will need to be regularly updated by the City as project scopes change and development occurs in the City. Individual projects were identified and costs estimates were compiled to produce a Transportation Improvement Plan (TIP) for the City. **Table 7** identifies the specific projects that will be necessary in the near future; however, only arterial and collector improvements were identified since any local roads would be required to be built as part of future development. All costs have not been adjusted for inflation and therefore represent 2015 costs. The cost estimates shown represent the costs of construction, right-of-way, and engineering. Impact fee eligible costs, as well as other potential funding sources, were identified for each project in the **Table 7**. Roadways of regional significance were assumed to be built through help from other jurisdictions, such as UDOT and WFRC. Details for each project cost can be found in **Appendix G – Syracuse Cost Estimates**.

Table 7 includes all projects in the City through the year 2040. Actual development and transportation needs should provide the final decision on project timing. It is expected that the total cost of roadway improvements needed before 2040 will be approximately **$89,500,000**, of which **$34,340,000** will be the responsibility of the City and may be eligible for impact fee expenditure.



SYRACUSE EST. CITY 1935

Master Transportation Plan

Figure 15: 2040 Capital Facilities Plan

Legend

Intersection

Roundabout

Traffic Signal

Capital Facilities Plan

Capacity Improvement

New Construction

West Davis Corridor

No Change

Syracuse Boundary

N

HORROCKS

HORROCKS ENGINEERS

0.5 0 0.5 Miles

Table 7: Transportation Improvement Plan

Transportation Improvement Program					
Project	Location	Total Price	Funding Source	Syracuse City %	Syracuse City Total
1	SR-193 Extension: 2000 West to 4000 West	$21,690,000	UDOT	0%	$0
2	2500 West Extension: 700 South to SR-193	$1,860,000	City	8%	$160,000
3	3250 West: 700 South to SR-193	$1,260,000	City	8%	$110,000
4	450 South: 1550 West to 2000 West	$2,660,000	City	25%	$670,000
5	1200 South: Extension to 3000 West	$820,000	City	8%	$70,000
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	$2,230,000	UDOT	0%	$0
7	2200 South Extension: End of Existing to 4000 West	$1,150,000	City	8%	$100,000
8	Doral Drive Connection: 2200 South to 2050 South	$550,000	City	8%	$50,000
9	3000 South: 3000 West to 2400 West (New Alignment)	$1,650,000	City	8%	$140,000
10	2400 West: 3000 South to City Boundary	$1,920,000	City	8%	$160,000
11	1475 West Connection: 1950 South to 2050 South	$190,000	City	8%	$20,000
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	$1,030,000	City/WFRC	8%	$80,000
13	500 West (3700 West Layton): 2000 South to 3000 South (Syracuse Portion)	$4,880,000	City	100%	$4,880,000
14	1000 West: SR-193 to Bluff Street (Syracuse Portion)	$8,580,000	City	100%	$8,580,000
15	2000 West: SR-193 to 1700 South	$9,340,000	UDOT	0%	$0
16	2000 West: 1700 South to 2700 South	$4,750,000	City	100%	$4,750,000
17	Bluff Street: 1770 South to 1000 West	$12,140,000	City	100%	$12,140,000
18	1700 South: 3000 West to 2000 West	$5,410,000	UDOT	0%	$0
19	Bluff Street: Connection to Layton Parkway	$2,660,000	City	25%	$670,000
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	$4,230,000	City/WFRC	8%	$340,000

Transportation Improvement Program					
Project	**Location**	**Total Price**	**Funding Source**	**Syracuse City %**	**Syracuse City Total**
21	Roundabout: 3000 West & 700 South	$380,000	City	100%	$380,000
22	Signal: 500 West & 2700 South	$270,000	City	100%	$270,000
23	Roundabout: Gentile Street & Bluff Street	$380,000	City	100%	$380,000
24	Roundabout: 3000 West & 2700 South	$380,000	City	100%	$380,000
25	Roundabout: 4000 West & 700 South	$380,000	City	100%	$380,000
	Total	**$90,790,000**			**$34,710,000**

IMPACT FEE FACILITIES PLAN

Introduction

The purpose of an Impact Fee Facilities Plan (IFFP) is to identify public facilities that are needed to accommodate development and to determine which projects may be funded with impact fees. Utah law requires communities to prepare an IFFP prior to preparing an impact fee analysis and establishing an impact fee. According to Title 11, Chapter 35a-302 of the Utah Code, the IFFP is required to identify the following:

- *The existing level of service*
- *A proposed level of service*
- *Any excess capacity to accommodate future growth at the proposed level of service*
- *The demands placed on existing public facilities by new development*
- *A proposed means by which the local political subdivision will meet those demands*
- *A general consideration of all potential revenue sources to finance the impacts on system improvements*

This analysis incorporates the information provided in previous chapters regarding the upcoming demands on the existing infrastructure facilities that will require improvements to accommodate future growth and provide an acceptable LOS. Reference should be made to the previous chapters for additional information on the evaluation methodology and how the projections were made.

This section focuses on the improvements that are projected to be needed over the next ten years. Utah law requires that any impact fees collected for those improvements be spent within six years of being collected. Only capital improvements are included in this plan; all other maintenance and operation costs are assumed to be covered through the City's General Fund as tax revenues increase as a result of additional development.

Existing Level of Service (11-36a-302.1.a.i)

According to the Impact Fee Act, level of service is defined as "the defined performance standard or unit of demand for each capital component of a public facility within a service area." The LOS of a roadway segment or intersection is used to determine if capacity improvements are necessary. LOS is measured on a roadway segment using its daily traffic volume and at an intersection based on the average delay per vehicle. A standard of LOS C was chosen as the acceptable LOS for Syracuse City. This allows for speeds at or near free-flow speeds, but with less freedom to maneuver. At intersections, LOS C means that vehicles should not have to wait more than one cycle to proceed through the intersection and experience delays less than 35 seconds, according to the Highway Capacity Manual 2010. **Table 8** below summarizes the maximum capacities used by Syracuse City

Table 8: LOS C Capacity Criteria in Vehicles per Day

Lanes	Arterial	Collector
2	NA	5,000
3	11,500	10,000
5	26,500	NA
7	40,000	NA

Intersection Standards

The performance of intersections has a large effect on the level of service of the roadway network. Intersections can have no control, be stop controlled, signalized, roundabouts, or be controlled in another way. The level of service for each type of intersection is calculated in a different way. Intersection improvements will be necessary in order to maintain the desired level of service. Planning ahead, by coordinating the placement of signal wiring, foundations, and other features, with roadway construction before the placement of the actual traffic signals and other elements, is a way to mitigate the costs of these intersection improvements. The costs of these intersection improvements has been included in the roadway network cost estimates included in **Table 9**. The total costs for the full installation of these intersection improvements may be postponed depending on the specific needs of the intersections in the future based on on-going analysis.

Trips

The unit of demand for transportation impact is the pm peak hour trip. A pm peak hour trip is defined by the Institute of Transportation Engineers (ITE) as a single or one-directional vehicle movement to or from a site between the hours of 4pm and 6pm. The total traffic impact of a new development can be determined by the sum of the total number of trips generated by a development during the pm peak hour. This trip generation number or impact can be estimated for an individual development using the ITE Trip Generation Manual (currently 8th edition). This publication uses national data studied over decades to assist traffic engineering professionals to determine the likely impact of new development on transportation infrastructure.

There is a minor discrepancy in the way ITE calculates trips and the way trips or roadway volumes are calculated in the travel demand modelling used in the Syracuse TMP. This discrepancy is explained by the model roadway volumes and capacities being calculated using daily traffic volumes rather than trips on the roadway. Essentially this means that a travel demand model "trip" or unit of volume is counted once as a vehicles leaves home, travels on the road network and then arrives at work. This vehicles will only be counted as it travels on the roadway network. The ITE Trip Generation method uses driveway counts as its measure of a trip. Therefore a vehicle making the same journey will be counted once as it leaves home and once again as it arrives at work for a total of 2 trips. This can be rectified simply by adjusting the ITE Trip Generation rates by one half.

An additional consideration is that certain types of developments do not generate primary trips or trips that originated for the sole purpose of visiting that development. An example of a primary trip is a home based work trip where someone leaves their house with the express purpose of going to work. This primary trip has been generated by a combination of the home the trip originated in and the place of occupation where the trip terminated. Thus it is easily understood that the impact of this trip should be

attributed to the housing development and workplace development, without either of these locations, the trip doesn't happen. Some trips are not primary trips, they are defined as pass-by trips. This essentially means that the trip (crossing the driveway of a development) was generated by a driver deciding to make a stop on their way to their primary destination. Good examples of pass-by trips are someone that stops at the gas station on their way to work (gas station is a pass-bay trip) or a driver that is enticed to stop at a fast food restaurant as they drive by because the HOT DONUTS sign is illuminated (the fast food restaurant is a pass-by trip). Pass-by trips do not add traffic to the roadway and therefore do not create additional impact. Each land use type in the ITE Trip Generation Manual has a suggested reduction for pass-by trips where applicable. In each case, the trip reduction rate has been applied to the trip generation rate used in this IFFP.

System Improvements and Project Improvements

As described in the TMP, there are four primary classifications of roads, including local streets, collectors, arterials, and freeways/expressways. Syracuse City classifies street facilities based on the relative amounts of through and land-access service they provide. Local streets primarily serve land-access functions, while freeways and expressways are primarily meant for mobility. Each classification may have a variable amount of lanes, which is a function of the expected traffic volume and serves as the greatest measure of roadway capacity.

Improvements to collectors and arterials are considered "system improvements" according to the Utah Impact Fee Law, as these streets serve users from multiple developments. System improvements include anything from back of curb to back of curb, including gutter and curb, asphalt, road base, and sub-surface storm water drain utilities, as well as lighting, signing, and noise walls for collectors and arterials. These projects are eligible to be funded with impact fees and are included in this IFFP.

Proposed Level of Service (11-36a-302.1.a.ii)

The proposed level of service provides a standard for future roadway conditions to be evaluated against. This standard will determine whether or not a roadway will need improvements or not. According to the Utah Impact Fee Law, the proposed level of service may:

1. Diminish or equal the existing level of service
2. Exceed the existing level of service if, independent of the use of impact fees, the political subdivision or private entity provides, implements, and maintains the means to increase the existing level of service for existing demand within six years of the date on which new growth is charged for the proposed level of service; or
3. Establish a new public facility if, independent of the use of impact fees, the political subdivision or private entity provides, implements, and maintains the means to increase the existing level of service for existing demand within six years of the date on which new growth is charged for the proposed level of service.

This IFFP will not make any changes to the existing level of service, and LOS C will be the standard by which future growth will be evaluated.

Existing Capacity to Accommodate Future Growth (11-36a-302.1.a.iii)

An important element of the IFFP is the determination of excess capacity on the roadway network. Excess capacity is defined as the amount of available capacity on any given street in the roadway network under existing conditions. This capacity is available for new development in the city before additional infrastructure will be needed. This represents a buy-in component from the City as the existing residents/property owners/developers have already paid for these improvements. New roads obviously do not have any excess capacity and roads which are not under City jurisdiction have their capacity information removed from the calculations. Excess capacity calculations for each of the future projects is shown in **Table 9**.

Table 9: Excess Capacity Calculations

Project	Location	Existing Capacity	Existing Volume	Excess Capacity	Excess Capacity %
1	SR-193 Extension: 2000 West to 4000 West	NA	NA	NA	NA
2	2500 West Extension: 700 South to SR-193	NA	NA	NA	NA
4	450 South: 1550 West to 2000 West	NA	NA	NA	NA
5	1200 South: Extension to 3000 West	NA	NA	NA	NA
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	NA	NA	NA	NA
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	NA	NA	NA	NA
14	1000 West: SR-193 to Bluff Street (Syracuse Portion)	10,000	7,600	2,400	24%
15	2000 West: SR-193 to 1700 South	NA	NA	NA	NA
16	2000 West: 1700 South to 2700 South	10,000	8,300	1,700	17%
19	1700 South: 3000 West to 2000 West	NA	NA	NA	NA
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	10,000	5,800	4,200	42%
21	Roundabout: 3000 West & 700 South	NA	NA	NA	NA

Demands Placed on Facilities by New Development (11-36a-302.1.a.iv)

To meet the requirements of the Utah Impact Fee law to "identify demands placed upon existing public facilities by new development activity at the proposed level of service" and "identify the means by which the political subdivision or private entity will meet those growth demands", the following steps were completed:

1. **Existing Demand-** The traffic demand at the present time was estimated using traffic counts and population data.
2. **Existing Capacity**- The capacity of the current roadway network was estimated using the calculated LOS.
3. **Existing Deficiencies-** The deficiencies in the current network were identified by comparing the LOS of the roadways to the LOS standard.
4. **Future Demand-** The future demand on the network was estimated using development projections.
5. **Future Deficiencies-** The deficiencies in the future network were identified by comparing the calculated future LOS with the LOS standard.
6. **Recommended Improvements-** Recommendations that will help meet future demands were made.

These steps were the basis for the TMP and are detailed in the report.

Conversions of Growth and Development Projections to Trip Generations

The basis of the future travel demand was projected using the Wasatch Front Regional Councils Travel Demand Model. The inputs to the model consist of socio-economic and land use data provided by WFRC and the City. The outputs from the model include peak hour trips and daily traffic volumes on each of the roadways in the network.

Infrastructure Required to Meet Demands of New Development (11-36a-302.1.a.v)

10-Year Improvement Plan

The projects required to maintain the desired level of service for the roadway network in 2040 were outlined in the TMP. These projects will need to be constructed at various times from the present through 2040. However, for the purposes of this IFFP, only projects that will be completed within the next ten years will be considered. **Table 10** shows the projects that are forecasted to be needed in the next ten years. This table includes all of the projects regardless of their eligibility for impact fee expenditure. The portion of the project, which is impact fee eligible is indicated in the **Syracuse City %** and **Syracuse City Total** columns. **Figure 16** shows the projects needed between now and 2025 to meet the demands placed on the roadway network by new development.

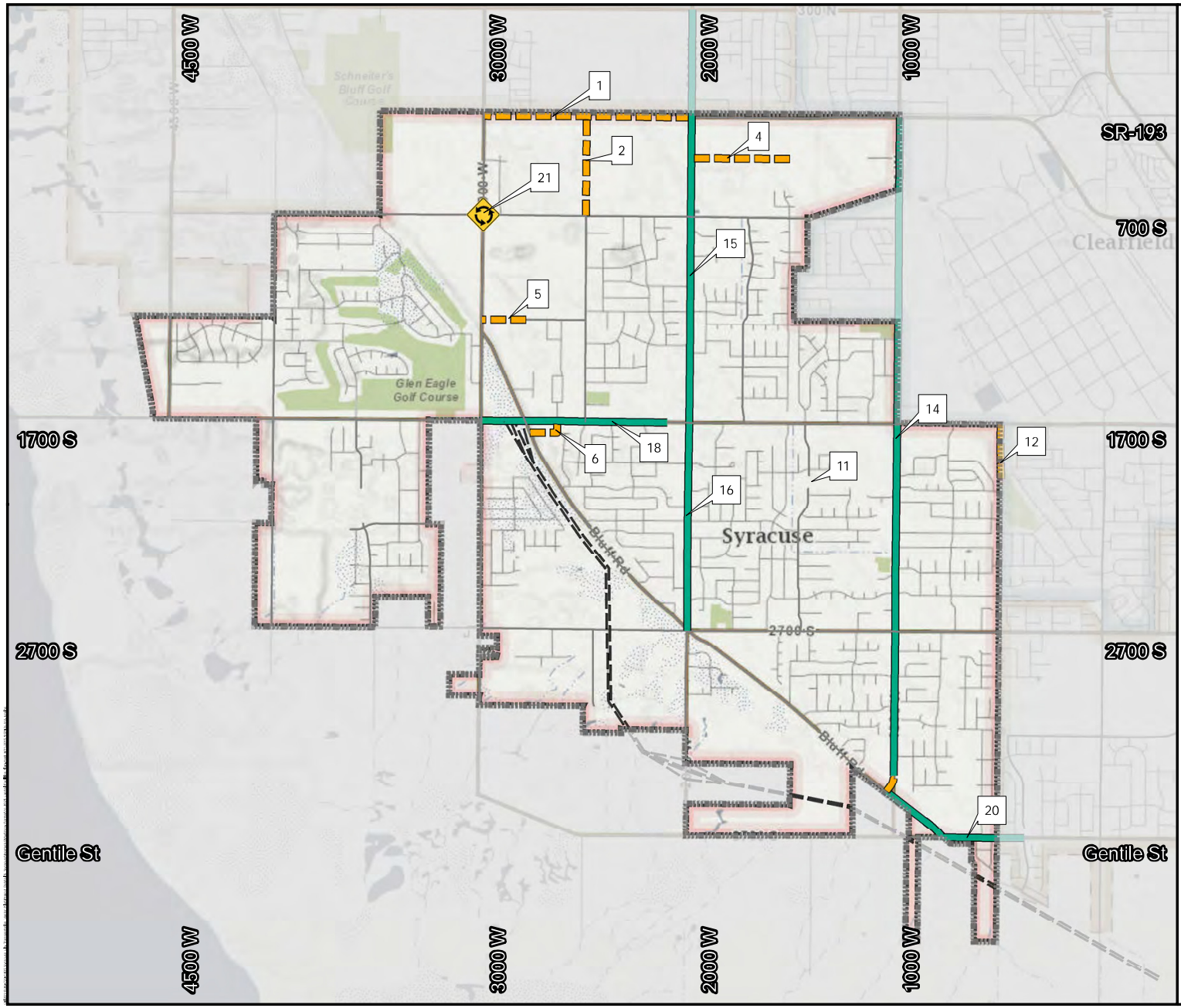
Project Cost Attributable to Future Growth

Table 10 shows the project costs attributable to new growth as a percentage of the total project costs as defined in the previous section. Each project in **Table 10** exists due to future growth but the cost that should be shared by new development through the assessment of impact fees varies depending on the owner of the road, the funding available, and the roadway classification. Where the project is likely to be completed using WFRC funding, the Syracuse City impact fee eligible portion of the project is only the amount of money the City will need to find as their required "matching funds", in this case, 8% of the total project cost. UDOT projects will be funded entirely with state funds and are therefore not eligible for impact fee expenditure. Road widening projects are considered 100% impact fee eligible as any work on these roads will only be needed as volumes increase as a result of new development. New, city owned roads are variable depending on the road classification. The cost attributable to new growth and potentially impact fee eligible is defined as the portion of the roadway cross section in excess of the standards for a local road. This is based on the premise that a local road cross section serves the needs

of the localized development which directly access the new road. This portion will be paid for by the individual development, which accesses the new road. Any improvements beyond the local street cross section would be considered a capacity improvement for the entire city as a whole and is therefore impact fee eligible. The City responsibility cost for each new road is determined as the percentage of the total project cost beyond a local street classification. For example, a Collector street is 8% more costly than a local street so the City responsible (impact fee eligible) portion of a new Collector is 8%.

Table 10: Impact Fee Facilities Plan 2015-2025

Project	Location	Total Price	Funding Source	Syracuse City %	Syracuse City Total
1	SR-193 Extension: 2000 West to 4000 West	$21,690,000	UDOT	0%	$0
2	2500 West Extension: 700 South to SR-193	$1,860,000	City	8%	$160,000
4	450 South: 1550 West to 2000 West	$2,660,000	City	25%	$670,000
5	1200 South: Extension to 3000 West	$820,000	City	8%	$70,000
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	$2,230,000	UDOT	0%	$0
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	$1,030,000	City/WFRC	8%	$80,000
14	1000 West: SR-193 to Bluff Street (Syracuse Portion)	$8,580,000	City	100%	$8,580,000
15	2000 West: SR-193 to 1700 South	$9,340,000	UDOT	0%	$0
16	2000 West: 1700 South to 2700 South	$4,750,000	City	100%	$4,750,000
19	1700 South: 3000 West to 2000 West	$5,410,000	UDOT	0%	$0
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	$4,230,000	City/WFRC	8%	$340,000
21	Roundabout: 3000 West & 700 South	$380,000	City	100%	$380,000
	Total	**$62,980,000**			**$15,030,000**



SYRACUSE EST. CITY 1935

Master Transportation Plan

Figure 16: 2025 Capital Facilities Plan

Legend

Intersection

Roundabout

Build Status

- Capacity Improvement
- New Construction
- West Davis Corridor
- No Change
- Syracuse Boundary

N

HORROCKS

HORROCKS ENGINEERS

0.5 0 0.5 Miles

Project Cost Attributable to 10-Year Growth

Using the travel demand model mentioned in previous chapters it is possible to estimate the number of PM trips originating or terminating in Syracuse for the existing and future conditions. The difference between the future PM trips and the existing PM trips (the number of new trips in the City) becomes the denominator in the equation used to calculate the impact fee cost per PM peak hour trip for new development. The City of Syracuse currently generates approximately 26,300 one-way PM peak hour trips. In 2040 this number is expected to increase to 41,100, an increase of 56%. The projected 2025 PM peak hour trip number for Syracuse City is 34,300, a 30% increase on today's value.

Another important consideration is the amount of excess capacity remaining in 2025. The projects recommended in the TMP are designed to serve demand through the year 2040. This provides the City the most efficient and cost effective way to meet the demands in the future. The other side to this long term planning is that some of the roads may be under capacity in 2025. It would be unreasonable to force development between now and 2025 to bear the entire burden of the cost of projects which will serve the demand of development up through 2040. Therefore the remaining capacity in 2040 must be considered in the impact fee calculation. This is the cost proportion attributable to growth in the next 10 years. It is the City's responsibility to ensure that future development pays impact fees to cover the buy-in cost of projects built in the next 10 years that will last through 2040. **Table 11** shows the future capacity calculations for each of the eligible projects. UDOT funded projects, although shown in the table, are not eligible for impact fees so their values are shown as NA.

The last consideration discussed is the percent pass through traffic. Pass through traffic includes vehicles trips on the street network which do not begin or end that vehicle trip within Syracuse. Although these vehicles impact the roadway network, they are removed from the impact fee calculation since the developments within the city did not generate the vehicle trip. **Table 11** includes the percentage of the 2025 volume that is considered pass through traffic.

Table 11: Future Capacity Calculations

Project	Location	2025 Capacity	2025 Volume	Excess Capacity	Excess Capacity %	% Pass Through Traffic
1	SR-193 Extension: 2000 West to 4000 West	NA	NA	NA	NA	NA
2	2500 West Extension: 700 South to SR-193	5,000	1,600	3,400	68%	6%
4	450 South: 1550 West to 2000 West	11,500	3,300	8,200	71%	5%
5	1200 South: Extension to 3000 West	5,000	2,200	2,800	56%	11%
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	NA	NA	NA	NA	NA
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	11,500	5,600	5,900	51%	6%
14	1000 West: SR-193 to Bluff Street (Syracuse Portion)	11,500	9,100	2,400	21%	24%
15	2000 West: SR-193 to 1700 South	NA	NA	NA	NA	NA
16	2000 West: 1700 South to 2700 South	11,500	9,400	2,100	18%	18%
19	1700 South: 3000 West to 2000 West	NA	NA	NA	NA	NA
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	11,500	2,600	8,900	77%	27%
21	Roundabout: 3000 West & 700 South	NA	NA	NA	NA	NA

Proposed Means to Meet Demands of New Development (11-36a-302.2)

All possible revenue sources have been considered as a means of financing transportation capital improvements needed as a result of new growth. This section discusses the potential revenue sources that could be used to fund transportation needs as a result of new development.

Transportation routes often span multiple jurisdictions and provide regional significance to the transportation network. As a result, other government jurisdictions or agencies often help pay for such regional benefits. Those jurisdictions and agencies could include the Federal Government, the State Government or UDOT, or WFRC. The City will need to continue to partner and work with these other jurisdictions to ensure the adequate funds are available for the specific improvements necessary to maintain an acceptable LOS. The City will also need to partner with adjacent communities to ensure corridor continuity across jurisdictional boundaries (i.e., arterials connect with arterials; collectors connect with collectors, etc.).

Funding sources for transportation are essential if Syracuse City recommended improvements are to be built. The following paragraphs further describe the various transportation funding sources available to the City.

Federal Funding

Federal monies are available to cities and counties through the federal-aid program. UDOT administers the funds. In order to be eligible, a project must be listed on the five-year Statewide Transportation Improvement Program (STIP).

The Surface Transportation Program (STP) funds projects for any roadway with a functional classification of a collector street or higher as established on the Functional Classification Map. STP funds can be used for both rehabilitation and new construction. The Joint Highway Committee programs a portion of the STP funds for projects around the state in urban areas. Another portion of the STP funds can be used for projects in any area of the state at the discretion of the State Transportation Commission. Transportation Enhancement funds are allocated based on a competitive application process. The Transportation Enhancement Committee reviews the applications and then a portion of the application is passed to the State Transportation Commission. Transportation enhancements include 12 categories ranging from historic preservation, bicycle and pedestrian facilities and water runoff mitigation. Other federal and state trail funds are available from the Utah State Parks and Recreation Program.

WFRC accepts applications for federal funds through local and regional government jurisdictions. The WFRC Technical Advisory and Regional Planning committees select projects for funding annually. The selected projects form the Transportation Improvement Program (TIP). In order to receive funding, projects should include one or more of the following aspects:

- *Congestion Relief – spot improvement projects intended to improve Levels of Service and/or reduce average delay along those corridors identified in the Regional Transportation Plan as high congestion areas*
- *Mode Choice – projects improving the diversity and/or usefulness of travel modes other than single occupant vehicles*
- *Air Quality Improvements – projects showing demonstrable air quality benefits*
- *Safety – improvements to vehicular, pedestrian, and bicyclist safety*

State/County Funding

The distribution of State Class B and C Program monies is established by State Legislation and is administered by the State Department of Transportation. Revenues for the program are derived from State fuel taxes, registration fees, driver license fees, inspection fees, and transportation permits. Seventy-five percent of these funds are kept by UDOT for their construction and maintenance programs. The rest is made available to counties and cities. As many of the roads in Syracuse fall under UDOT jurisdiction, it is in the interests of the City that staff is aware of the procedures used by UDOT to allocate those funds and to be active in requesting the funds be made available for UDOT owned roadways in the City.

Class B and C funds are allocated to each city and county by a formula based on population, centerline miles, and land area. Class B funds are given to counties, and Class C funds are given to cities and towns. Class B and C funds can be used for maintenance and construction projects; however, thirty percent of

those funds must be used for construction or maintenance projects that exceed $40,000. The remainder of these funds can be used for matching federal funds or to pay the principal, interest, premiums, and reserves for issued bonds.

In 2005 the state senate passed a bill providing for the advance acquisition of right-of-way for highways of regional significance. This bill would enable cities in the county to better plan for future transportation needs by acquiring property to be used as future right-of-way before it is fully developed and becomes extremely difficult to acquire. UDOT holds on account the revenue generated by the local corridor preservation fund but the county is responsible to program and control monies. In order to qualify for preservation funds, the City must comply with the Corridor Preservation Process found at the flowing link ***www.udot.utah.gov/public/ucon*** and also provided in the appendix of this report. Currently, Syracuse City uses Class C funding for their transportation projects.

City Funding

Some cities utilize general fund revenues for their transportation programs. Another option for transportation funding is the creation of special improvement districts. These districts are organized for the purpose of funding a single specific project that benefits an identifiable group of properties. Another source of funding used by cities includes revenue bonding for projects intended to benefit the entire community.

Private interests often provide resources for transportation improvements. Developers construct the local streets within subdivisions and often dedicate right-of-way and participate in the construction of collector/arterial streets adjacent to their developments. Developers can also be considered a possible source of funds for projects through the use of impact fees. These fees are assessed as a result of the impacts a particular development will have on the surrounding roadway system, such as the need for traffic signals or street widening.

General fund revenues are typically reserved for operation and maintenance purposes as they relate to transportation. However, general funds could be used if available to fund the expansion or introduction of specific services. The City of Syracuse currently uses Class C funding for their transportation improvements. Providing a line item in the City budgeted general funds to address roadway improvements, which are not impact fee eligible is a recommended practice to fund transportation projects should other funding options fall short of the needed amount.

General obligation bonds are debt paid for or backed by the City's taxing power. In general, facilities paid for through this revenue stream are in high demand amongst the community. Typically, general obligation bonds are not used to fund facilities that are needed as a result of new growth because existing residents would be paying for the impacts of new growth. As a result, general obligation bonds are not considered a fair means of financing future facilities needed as a result of new growth.

Certain areas might require different needs or methods of funding other than traditional revenue sources. A Special Assessment Area (SAA) can be created for infrastructure needs that benefit or encompass specific areas of the City. Creation of the SAA may be initiated by the municipality by a resolution declaring the public health, convenience, and necessity requiring the creation of a SAA. The boundaries and services provided by the district must be specified and a public hearing held prior to creation of the SAA. Once the SAA is created, funding can be obtained from tax levies, bonds, and fees when approved by the majority

of the qualified electors of the SAA. These funding mechanisms allow the costs to be spread out over time. Through the SAA, tax levies and bonding can apply to specific areas in the City needing to benefit from the improvements.

Interfund Loans

Since infrastructure must generally built ahead of growth, it must sometimes be funded before expected impact fees are collected. Bonds are the solution to this problem in some cases. In other cases, funds from existing user rate revenue will be loaned to the impact fee fund to complete initial construction of the project. As impact fees are received, they will be reimbursed. Consideration of these loans will be included in the impact fee analysis and should be considered in subsequent accounting of impact fee expenditures.

Developer Dedications and Exactions

Developer dedications and exactions can both be credited against the developer's impact fee analysis. If the value of the developer dedications and/or extractions are less than the developer's impact fee liability, the developer will owe the balance of the liability to the city. If the dedications and/or extractions of the developer are greater than the impact fee liability, the city must reimburse the developer the difference.

Developer Impact Fees

Impact fees are a way for a community to obtain funds to assist in the construction of infrastructure improvements resulting from and needed to serve new growth. The premise behind impact fees is that if no new development occurred, the existing infrastructure would be adequate. Therefore, new developments should pay for the portion of required improvements that result from new growth. Impact fees are assessed for many types of infrastructures and facilities that are provided by a community, such as roadway facilities. According to state law, impact fees can only be used to fund growth related system improvements.

Necessity of Improvements to Maintain Level of Service

According to State statue, impact fees must only be used to fund projects that will serve needs caused by future development. They are not to be used to address present deficiencies. Only projects that address future needs are included in this IFFP. This ensures a fair fee since developers will not be expected to address present deficiencies.

Impact Fee Certification (11-36a-306)

According to state law, this report has been prepared in accordance with Utah Code Title 11 Chapter 36 titled "Impact Fees Act". This report relies upon the planning, engineering, land use and other source data provided by the City and their designees and all results and projections are founded upon this information.

In accordance with Utah Code Annotate, 11-36a-306(1), Horrocks Engineers, certifies that this impact fee facilities plan:

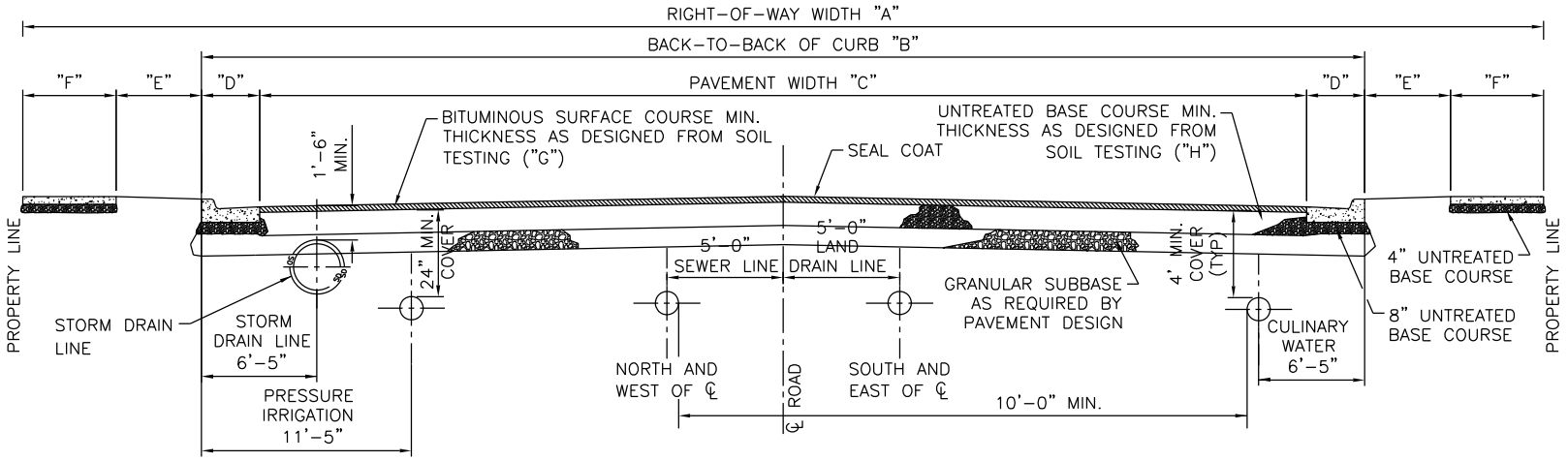
1. Includes only the cost of public facilities that are:
    a. Allowed under the Impact Fees Act; and
    b. Actually incurred; or
    c. Are projected to be incurred or encumbered within six years of the day on which each impact fee is paid;

2. Does not include:
    a. Costs of operation and maintenance of public facilities
    b. Cost of qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service supported by existing residents;
    c. An expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. Complies in each and every relevant respect with the Impact Fees Act.

This certification is made with the following limitations:

1. All of the recommendations for implementing this IFFP of IFA are followed in their entirety by the City.
2. If any portion of the IFFP is modified or amended in any way, this certification is no longer valid.
3. All information presented and used in the creation of this IFFP is assumed to be complete and correct, including any information received from the City or other outside sources.

APPENDIX A – SYRACUSE CITY STANDARD DRAWINGS

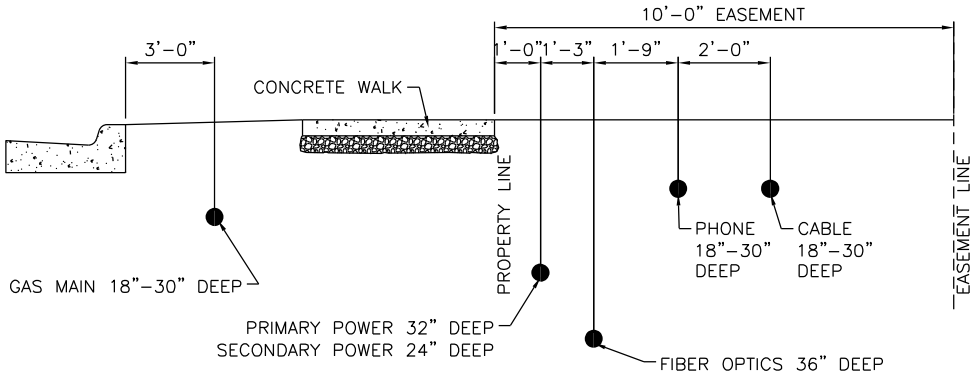


TYPICAL STREET DIMENSIONS								
STREET DESIGNATION	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
ARTERIAL	110	91'	86'	2.5'	*3.0'	*4.0'	NOTE 2	NOTE 2
MINOR ARTERIAL	84'	66'	61'	2.5'	*5.0'	4.0'	NOTE 2	NOTE 2
COLLECTOR	66'	50'	45'	2.5'	*4.0'	4.0'	NOTE 2	NOTE 2
LOCAL	60'	40'	35'	2.5'	*6.0'	4.0'	*3"	*10"
LOW VOLUME LOCAL	60'	30'	25'	2.5'	*11.0'	4.0'	*3"	*10"
*MINIMUM REQUIREMENT								

NOTES:
1. TOP BACK OF CURB ON BOTH SIDES OF ROAD TO BE SAME ELEVATIONS.
2. THE CITY ENGINEER SHALL VERIFY PAVEMENT DESIGN PRESCRIBED BY SOILS REPORT (SEE SPECIFICATIONS).
3. COMMERCIAL AND INDUSTRIAL STREET SECTIONS ARE DETERMINED BASED ON A TRAFFIC ANALYSIS FOR THE PARTICULAR USE.
4. VARIATIONS IN TYPICAL STREET DIMENSIONS MAY BE CONSIDERED BY THE CITY WHERE PHYSICAL CONSTRAINTS OF THE NATURAL LAND OR CREATING ENHANCEMENTS WOULD PREVENT THE ABILITY TO FOLLOW ESTABLISHED DIMENSIONS.

1 STANDARD STREET SECTION

SCALE:NOT TO SCALE



A UTILITY EASEMENT SECTION

SCALE:NOT TO SCALE

LOW VOLUME LOCAL STREET DESIGN MAY ONLY BE USED WHEN THE FOLLOWING CRITERIA IS SATISFIED:

1. TRAFFIC VOLUME IS 400 VEHICLES PER DAY OR LESS.
2. PARKING IS PROHIBITED ON THE STREET. OFF STREET PARKING DEMANDS MUST BE SATISFIED.

TYPICAL SURFACE TREATMENT APPLICATIONS

HIGH DENSITY MINERAL BOND SEAL: PARKING LOT, PAVED TRAIL, LOW VOLUME LOCAL, LOCAL STREET
CHIP & FOG: COLLECTOR, ARTERIAL

NO.	REVISION DESCRIPTION	BY	APP.	DATE
1	DELETED MAJOR COLLECTOR/CHANGED UTILITY LOCATIONS	BB	RCW	2/11/14

STATEMENT OF USE
THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN SYRACUSE CITY. DEVIATION FROM THIS DOCUMENT REQUIRES APPROVAL OF SYRACUSE CITY. SYRACUSE CITY CORPORATION CAN NOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.

CAD FILE: SYRACUSE CITY STANDARDS
DRAWN BY: BB
DESIGN BY: BB
CHECKED BY: RCW
LAST UPDATED: 2/11/2014
DATE ADOPTED: 2/11/2014

SYRACUSE EST. CITY 1935

DEVELOPMENT STANDARDS
SYRACUSE CITY CORPORATION

STANDARD STREET SECTION

SHEET 3

APPENDIX B – LAYTON PARKWAY CONNECTION AGREEMENT

SCANNED

JAN 0 5 2005

R 03-10

RESOLUTION 03-10

RESOLUTION TO ENTER INTO AN INTERLOCAL AGREEMENT BETWEEN LAYTON CITY AND SYRACUSE CITY FOR THE COOPERATIVE DEVELOPMENT OF STREETS TO PROPERTIES ADJACENT TO THE COMMON BOUNDARY OF THE TWO CITIES

WHEREAS, the City of Layton and the City of Syracuse have developments near their common boundaries which necessitates a cooperative effort in developing the streets in that area; and

WHEREAS, both cities desire to cooperate together to provide streets to benefit both cities; and

WHEREAS, this interlocal agreement will be mutually beneficial.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF LAYTON, UTAH:

Section I: The Agreement which is attached hereto and made a part hereof by this reference, is approved in its entirety.

Section II: This resolution will become effective immediately upon the adoption of the Agreement by each of the governing bodies of the municipalities.

Section III: The Mayor is hereby authorized to execute this Interlocal Agreement

PASSED AND ADOPTED by the City Council of Layton, Utah this **20th day of February, 2003.**

LAYTON CITY CORPORATION CORPORATE Seal STATE OF UTAH

JERRY STEVENSON, Mayor

ATTEST:

STEVEN M. ASHBY, City Recorder

R 03-10

INTERLOCAL COOPERATION AGREEMENT

This agreement is entered into this 20th day of February, 2003, by and between Layton City, a Utah municipal corporation, hereinafter referred to as "Layton" and Syracuse City, a Utah municipal corporation, hereinafter referred to as "Syracuse".

WHEREAS, Layton and Syracuse share common boundaries; and

WHEREAS, It is mutually beneficial to Layton and Syracuse to have a cooperative effort in developing a street system that is properly connected to accommodate the flow of vehicular and pedestrian traffic; and

WHEREAS, Layton and Syracuse are desirous of cooperating in funding the construction and long term maintenance of street facilities that are near the common boundary of the two cities; and

WHEREAS, The long-range street programming for both cities requires the development of arterial streets that will require the construction of those streets to be primarily within the boundaries of Layton City; and

WHEREAS, pursuant to the authority and provisions of the Interlocal Cooperation Act, Title 11, Chapter 13 of the Utah Code Annotated, Layton City and Syracuse City are willing to cooperate in planning for, and constructing a street system, and equitably provide for the maintenance and oversight of the improvements within the streets right-of-way.

NOW, THEREFORE, in an effort to provide an efficient, economical, and coordinated street system for both Layton and Syracuse; to enjoy the mutual benefit of a coordinated street system, and for other good and valuable consideration, the parties agree as follows:

1. **Street Plan.** The map noted as "Exhibit A" shall represent the agreed upon mutual major street system for Layton and Syracuse. The map is attached to, and is made a part of this agreement.

2. **Layton City Undertakings.** Layton will be responsible to extend West Hillfield Road to the common boundary of the two cities. The right-of-way width shall be 84 feet with the street being constructed to the Layton City standards for that width of street. Said extension will be done at the full expense of Layton. Layton will make appropriate efforts as agreed upon by the city engineers of both cities to capture storm water generated in Layton prior to that water entering into Syracuse. Layton will be fully responsible for the maintenance of West Hillfield Road to the Syracuse boundary.

3. **Syracuse City Undertakings.** Syracuse will be responsible to extend Bluff Road from its present terminus at Gentile Street, southeasterly along the projected right-of-way of Legacy Parkway to a future intersection with 3700/500 West. (on the Layton and Syracuse grids respectively). Said extension will be at the full expense of Syracuse and shall be at an 84 foot width and built to Layton City standards for that width of street. Syracuse will be fully responsible for the maintenance of this portion of the Bluff Road extended. The width of this roadway may be modified if the street

is incorporated as a frontage road commensurate with Legacy Parkway as agreed upon by the Layton, Syracuse, and Utah Department of Transportation engineers.

4. **Joint Undertakings.** Layton and Syracuse will equally participate in the extension of 3700/500 West from the existing terminus at approximately 750 North (on the Layton grid) southerly to its intersection with the Bluff Road extended. The alignment will be moved to the east to a corridor that is currently free of any structures. This necessitates placing the entire street within Layton. However, Syracuse agrees to participate on an equal basis in the construction and maintenance of that facility. Layton will preserve the appropriate right-of-way and may require new development adjacent to the street to pay a proportionate share of the street costs. Either Layton or Syracuse may use this right-of-way to place utilities such as culinary water, sanitary sewer, storm drainage, secondary water, etc. at each city's own expense unless joint use of the facilities is deemed to be advantageous to both cities by the city engineers. If this roadway is incorporated as a frontage road for the Legacy Parkway, the Utah Department of Transportation may also place utilities as necessary.
   Layton and Syracuse will equally participate in the extension of 500 West (Clearfield/Syracuse grid) from its terminus at the south line of Melanie Acres Subdivision. Sixty-six feet of an 84 foot right-of-way will be developed within Layton City and Syracuse will require the additional eighteen (18) feet of right-of-way on the west side of the common city boundary. Layton and Syracuse may require adjacent land developers to construct a proportionate share of the street. Layton and Syracuse will participate equally in the maintenance of this section of street. Syracuse will be solely responsible for any costs associated with the widening of the street in the area already constructed at a 66 foot width, to the north of the south boundary of Melanie Acres Subdivision.
   Layton and Syracuse will equally participate in the extension of Bluff Road southeasterly from the future intersection of Bluff Road and 3700 West, along the projected Legacy Parkway alignment, to 2700 West (on the Layton grid). Layton and Syracuse will equally participate in the maintenance of this section of roadway. Said extension shall be 84 feet in width, built to Layton City standards except that this standard may be modified if the street is incorporated as a frontage road commensurate with Legacy Parkway. Any deviation from the 84 foot width shall be agreed upon by the Layton, Syracuse, and Utah Department of Transportation engineers. Layton may place utilities within the right-of-way at Layton's expense. The Utah Department of Transportation may place utilities in the right-of-way if it is incorporated into Legacy Parkway as a frontage road.
   All streets noted in this section shall be permanent right-of-ways and no part of these streets shall be abandoned or vacated by one city without the written permission of the other city.
   All of the streets noted shall be classified as arterial streets and neither city shall allow single family lots to front directly on the streets of have any driveway access.

5. **Administration of Agreement.** The administration of this Agreement shall be by the Cities' respective City Managers.

6. **Acquisition of Property.** If any property is acquired through the performance of this Agreement, it shall be done by the individual City as needed to fulfill its obligations under this Agreement. No property shall be acquired in joint title by the Cities.

7. **Amendment of General Plan.** Each City agrees to amend its Master Street Plan, Transportation Element of its General Plan, or similar planning mechanism, to reflect the provisions of this Agreement.

8. **Termination.** The Cities agree that this Agreement will not be terminated until each entities' respective obligations are completed. The only exceptions will be for force majuere or a non-appropriation situation. If such a situation arises, the City needing to terminate the Agreement will immediately notify the other City.

9. **Breach.** If either City fails or refuses to perform hereunder, the non-breaching party shall demand performance to resume and be completed. If a good faith resumption of performance does not occur within 30 days from the demand for performance, the breaching entity shall pay damages in an amount equal to the amount necessary to complete the breaching City's performance under this Agreement. Said amount shall be determined through the statutory bidding process.

10. **Term of Agreement.** The term of this agreement shall be fifty (50) years from the date of execution. This agreement may be extended as jointly agreed upon by the City Councils of Layton and Syracuse.

11. **Amendments.** This agreement may be amended upon mutual agreement of the Cities, in writing. The purpose and reasons for any amendments should be set forth in the amended agreement.

Executed as of the day and date above.

LAYTON CITY

Mayor

ATTEST:

APPROVED:

City Attorney

LAYTON CITY CORPORATION CORPORATE Seal STATE OF UTAH

SYRACUSE CITY

Mayor

ATTEST:

APPROVED:

City Attorney

SYRACUSE CITY CORPORATE Seal DAVIS COUNTY, UTAH

APPENDIX C – TRAILS MASTER PLAN

SYRACUSE CITY

TRAIL SYSTEM MASTER PLAN

Appendix 1

Adopted by the Syracuse City Council
March 14, 2012
Ordinance No. 12-04

Introduction

The Syracuse City Trail System Master Plan stems from the community's desire to enjoy enhanced outdoor recreation opportunities. Like many communities throughout the U.S., Syracuse City is experiencing a resurgence in bicycling and walking.
The bicycle is a low-cost, quiet, non-polluting, energy efficient, versatile, healthy and fun means of transportation. Bicycles also offer a low-cost mobility option, especially to the young. Walking is the oldest and most basic form of human transportation. It is clean, requires little infrastructure, and is integral to the health of individuals and communities. People who walk know their neighbors and their neighborhood.

The Trail System Master Plan is a long-term guide to future planning, design and implementation of a citywide system of trails to be utilized for commuter travel, health and fitness, and recreational purposes throughout Syracuse. A key element to the plan is interconnecting various neighborhoods within Syracuse as well as regional trail systems being developed by other entities. City parks, neighborhood schools, and future development provide great opportunities for interconnecting pathways.

Community Overview

Syracuse City is a trail-friendly community, due to its natural characteristics. These characteristics include: a moderate climate, relatively flat terrain, low traffic volumes, as well as attracting those who are interested in a healthy lifestyle, a clean environment, and livable and safe neighborhoods. Its beauty and gateway to Antelope Island and the Great Salt Lake Shorelands has long attracted regional bicyclists and worldwide tourists.

Vision

To maintain the "*Syracuse City Trail System Master Plan*" which will enhance the quality of life by: developing a sense of place, increase outdoor recreation opportunities, preserve open space, enhance the beauty of our community, promote healthy lifestyles, and foster economic development.

Goals

Expand the trail facilities which are conveniently located, safe, and designed to be adaptable to changes in the population, and provide beauty and functional efficiency to complement both the City's natural environment and the needs of its schools and citizens.

Maintain the continuity of the trail master plan network so that it may remain cohesive with the current and future transportation network.

Identify resources to support the improvement, maintenance and operation of existing trails, and the planning, acquisition and development of future trails.

Definitions

Bike Lane:
A designated lane independently delineated for bicycle travel on a public street.

Development:
Improvement of land in any zone for any purpose by adding, modifying, or enhancing structures and/or supporting infrastructure.

Equestrian Trail:
An independent trail which has a non-paved surface,

such as a natural, native, or loose granular material for use of horse riding.

Shared Lane:
A designated travel lane inside a public right-of-way that is open to both bicycle travel and vehicular use. This type of lane is typically utilized on existing streets where street widths are already established and prohibit the use of bike lanes. These lanes are marked with a standard pavement marking designated by Manual of Uniform Traffic Control Devices (MUTCD).

Shared Use Trail:
An improved path located inside a public right-of-way that is physically independent from motorized vehicular traffic by an open space or barrier and is utilized by cyclists, joggers, pedestrians, scooters, skaters, strollers, wheelchairs (motorized and non-motorized), and other devices compatible with pedestrian travel.

Trail Access Point:
A designated point of access to the trail system, which provides adequate off-street vehicular parking at desirable locations, that are spread throughout the trail network.

Trail:
A path defined on the map attached to the master plan which could be a bike lane, equestrian trail, and/or shared use trail.

Policies

1. Work with new development to incorporate trails where recommended on the attached map, utilizing incentives that may be established by ordinance.

2. Work closely with local organizations to facilitate the creation, maintenance, and joint use of trails, access points, amenities and connections.

3. Emphasize safety as an essential component of the trail system utilizing current local, State, and federally accepted design standards, as well as incorporating safety measures such as: adequate lighting, trail signs and markings, ongoing maintenance, citizen patrols and similar other measures to ensure the safety of trail users.

4. Develop a connected trail system that will link city neighborhoods, parks, and trails developed/planned by adjacent entities.

5. Coordinate with adjacent communities, local county, regional agencies, and State agencies as necessary when portions of the Trail System Master Plan is improved, expanded, or modified.

6. Encourage the city to develop an *Adopt-a-Trails* program that governmental, volunteer and private organizations can participate in to facilitate the maintenance of current and future trails.

7. Encourage trail system enhancements such as benches, historic/cultural markers, gateways, exercise stations, picnic areas, rest areas, restrooms and/or landscaping as appropriate to make the trails more interesting, functional, and enjoyable.

8. Designate trail access points with off-street

parking facilities to provide easy access to the trail network for all citizens regardless of physical ability.

9. Encourage the city to provide consistent trail system management signage for the benefit and safety of all users.

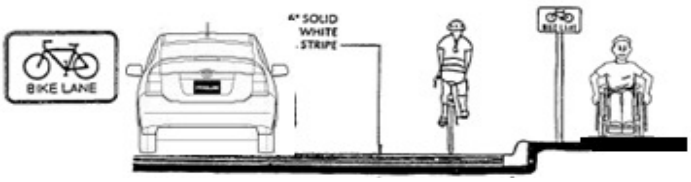
10. Update the trails system plan as necessary to assure that current issues are addressed and to coordinate the plan with the efforts of other governmental agencies.

Infrastructure

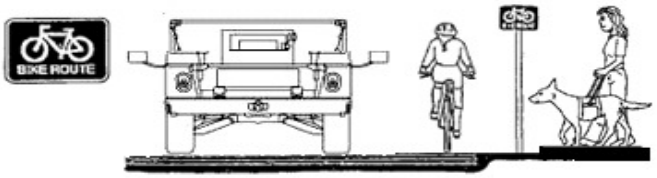
This plan uses four types of classifications for trails. These are identified as follows:

Class I - Shared Use Trail

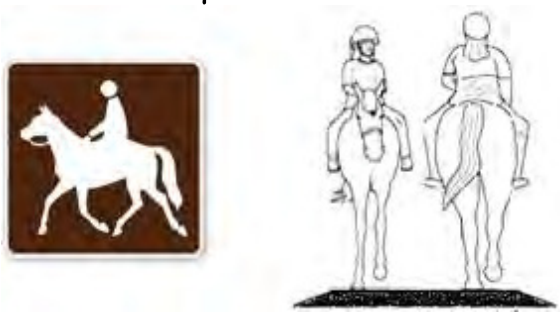
Class II - Bike Lane



Class III - Shared Lane



Class IV- Equestrian Trail



Implementation

In order to implement the trails as established in the "*Syracuse City Trail System Master Plan*," the city should follow the trails planning process for each trail segment:

1. Analyze the ownership of the various trail segments identified on the Plan
   - Prioritize the right-of-way acquisition needs based on the potential for development to occur, land costs and potential usage
   - Formulate a set of design guidelines for each trail type
   - Estimate acquisition and construction costs

- Identify funding sources

2. Develop a trail Signing Program that includes:
   - Trail Logo Sign(s)
   - Bike Route and Bike Lane signs
   - Trail "Links" through subdivisions and where appropriate

3. Provide trail system management signing where necessary advising users about:
   - Overtaking protocol (proper passing)
   - Slower traffic staying to the right
   - Leash requirements and dog etiquette
   - Any applicable enforcement codes

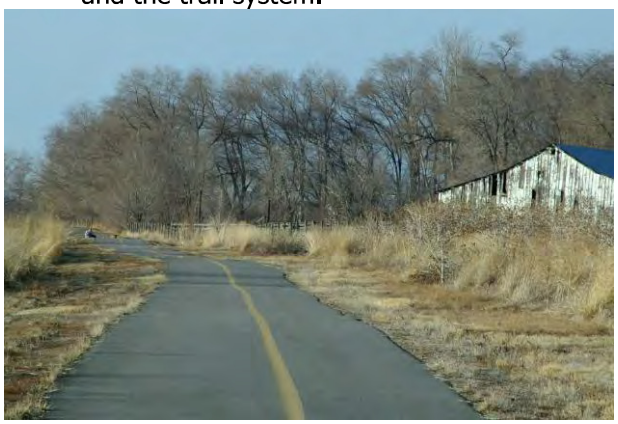
4. Develop a trail section which considers:
   - Paved section – 10 feet wide
   - Separate unpaved surface on one or both sides of the pathway for runners and walkers, and equestrian users
   - Centerline striping when volumes are high
   - Security lighting where necessary

5. Publicize pathways in order to encourage community use by:
   - Posting the route on the City's web site
   - Conducting a pathway logo contest
   - Naming pathways for donors that contribute significant land, materials, etc. that add to the development of the pathway system

6. Incorporate bike lanes on existing streets following the intended routes shown on the map (or considering alternate routes, if necessary in order to create continuity in the overall trail system). Bike lane installations should be considered in situations where:
   - Interconnecting existing bike lanes are beneficial
   - Street resurfacing projects are performed
   - Improvements for public safety are beneficial

7. As non- motorized trails are expanded, consideration will be given to interconnect points of interest, such as:
   - Emigrant Trail
   - Scenic vistas
   - Antelope Island
   - Equestrian trails
   - Unique landforms
   - Unique wildlife habitats
   - Town Center
   - Great Salt Lake
   - The Nature Conservancy's, Great Salt Lake Shorelands Preserve
   - Schools
   - Parks
   - Historic Markers

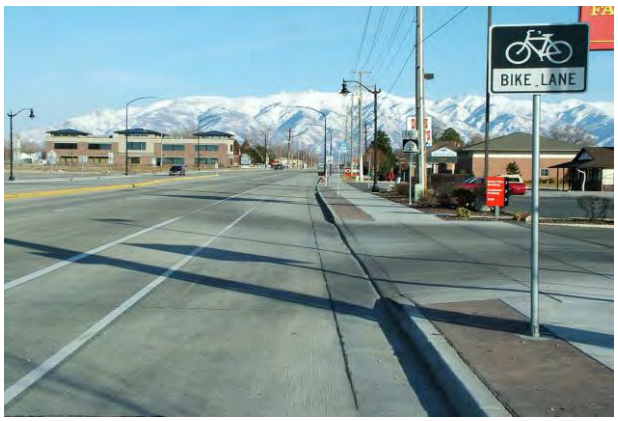
8. As opportunities to expand the trail system arise, consideration should be given to connecting new trails to existing trails as well as city amenities and the trail system.



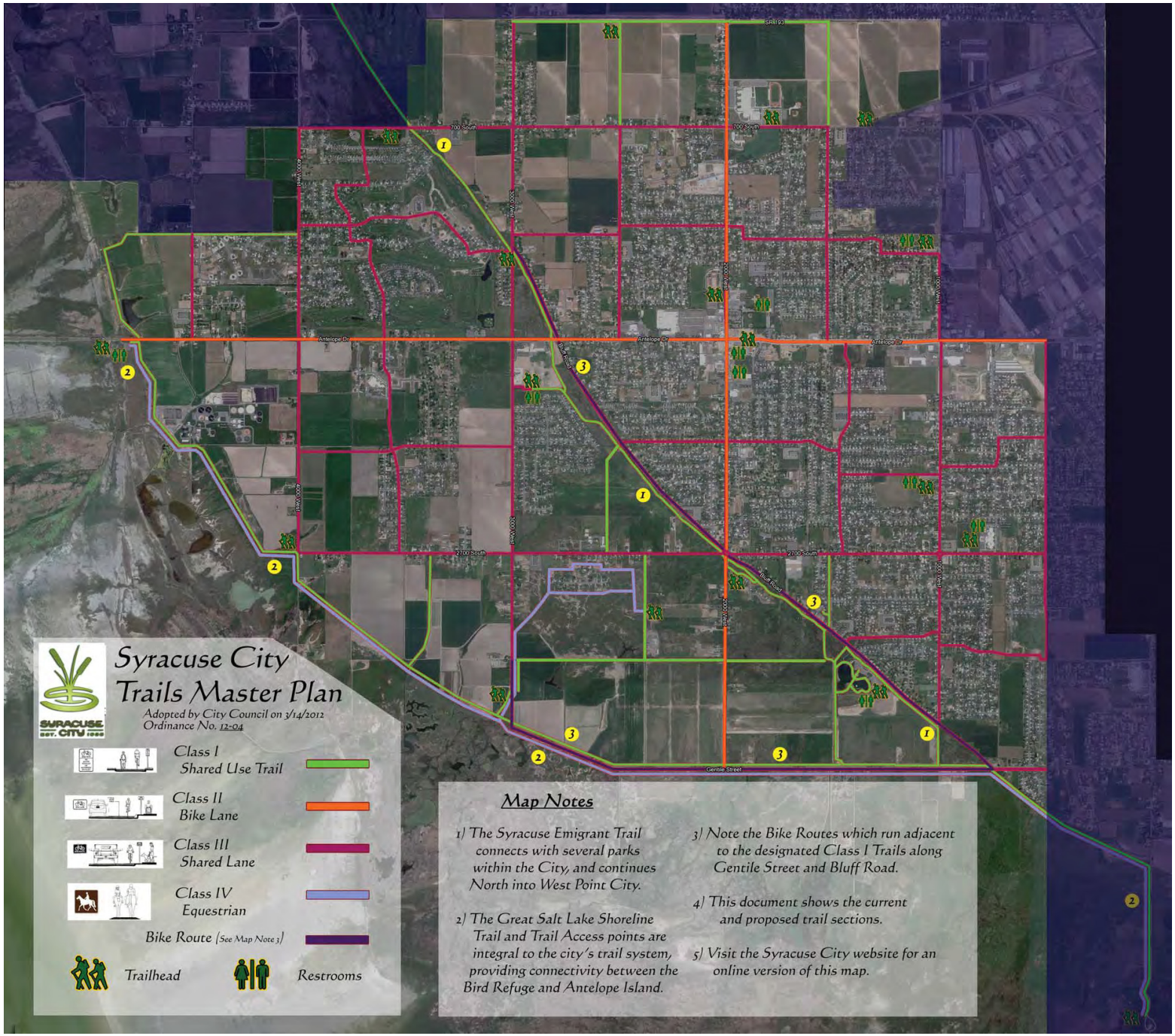
Specific Map Notes

1) The Syracuse Emigrant Trail connects with several parks within the City, and continues north into West Point City.

2) The Great Salt Lake Shoreline Trail and Trail Access points are integral to the city's trail system, providing connectivity between the Bird Refuge and Antelope Island Causeway.




SR193
700 South
700 South
1000 West
2000 West
Antelope Dr
Antelope Dr
Antelope Dr
Bluff Road
2700 South
2700 South
1000 West
2000 West
Bluff Road
Gentile Street
Syracuse City
Existing Trails Map
Legend
Class I
Shared Use Trail
Class II
Bike Lane
Trailhead
Restrooms
Map Notes
1/ The Syracuse Emigrant Trail connects with several parks within the City, and continue North into West Point City.
2/ Visit the Syracuse City website for an online version of this map.


SR193
700 South
700 South
Antelope Dr
Antelope Dr
Antelope Dr
2700 South
2700 South
Gentile Street
Bluff Road
Bluff Road
1000 West
1500 West
2000 West
2000 West
1000 West
1500 West
1
2
3
Syracuse City
Trails Master Plan
Adopted by City Council on 3/14/2012
Ordinance No. 12-04
Class I
Shared Use Trail
Class II
Bike Lane
Class III
Shared Lane
Class IV
Equestrian
Bike Route (See Map Note 3)
Trailhead
Restrooms
Map Notes
1) The Syracuse Emigrant Trail connects with several parks within the City, and continues North into West Point City.
2) The Great Salt Lake Shoreline Trail and Trail Access points are integral to the city's trail system, providing connectivity between the Bird Refuge and Antelope Island.
3) Note the Bike Routes which run adjacent to the designated Class I Trails along Gentile Street and Bluff Road.
4) This document shows the current and proposed trail sections.
5) Visit the Syracuse City website for an online version of this map.

APPENDIX D – TRAFFIC IMPACT STUDY GUIDELINES

Traffic Impact Study Requirements

When a Traffic Impact Study is required the study must be prepared according to the appropriate TIS level as shown below. The traffic study shall, at a minimum, incorporate Syracuse City principles and standards and national practices. Additional requirements and investigation may be imposed upon the applicant as necessary.

Traffic Study level I
Project ADT < 100 trips

No proposed modifications to traffic signals or 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 boundary, area of immediate influence or reasonable travel time boundary.

The study area may be limited to or include property frontage and include neighboring and adjacent parcels. Identify site, cross, and next adjacent up and down stream access points within access category distance of property boundaries.

2. Design year.
Opening day of project

3. Analysis Conditions and Period
Identify site traffic volumes and characteristics.
Identify adjacent street(s) traffic volume and characteristics.

4. Identify right-of-way, geometric boundaries and physical conflicts.
Investigate 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 A.M. and P.M. peak hours including Saturday peak hours if required by the City Engineer. Identify 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 operation pursuant to appropriate state highway access category.

Traffic Study Level II
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 boundary, area of immediate influence or reasonable travel time boundary. 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 project

3. Analysis Period

Identify site and adjacent road traffic for weekday A.M. and P.M. 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 access point(s) for 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 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 site and study area data. Identify operational concerns and mitigation measures to ensure safe and efficient operation pursuant to appropriate state highway access category.

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 boundary, area of immediate influence or reasonable travel time boundary. An acceptable traffic study boundary is 1/4-1/2 mile on each side of the project site per the City Engineer.

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 project and five year after project completion.
Document and include all phases of development (includes out pad parcels).

3. Analysis Period

Analyze site and adjacent road traffic for weekday A.M. and P.M. peak hours including Saturday peak hours if identified as a high Saturday use.. Identify special event peak hour as necessary (adjacent roadway peak and site peak).

4. Data Collection

a. Daily and Turning Movement counts.
b. Identify site and adjacent street roadway and intersection geometries.
c. Traffic control devices including traffic signals and regulatory signs.
d. Traffic accident data

5. Trip Generation

Use equations or rates available in latest edition of ITE Trip Generation. Where 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 existing, site, background, and future traffic volumes on surrounding network of study area.

7. Conflict / Capacity Analysis

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

8. Traffic Signal Impacts

For modified and proposed traffic signals:
a. Traffic Signal Warrants as identified.
b. Traffic Signal drawings as identified.
c. Queuing Analysis

9. Design and Mitigation.

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

Traffic Study Level III

Project ADT 3,000 to10,000 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 boundary.

An acceptable traffic study boundary should be based on travel time or by market area influence. Intersection of site access drives with state highways and any intersection within 1/2 mile of property line on each side of project site.

2. Design Year

Opening day of 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 site and adjacent road traffic for weekday A.M. and P.M. peak hours including Saturday peak hours if identified as needed per the City Engineer. Identify special event peak hour as necessary (adjacent roadway peak and site peak).

4. Data Collection

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

5. Trip Generation

Use equations or rates available in latest edition of ITE Trip Generation. Where 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 Distributions and Assignment

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

7. Capacity Analysis

a. Level of Service (LOS) for all intersections.
b. LOS for existing conditions, design year without project, design year with project.

8. Traffic Signal Impacts. For proposed Traffic Signals:

a. Traffic Signal Warrants as identified.
b. Traffic Signal drawings as identified.
c. Queuing Analysis.
d. Traffic Systems Analysis. Includes acceleration, deceleration and weaving.
e. Traffic Coordination Analysis

10. Accident and Traffic Safety Analysis

Existing vs. as proposed development.

11. Design and Mitigation

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

Traffic Study Level IV

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 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 site and adjacent road traffic for weekday A.M. and P.M. peak hours including Saturday peak hours as needed per the City Engineer. Identify special event peak hour as necessary (adjacent roadway peak and site peak).

4. Data Collection

a. Daily and Turning movement counts.
b. Identify site and adjacent street roadway and intersection geometries.
c. Traffic control devices including traffic signals and regulatory signs.
d. Automatic continuous traffic counts for at least 24 hours or obtain ADT from local or state agencies
e. Traffic accident data.

5. Trip Generation

Use equations or rates available in latest edition of ITE Trip Generation. Where 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 Distributions and Assignment

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

7. Capacity Analysis

a. Level of Service (LOS) for all intersections.
b. LOS for existing conditions, design year without project, design year with project.

8. Traffic Signal Impacts. For proposed traffic signals:

a. Traffic Signal Warrants as identified.
b. Traffic Signal drawings as identified.
c. Queuing Analysis.
d. Traffic Systems Analysis. Includes acceleration, deceleration and weaving.
e. Traffic Coordination Analysis.

9. Accident and Traffic Safety Analysis. Existing vs. as proposed develop

10. Design and Mitigation

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

APPENDIX E – UDOT CORRIDOR PRESERVATION PROCESS

The Utah Department of Transportation
Corridor Preservation Process

The Intermodal Surface Transportation Efficiency Act of 1991 formally introduced the concept of corridor preservation, requiring states to consider "preservation of rights of way for construction of future transportation projects…and identify those corridors for which action is most needed to prevent destruction or loss."

While strongly promoted at the federal level, it has been left to the individual states to develop techniques and programs for corridor preservation. The Utah Department of Transportation (UDOT) has developed a program that enables the state and local municipalities to preserve future transportation corridors by acquiring rights of way that meet certain eligibility requirements.

If you are interested in selling your property to the state for corridor preservation purposes, you must meet the following requirements to be eligible:

Bare Ground and/or Imminent Development

- Your land must be vacant (without constructed improvements), and soon to be developed.

- Your land is in a corridor that UDOT or the local municipality has identified for preservation.

Hardship

Health and Safety Considerations:

- Advanced age – needs care or assistance from others.
- Ambulatory defects or diseases – where present facilities are inadequate or cannot be maintained by the owner.
- Major disabilities or equivalent disabilities.
- Doctor's recommendation to change climate or physical environments.
- Non-decent, safe, and sanitary housing such as overcrowded living conditions if the occupancy level did not exceed decent, safe, and sanitary standards at the time the owner originally bought the property.

Financial Considerations:

- Probate or other litigation.
- Loss of employment.
- Retirement causing financial inability to maintain current residence, or purchase of retirement home.
- Pending mortgage foreclosure.
- Job transfer that creates a need to move.

- Financial Distress involving personal or business circumstances.
- Substantial Burden such as maintenance, taxes, and/or rehabilitation costs.
- Monetary Loss – Income or vacant properties. Eligible when the proposed project is the immediate cause of a monetary loss. The owner must demonstrate that the project creates an adverse impact upon business profitability or upon property. Non-transportation issues to be considered are:
    - Inability to obtain financing
    - Inherent risk of ownership associated with this type of property.
    - Other outside factors affecting the profitability of the business operation or property ownership.
    - Local governmental regulations affecting development or rehabilitation, such as requiring the owner to set aside right of way from development, without the requirement for dedication.

Application Process

If you believe you may qualify for advanced acquisition, you must apply for a Hardship Acquisition. Please follow the steps below in order to be considered for advanced acquisition using the Corridor Preservation Funds:

1. Completely fill out the Hardship Acquisition Questionnaire and attach all necessary documentation.

2. If needed, a letter may accompany the Questionnaire if further information is needed to describe your hardship.

3. The letter or questionnaire must include the property owner's name, address of the property and a telephone number.

4. In the documentation, please state the reason you believe you qualify for advanced acquisition, the estimated market value of the property and what steps, if any, you have taken to sell the property on the open market.

5. Please submit the information packet to:

    Utah Dept of Transportation
    P. O. Box 148420-8420
    Salt Lake City, UT 84114
    Attn: Dian McGuire

    Re: Corridor Preservation Fund

6. Upon receipt of your letter, you will be contacted by a UDOT representative that will explain the process to you.

7. An appraisal will be ordered by UDOT at no cost to you. The appraiser will be a qualified appraiser and will contact you directly. You have the right to accompany the appraiser during their site visit. This could take approximately 30 days.

8. A review appraiser will be hired to go over the appraisal report. The reviewer will review the report and validate the integrity of the report and help determine market value. This process may take 7 to 10 days.

9. Once UDOT has received the reports from both appraisers, your completed application packet will be evaluated at the next monthly Advisory Council meeting. The Advisory Council is a group of representatives from each of the Metropolitan Planning Organizations (MPOs), UDOT, and appointed members from the Transportation Commission.

10. If the Advisory Council recommends approval, your application will then be considered by the Transportation Commission for acquisition approval. The Transportation Commission meets monthly and may review your application the same month as the Advisory Council.

11. If the Transportation Commission approves your application, a UDOT representative will contact you with an explanation of the acquisition process. In the event of denial, you will receive a letter explaining your rights of appeal.

12. Please note that the advanced acquisition program using Corridor Preservation Funds is a voluntary process. Should you and the Department of Transportation be unable to reach an agreement on the terms of sale, the Department may withdraw their offer without any further obligation.

If you have additional questions concerning this process, please contact Dian McGuire at 801-633-6370 or dmcguire@utah.gov

APPENDIX F – TRAFFIC CALMING

Neighborhood

Traffic Calming Program

Adopted by Resolution R08-33

December 23, 2008

Neighborhood Traffic Calming Program

"Traffic Calming is the combination of mainly physical measures that reduce the negative effects of motor vehicles, alter driver behavior and improve conditions for non-motorized street users".

-Adopted by ITE International, 1997

Background

Syracuse City Staff has been approached often by City residence with the concerns of speeding in residential neighborhoods, and request that the City construct “speed humps” or other types of traffic calming devices in residential neighborhoods. Until now there has not been a set of guidelines or criteria in which these requests can be accurately evaluated or even warrant a traffic calming devices.

This document was developed with input from various City departments and several Governing bodies. These include: Police, Fire, Public Works, City Engineer, and Community Development Departments; the City Council and Planning Commission. While opinions vary regarding how traffic calming should best be applied this document represents the City’s attempt to produce a fair policy for all of the residents of Syracuse City.

For the development of this document, the traffic calming policies from the following City’s and Organizations were reviewed to determine what accepted practices were being used, and try to use some of those accepted and tested practices that would apply to our community.

- City of Auburn, WA
- City of Bellevue, WA
- City of Boulder, CO
- City of Concord, CA
- City of Grand Rapids, MI
- City of Greeley, CO
- City of Eden, NC
- City of Federal Way, WA
- City of Franklin, TN
- City of Hilliard, OH
- City of Huntsville, AL
- City of Issaquah, WA
- City of Jackson, MS
- City of Kirkland, WA
- City of Lake Forest Park, WA
- City of Lee’s Summit, MO
- City of Littleton, CO
- City of Livermore, CA
- City of Loveland, CO
- City of Madison, WI
- City of Mankato, MN
- City of Melbourne, FL
- City of Mercer Island, WA
- City of Missoula, MT
- City of Monterey, CA
- City of Murray, UT
- City of Newport, VA
- City of Oak Ridge, TN
- City of Park City, UT
- City of Redmond, WA
- City of Salt Lake City, UT
- City of San Leandro, CA
- City of San Mateo, CA
- City of Sebastopol, CA
- City of St. George, UT
- City of Stockton, CA
- City of Weatherford, TX
- City of Wilmington, NC
- City of Westfield, IN
- City of Woodland, CA
- County of Arlington, VA
- Safe Routes to School Program (SRTS)
- Town of Los Gatos, CA
- Town of Lewisville, NC
- Town of Yarmouth, ME
- Traffic Calming “State of the Practice”

GENERAL PURPOSE

Syracuse City is dedicated "to provide quality, affordable services for its citizens, while promoting community pride, fostering economic development and managing growth" (*Syracuse City Moto*). The purpose of the Syracuse City Neighborhood Traffic Calming Program is to improve both the safety and quality of life within residential neighborhoods with an attempt to reduce the negative impact of traffic (volumes, speeds, and/or accidents).

The Neighborhood Traffic Calming Program is a process, rather than a fixed solution. Ongoing communication and assessment are essential to the success of the effort and will help ensure that neighborhood safety concerns are addressed in an effective and sustainable manner.

The purpose of this program is to promote safe and pleasant conditions for pedestrians, bicyclists and motorists on residential streets by using a process in which residents work with City staff to address traffic and safety problems. This can be achieved through the following means (the three "E's"):

- Education: Increase awareness of residents in neighborhoods that there are traffic related concerns such as excessive speed, non-local (cut-through) traffic, and accidents.
- Enforcement: Encourage compliance with speed limits on local streets through speed reducing tactics provided by Syracuse City Police Department, which includes, but not limited to, traditional enforcement, the Neighborhood Speed Watch Program, and the use of speed trailers (S.M.A.R.T).
- Engineering: Evaluate the affected street for speeding, traffic volume, and accidents to determine if traffic calming measures are warranted.

OBJECTIVES

Syracuse City strives to ensure overall safety and enhance the quality of life for its residents. Traffic conditions on residential streets certainly affect the residence "livability". Traffic that is traveling at improper speeds and an excessive amount of non-local traffic that is consistently using residential streets can affect a neighborhood's "livability", including pedestrian and bicyclist activities.

Installing traffic calming devices on every street is not always the answer. Syracuse City Neighborhood Traffic Calming program was designed to serve as a guide for city staff, elected officials, and residents throughout the traffic calming study, planning, and implementation processes. The program is only a guideline and, therefore, subject to change. Under this program, staff will work with residents to identify traffic issues in their neighborhoods and seek appropriate solutions.

The goal of the program is to affect driver behavior in order to improve safety and the quality of life for residents, pedestrians, bicyclists, and motorists. This is to be balanced with providing streets that do not hinder quick response time for emergency service vehicles including fire trucks, police cars, and

ambulances and streets that are accessible by large vehicles, such as school buses and trucks used for essential City services. Throughout the study process, Syracuse City Planning staff will work with representatives of neighborhoods, the Syracuse City Police Department, the Syracuse City Fire Department, and the Syracuse City Public Works Department to develop workable solutions to problems identified.

Objectives are as follows:

- Reduce motorist speed in residential neighborhoods;
- Reduce number and severity of accidents;
- Reduce neighborhood cut through traffic;
- Increase the safety of children, pedestrians, bicyclists, and motorists;
- Create and/or enhance attractive streetscapes;
- Establish clear guidelines of the process and procedures to evaluate traffic calming requests;
- Partner with residents for the best overall program for the affected streets;
- Implement self-enforcing rather than regulatory measures;
- Maximize street life and pedestrian activity;
- Prevent crime; and
- Enhance urban redevelopment.

PROCEDURES

This process is to ensure that there is a fair and effective consideration at minimal taxpayer expense. This program encourages a collaborative approach by residents, working with City Staff in all steps of the Neighborhood Traffic Calming Program. Projects that are being considered for the Neighborhood Traffic Calming Program must follow the procedure that is outlined below. A flowchart summarizing this procedure is provided in Appendix A.

PHASE I

IMPLEMENTATION PROCESS

The traffic calming process begins once a Citizen submits a completed Citizen Action Request application (CAR) into the City. The request must identify the perceived traffic problem and must include contact information for a neighborhood representative and must include four (4) additional signatures of residents within the affected area that share the same concerns as the applicant (only one signature per household will be accepted). There will be a required application fee of $100 that must be submitted with the CAR into the Syracuse City Office by the first Monday in November for the application to be considered for the upcoming fiscal year. The Neighborhood Traffic Calming Program application is provided in Appendix B.

Upon receipt of the Neighborhood Traffic Calming Program application, Syracuse City staff will evaluate the project to determine the need for traffic calming measures. This evaluation will typically include a

site visit and the collection of data, such as traffic volumes and traffic speeds. After traffic data is collected an Index score will be assigned to the street (*Table A-1*). If the street index is 80 points or greater the process will continue within the Neighborhood Traffic Calming Program.

TABLE A-1
STREET INDEX

CRITERIA	POINTS	BASIS	POINTS
SPEED	10 POINTS PER EVERY MPH OVER THE POSTED SPEED LIMIT	85TH PERCENTILE SPEED	
VOLUME	1 POINT FOR EVERY 100 VEHICLES	AVERAGE DAILY TRAFFIC VOLUME	
CRASHES	3 POINTS FOR EVERY CRASH	NUMBER OF REPORTED CRASHES IN LAST 3 YEARS	
EMERGENCY RESPONSE ROUTE	0 POINTS FOR YES, 3 POINTS FOR NO	IS STREET DESIGNATED EMERGENCY RESPONSE ROUTE?	
FATALITIES	15 POINTS FOR EVERY FATALITY	NUMBER OF REPORTED FATALITIES IN LAST 3 YEARS	
BIKE ROUTE	5 POINTS FOR YES, 0 POINTS FOR NO	IS STREET DESIGNATED BIKE ROUTE?	
PEDESTRIAN GENERATORS	5 POINTS FOR EACH	IS THERE A PARK, SCHOOL, CHURCH, WITHIN 500 FEET	
SIDEWALKS	0 POINTS FOR YES, 5 POINT FOR NO	IS THERE A SIDEWALK?	
TRAFFIC CALMING	-5 POINTS FOR YES, 0 POINTS FOR NO	IS THERE EXISTING TRAFFIC CALMING?	
STREET WIDTH	1 POINT FOR A STREET SEGMENT < 21' WIDE, 0 POINTS FOR A STREET SEGMENT > 21' WIDE	IS THE EXISTING STREET WIDTH GREATER THAN 21' FROM THE EDGE OF ASPHALT?	
POSTED SPEED LIMIT	1 POINT FOR 25 MPH POSTED LIMIT, 0 POINTS FOR OTHER	I THE POSTED SPEED LIMIT 25 MPH?	
* TANGENT LENGTH OF STREET	1 POINT FOR THE TANGENT LENGTH OF THE STREET TO BE < 600'	IS THE LENGTH OF THE STREET GREATER THAN 600'?	
**LOCAL STREET CLASSIFICATION	5 POINTS FOR LOCAL STREET, 1 POINTS FOR MINOR COLLECTOR	IS THE STREET A LOCAL STREET?	
		***TOTAL	

* For the street to be considered in the Neighborhood Traffic Calming Program the street tangent length shall not be less than 600 feet.
** Cul-de-sac streets and fire lanes are ineligible for the Neighborhood Traffic Calming Program.
*** 80 points or greater will be included in the Neighborhood Traffic Calming Program.

If City staff determines by the street index that the street segment does not have a traffic volume or a traffic speed problem, then the project will be terminated. The project will be ineligible for the Neighborhood Traffic Calming Program for a period of two (2) years unless City Staff determine that changing conditions have resulted in a traffic volume or speeding problems.

If City staff determines that a street segment has a traffic volume or a traffic speed problem, but the above street index requirements are not met, then staff will work with the Syracuse Police Department and the neighborhood association/group to address the problem with Level I measures. However, the

street will not be considered for Level II measures at this time. Also, the project will be ineligible for the Neighborhood Traffic Calming Program for a period of two (2) years unless City Staff determine that changing conditions during this time have resulted in a traffic volume or speeding problems.

If City staff determines that a street segment has a traffic volume or a traffic speed problem, and if the above street index requirements are met, then the project will be included in the Neighborhood Traffic Calming Program Level I process. City Staff will identify feasible and appropriate traffic calming solutions to address the identified traffic problem. Examples of traffic calming techniques are provided in Appendix F.

Once the process is reviewed by City staff an initial neighborhood meeting will be held with the assistance of those residents that signed the original CAR application. At the meeting, City staff will present findings from the initial field investigation and data collection, and will provide a presentation of the Syracuse City Neighborhood Traffic Calming Policy.

A volunteer group of residents will form the project's Community Working Group. The goal of this group is to have members that represent the various geographical areas and interests within the neighborhood.

The Community Working Group will work with City staff and meet to review existing problems, determine community goals, establish the neighborhood study boundary, discuss and evaluate various Level I measures, and gain community acceptance on which Level I measures to implement as means of addressing the problems. The group will also determine how long to implement the recommended improvements, although Level I efforts will be applied for a period of not less than three (3) months and not more than nine (9) months

The Neighborhood Traffic Calming Program Level I measures will involve the coordinated efforts of City staff, Syracuse Police Department, and the Community Working Group. The Community Working Group must actively participate in this process in order for the project to continue in this program. Upon approval from City staff, the appropriate Level I improvements will be installed. Following the pre-established implementation period, City staff will collect new data to determine the effectiveness the measures put into place. The Community Working Group will then meet to discuss if their goals have been met.

If the prescribed Level I actions have proved effective in addressing the goals, the improvements will stay in place or permanent devices will be installed. If the actions are ineffective; the Community Working Group may consider reapplying at a later time or pursue potential implementation of Level II measures.

PHASE II

IMPLEMENTATION PROCESS

Level II improvements will only be considered if Level I measures do not meet the goals established by the Community Working Group, as previously discussed. In special circumstances, City staff may determine that previously installed Level I measures cannot achieve the desired outcome and my recommend consideration of Level II measures. Projects that move into Level II consider physical travel speed and traffic volume reduction measures and therefore require increased neighborhood consensus.

Before a Level II program can commence for a particular neighborhood, residents and property owners within the study area boundary will be surveyed to determine their level of support in considering Level II improvements. The Community Working Group will conduct the survey. A minimum of 33-1/3 percent of those surveyed must agree to proceed in developing an expanded plan. If less than 33-1/3 percent agree, then Level II improvements will not be considered.

If the vote supports consideration of Level II measures, the Community Working group will be reestablished. It may be necessary to expand or otherwise alter the composition of the group due to the likely grater impacts that could result under a Level II traffic calming plan.

In addition, a Technical Working Group will be formed. The member of this group will consist of Syracuse City's Community Development, Engineering, Fire, Police, and Public Works Departments. Their perspective is essential for developing a plan that effectively address existing concerns without creating new problems that cannot be mitigated or that keep the ultimate plan form being implemented.

The Community and Technical Working Groups will meet to review the results from the Level I program, revisit existing problems and community goals, and identify the appropriateness of various Level II measures in addressing the existing problems. City staff will work with the Community and Technical Working Groups in developing a Level II traffic calming plan (Note: the plan may contain some Level I type of measures).

Next, the Community Working Group will present the provided Level II traffic calming plan (which may consist of alternatives) to the neighborhood residents and property owners at a Neighborhood Open House. In addition, the plan may be presented through a newsletter or other types of mailing. The City will assist the neighborhood in these efforts. However, it is up to the Community Working Group to gather support for the project.

All projects that reach this point will be prioritized by City staff based on a variety of factors, such as traffic speeds, traffic volumes, and implementation costs. This prioritization will be used by City staff to develop construction schedules for the projects depending on the City Councils approval.

After the project has been prioritized against other traffic calming requests, City staff will then present the project(s) to Syracuse City Council for their approval of project funding during the fiscal year budget process. Projects that have the highest priority will be implemented first. If sufficient funding is not available for the highest priority project, then the highest priority project that can be implemented with the amount of funding that is available will be implemented first. If there is not sufficient funding available for a project to continue, then that project will be placed on hold until the next fiscal year (July 1st). If the City Council elects not to fund the project then City staff and the Community Working Group will then have the option to go back to and develop a more feasible solution. A lower-priority project can be implemented ahead of schedule if the Community Working Group elects to pay 100 percent of the implementation costs and as long as doing so does not affect the construction schedules of higher-priority projects. Implementation of a project will not occur until all associated maintenance landscape payment agreements have been finalized.

If funding is approved, the proposed Level II traffic calming plan will be implemented on a test basis using temporary control devices, where possible, for a period determined by City staff, but not to exceed one (1) year. Temporary devices will not be installed during the snow removal season (November- March), and if temporary device are currently installed, but the evaluation process not completed these devices will be removed and then placed back at the end of the snow removal season. Installation of the temporary traffic calming measures will be performed by Syracuse City crews or by a contractor that is selected by the City.

Following the test period, City staff will collect new data to determine the effectiveness of the measures put into place. These results will be provided to all of the neighborhood's residents and property owners. Then, residents and property owners will vote on whether or not to install a permanent device of the proposed Level II traffic calming plan. A minimum of 60 percent of residents and property owners (household locations will be determined by City staff) that could be affected by the proposed changes in traffic flow must favor implementation for the Level II measures to proceed. In addition, a minimum of 75 percent of the residents and property owners immediately adjacent to each proposed device must favor implementation. One vote will be granted to each residence and/or property owner. This voting period will last up to four (4) weeks.

Installation of the traffic calming measure will be performed by Syracuse City crews or by a contractor that is selected by the City

After the construction of the permanent Level II measures, City staff will continue to monitoring the effectiveness of the plan for up to one (1) year. City staff will prepare a report of the findings for presentation to the neighborhood. Depending on the nature of the measures, this report could include a maintenance plan for residents and property owner.

MODIFICATION OR REMOVAL

OF A TRAFFIC CALMING DEVICE

If City staff determines that a traffic calming device should be modified or removed due to public health/safety reasons, then City staff, with assistance from the Public Works Department, shall modify or remove the device. If the Community Working Group wishes to remove or significantly alter a traffic calming device, then the neighborhood must conduct the same petitioning just prior to the installation of the permanent device. If the petition supporting the removal/modification is successful, then the neighborhood must pay for the costs that are associated with the removal/modification. A traffic calming device will not be removed until all payment agreements have been finalized. If the removal/modification is initiated by the neighborhood, then the neighborhood will be ineligible to participate in the Neighborhood Traffic Calming Program for a period of five years.

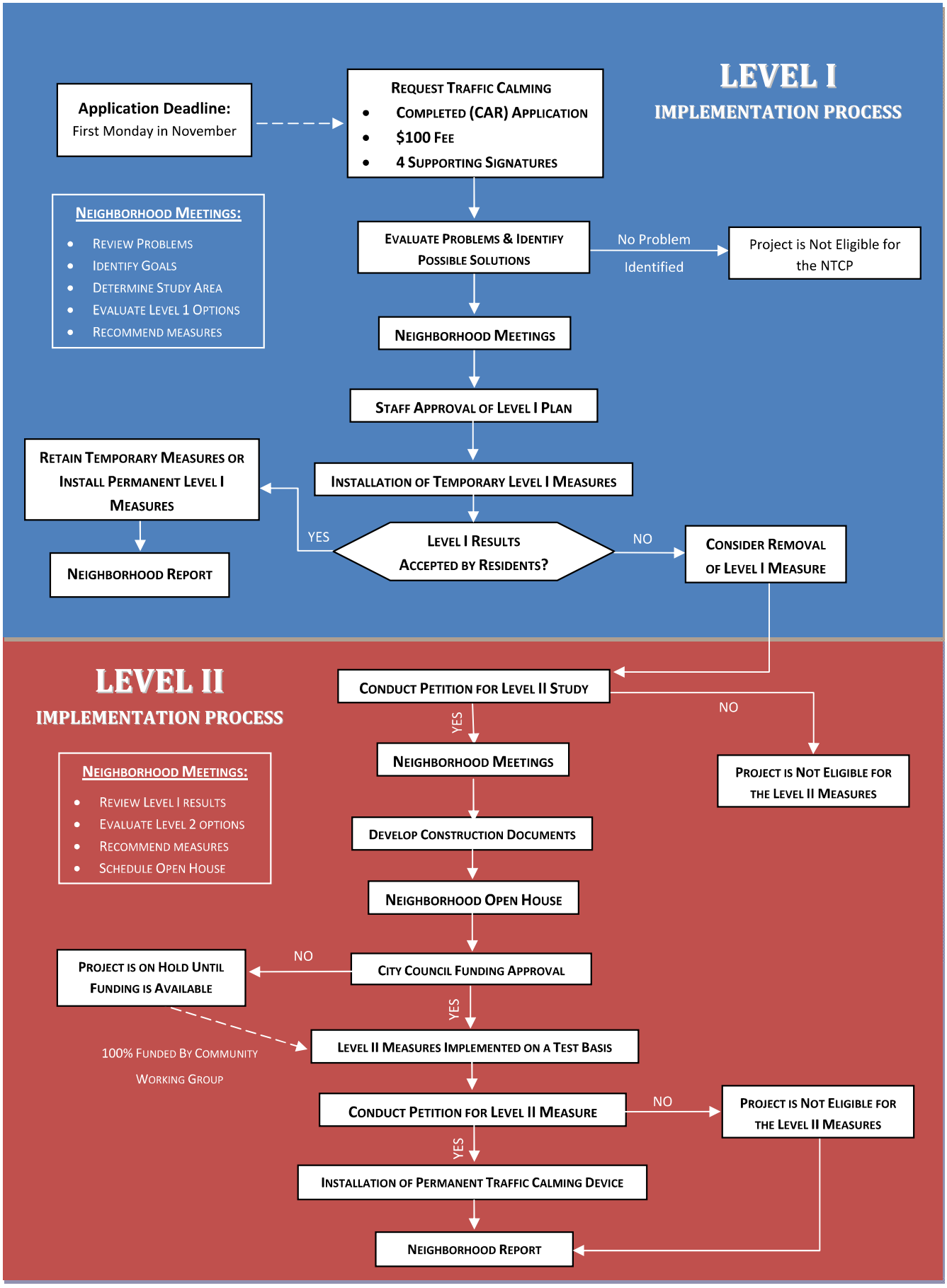
FUNDING CONSIDERATIONS

Funding for the implementation of a traffic calming plan should be considered throughout the plan development process. If funding limitations will impact the range of options available, this needs to be identified early in the process and the variety of appropriate devices should reflect these limitations. It must be reiterated that Level II devices are expensive.

However, if a neighborhood wants to implement a more extensive plan than what City staff believes is appropriate to resolve the identified problem(s), then the City Council may need to approve the plan with additional funds and/or the neighborhood may be requested to participate in funding all or a part of the project.

Appendix A

Neighborhood Traffic Calming Program
Process Flow Chart


LEVEL I
IMPLEMENTATION PROCESS
Application Deadline:
First Monday in November
Request Traffic Calming
Completed (CAR) Application
$100 Fee
4 Supporting Signatures
Neighborhood Meetings:
Review Problems
Identify Goals
Determine Study Area
Evaluate Level 1 Options
Recommend measures
Evaluate Problems & Identify Possible Solutions
No Problem Identified
Project is Not Eligible for the NTCP
Neighborhood Meetings
Staff Approval of Level I Plan
Installation of Temporary Level I Measures
Level I Results Accepted by Residents?
YES
NO
Retain Temporary Measures or Install Permanent Level I Measures
Neighborhood Report
Consider Removal of Level I Measure
LEVEL II
IMPLEMENTATION PROCESS
Conduct Petition for Level II Study
YES
NO
Project is Not Eligible for the Level II Measures
Neighborhood Meetings:
Review Level I results
Evaluate Level 2 options
Recommend measures
Schedule Open House
Neighborhood Meetings
Develop Construction Documents
Neighborhood Open House
City Council Funding Approval
NO
Project is on Hold Until Funding is Available
YES
100% Funded By Community Working Group
Level II Measures Implemented on a Test Basis
Conduct Petition for Level II Measure
NO
Project is Not Eligible for the Level II Measures
YES
Installation of Permanent Traffic Calming Device
Neighborhood Report

Appendix B

Citizen Action Request Form

SYRACUSE CITY CORPORATION
1979 West 1900 South
Syracuse, UT 84075
(801) 614-9657

FAX: (801) 614-9657

Citizen Action Request (CAR)

for the Neighborhood Traffic Calming Program

(Please Print)

Representative: _____ **Date:**_____

Applicant Street Address: _____

Phone: _____ **FAX:** _____

Email: _____

Please list at least 4 or more other occupied residence along you street or general affected area that support your concerns.

Name	Address	Phone	Signature

Name of the home owner association (if applicable):_____

Detailed Description of Concern:_____

_____

_____

_____

_____

_____

_____

What day(s) of the week and time(s) does the problem appear to be the worst?_____

_____

Describe who you feel is causing the problems in your area?_____

_____

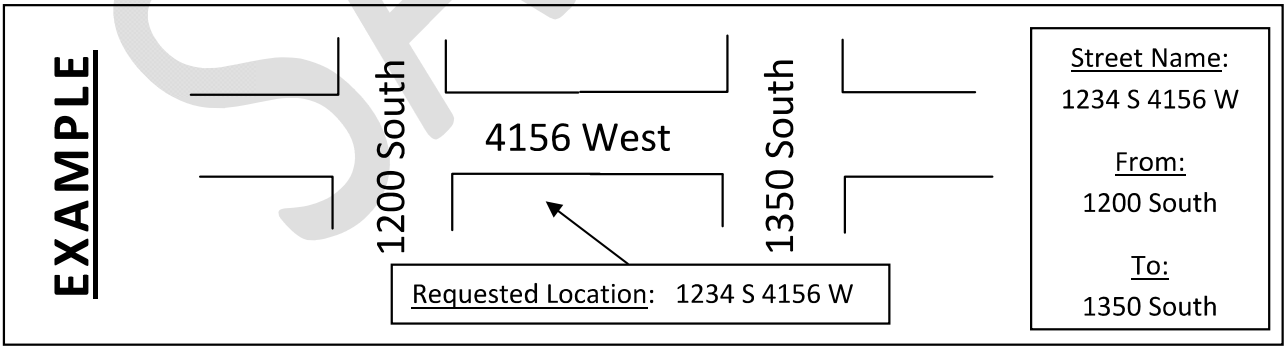
Location Requested

Please provide the approximate address to be considered. Indicate the name of the street to be considered and the boundaries of the street segment by identifying intersecting streets (from and to). Consideration will be given for only that described.

Requested Location:_____

Street Name:_____

From:_____ **To:**_____



Specific Action Requested:_____

_____

How long has this traffic problem existed?_____

Is school traffic a factor in your traffic problem? YES ☐ NO ☐

Have you contacted the City before about your concerns? If yes explain Yes ☐ NO ☐

I understand that submitting this application does not guarantee approval for traffic calming and that such approval is subject to the discretion of the Neighborhood Traffic Calming Program Guidelines. I accept responsibility to serve as the contact person for this request.

_____ _____

Applicant's Signature Date

APPLICATION DEADLINE FOR FUNDING DURING THE NEXT BUDGET CYCLE IS THE
FIRST MONDAY IN NOVEMBER

For Office Use Only

Application fee $250 Date paid: _____

Application taken by:_____

Project Number: _____

Date(s) of Enforcement: _____

_____

Date(s) Speed Trailer Deployed: _____

_____

Recommends Traffic Study? Yes: _____No:____

Date(s) of Traffic Study:_____

_____

Date of Design Presentation: _____

Date Petition Received:_____

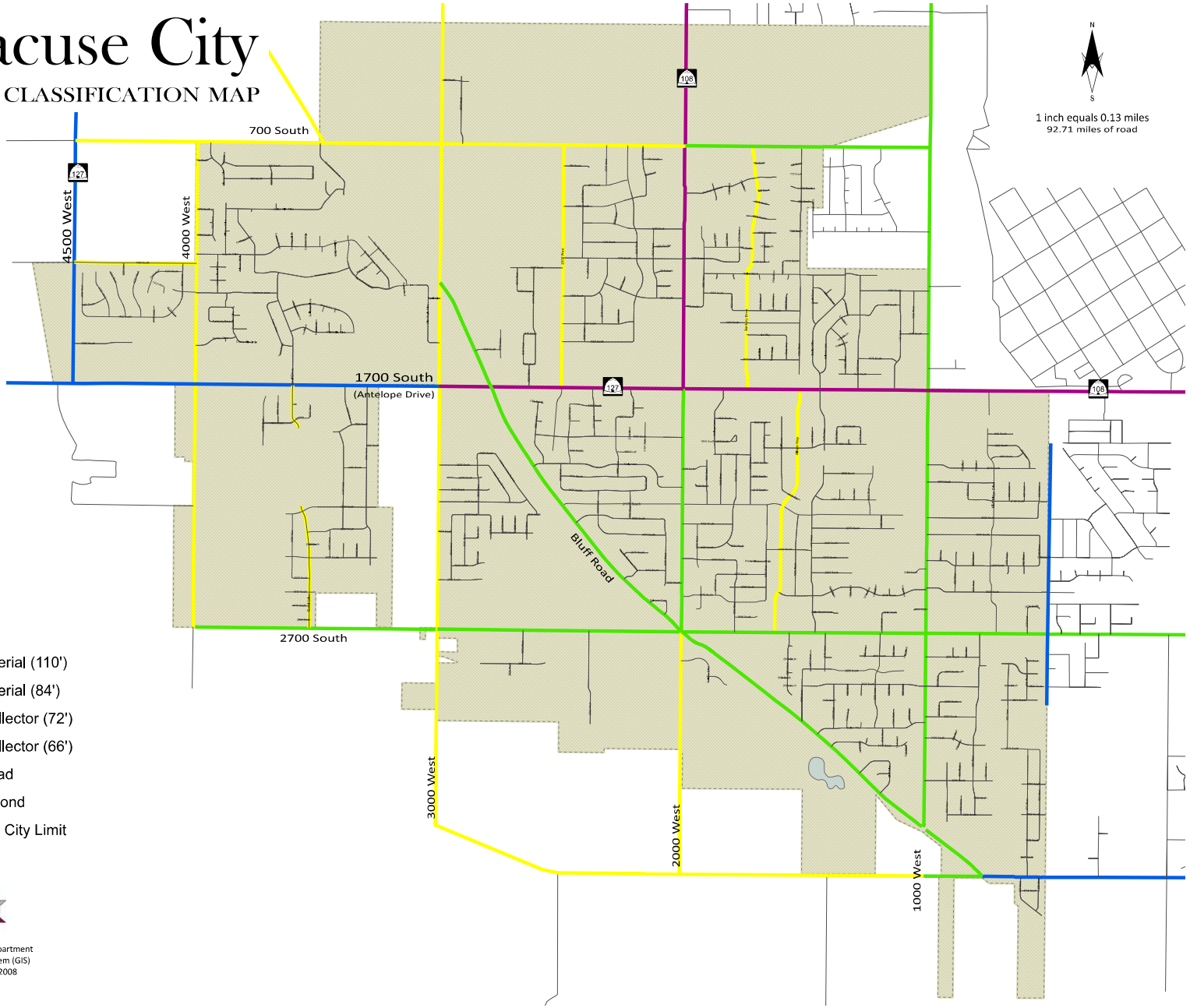
Date Measures Implemented: _____

Appendix C

Street Classification Map

Syracuse City

STREET CLASSIFICATION MAP



Legend

- Interstate
- Major Arterial (110')
- Minor Arterial (84')
- Major Collector (72')
- Minor Collector (66')
- Local Road
- Jensen Pond
- Syracuse City Limit

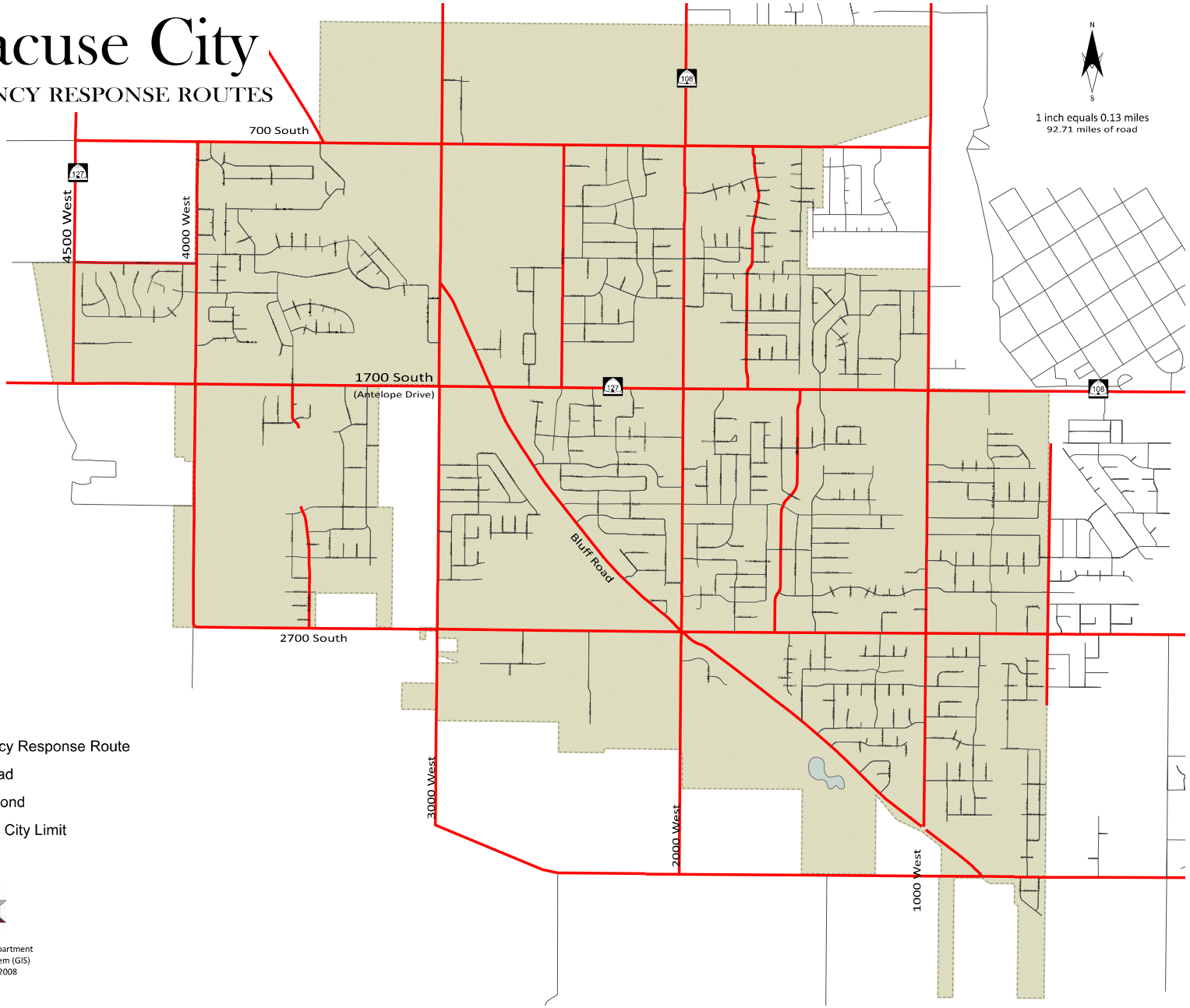
Community Development Department
Geographic Information System (GIS)
Updated: December 15, 2008

Appendix D

Emergency Response Map

Syracuse City

EMERGENCY RESPONSE ROUTES



Legend

- Emergency Response Route
- Local Road
- Jensen Pond
- Syracuse City Limit

Community Development Department
Geographic Information System (GIS)
Updated: December 15, 2008

Appendix E

Neighborhood Traffic Calming Program
Level I Measures

NEIGHBORHOOD TRAFFIC CALMING PROGRAM
LEVEL I MEASURES

Level I measures would emphasize to residents important traffic safety issues and give instructions for driving safely in accordance with the rules of the road.

NEIGHBORHOOD EDUCATION BROCHURE

Provides information describing techniques the City can use to help address traffic issues and educate the residents to be more aware of driving habits. The Citizen Action Request Form provides a method for the residents to explain perceived problems and recommend solutions that staff can review, analyze, and implement. If implementation of the more conventional solutions(s) such as installation of striping, signs and pavement markings to solve the neighborhood concerns were not successful, the Neighborhood Speed Watch Program would be implemented.

NEIGHBORHOOD TRAFFIC SAFETY CAMPAIGN

A personalized newsletter is mailed to your neighborhood. The newsletter explains traffic volumes and speed study results in your area. Recommended traffic calming measures, along with information about traffic laws, pedestrian and bicycle safety are included in the neighborhood newsletter. The goal is to heighten traffic safety awareness within the neighborhood. Many of the inattentive drivers who cause the majority of the neighborhood traffic problems live in the immediate area.

SIGNAGE

Posting appropriate traffic control signs may include speed limit, parking, dead-end, school signs, etc.

PAVEMENT MARKINGS

Painting legends and other markings on neighborhood roadways can also be a solution. Pavement markings can include centerlines, fog lines, school crossings, and speed limits.

BRUSH TRIMS

Sight distance is improved when brush is trimmed and vegetation is cleared by homeowners or City crews.

TARGET ENFORCEMENT

Increased enforcement by the Syracuse City Police Department's can be a recommended solution.

NEIGHBORHOOD SPEED WATCH

In addition, Redmond Police offer the Neighborhood Speed Watch Program. Residents who participate in Neighborhood Speed Watch are trained by police staff to use radar equipment to record vehicular speed. Records are turned over to Syracuse Staff, who contact by letter the registered owners of those vehicles

found traveling above the posted neighborhood speed limit. These letters are not citations, but serve to remind violators about the posted speed limit and the concern for community safety.

RADAR SPEED TRAILER

A portable trailer equipped with a radar unit detects the speed of passing vehicles and displays it on a digital reader board. This device shows drivers their "actual" speed versus the posted speed limit. This information helps to promote compliance with the posted speed.

Appendix F

Neighborhood Traffic Calming Program
Level II Techniques

LEVEL II
TRAFFIC CALMING TECHNIQUES

The physical traffic measures referred to in this appendix includes a combination of vertical and horizontal deflections in the road as well as obstruction and traffic regulations. Examples of these measures include speed humps, traffic circles, curb extensions and diverters. These measures used alone or in various combinations and implemented properly can be effective in reducing motor vehicle speeds, reducing traffic volume, and reducing conflicts between road users and thereby improving the immediate environment. The installation of traffic calming devices is subject to the approval of Syracuse City.

WHY STOP SIGNS AND CHILDREN AT PLAY SIGNS ARE NOT USED FOR TRAFFIC CALMING

A common request to address speeding in neighborhoods is the installation of Stop signs. This may seem like an easy way to reduce vehicle speeds, however, Stop signs used for traffic calming can actually create a less desirable situation.

Stop signs that are used as a traffic-calming measure can cause high incidences of drivers intentionally violating the stop and other traffic-related issues. When vehicles do stop, the speed reduction is often only effective in the immediate area, since motorist will then increase their speed to make up for lost time. This can result in increased mid-block speeds. There is often an increase in rear-end collisions near the inappropriate Stop sign, frequently called "cluster" accidents. In order to avoid the extra stops and starts on streets with these Stop signs, there can be a redistribution of traffic to adjacent streets.

For these reasons, the Syracuse City does not list Stop signs as an effective traffic calming measure. Instead, the City uses Stop signs to improve safety at intersections where traffic volumes or accidents warrant their installation.

Another common request in neighborhoods is the installation of "Children at Play" signs. National and statewide traffic studies have shown that "Children at Play" signs are not effective in increasing a driver's attention to the point of reducing vehicle speeds or reducing pedestrian accidents. In fact, placement of these signs can increase the potential for accidents by conveying to children and parents that the area is safe for children.

For these reasons, the Syracuse City does not use "Children at Play" signs and we encourage parents and/or guardians to find alternative play areas for children, such as a backyard or local parks.

NOT ACCEPTED CALMING DEVICES IN THE SYRACUSE CITY NEIGHBORHOOD TRAFFIC CALMING PROGRAM ARE:

Speed Humps
Rumble Strips

ACCEPTABLE TRAFFIC CALMING MEASURES

I. VOLUME CONTROL MEASURES

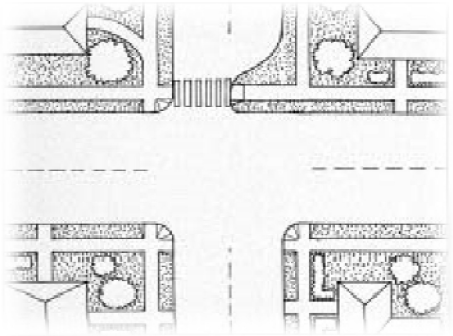
The primary purpose of volume control measures is to discourage or eliminate cut-through traffic. When a detour through a residential neighborhood allows motorists to avoid traffic, save time, or shorten their travel distance, they will use the residential cut-through as their normal route of travel. The traffic calming tools that have proven to be successful in diverting traffic and reducing cut-through traffic include:

- Half street closures;
- Median barriers; and
- Forced turn islands.

HALF STREET CLOSURES

Half street closures consist of constructed obstructions to block one side of the street. One direction of traffic is diverted to another route. Half closures are often called partial closures or one-way closures.

APPLICATIONS:



- Neighborhoods locations with non-local traffic volume problems

ADVANTAGES:

- May reduce both speeds and volumes
- Can have positive aesthetic value
- Increase pedestrian safety.

DISADVANTAGES:

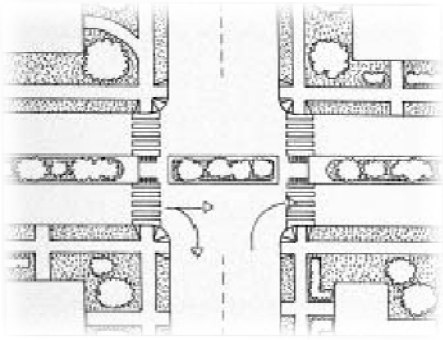
- Increase emergency response times
- May increase traffic volumes on adjacent streets
- Create circuitous routes for local residents and emergency vehicle services

MEDIAN BARRIERS

Median barriers are raised islands located in the middle of a street and continuing through an intersection. Median barriers are implemented to block cut-through movement of motor vehicle traffic at a cross street. Median barriers can block left turning motorists, which can benefit pedestrians. They are also called median diverters or island diverters

APPLICATIONS:

- Neighborhoods locations with non-local traffic volume problems



ADVANTAGES:

- May reduce both speeds and volumes
- People with mobility impairments benefit from divided and decreased crossing distances due to the presence of a pedestrian refuge in the center of the street
- Can have positive aesthetic value

DISADVANTAGES:

- Increase emergency response times
- May increase traffic volumes on adjacent streets
- Create circuitous routes for local residents and emergency vehicle services

FORCE TURN ISLANDS

Force Turn Islands or known as turn channelization, pork chops, or right turn islands which prohibit certain vehicle turning movements.

APPLICATIONS:

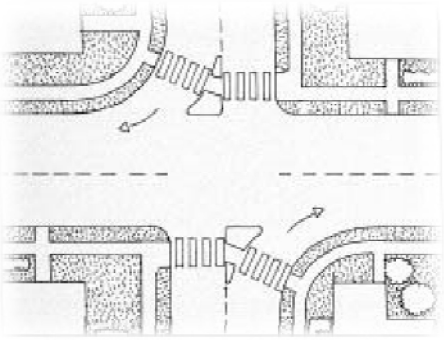
- Neighborhoods locations with non-local traffic volume problems

ADVANTAGES:

- May reduce both speeds and volumes
- Can have positive aesthetic value
- Increase pedestrian safety.

DISADVANTAGES:

- Increase emergency response times
- May increase traffic volumes on adjacent streets
- Create circuitous routes for local residents and emergency vehicle services



II. SPEED CONTROL MEASURES

SPEED CUSHIONS

TEMPORARY ONLY

Speed cushions consist of either recycled rubber or asphalt, raised about 3 inches in height. The length of the cushion is about 10 ft. The spaces between the cushions allow emergency vehicles to partially straddle the device.

APPLICATIONS:

Locations where very low speeds are desired and reasonable, and noise and fumes are not a major concern.

ADVANTAGES:

- Reduces vehicle speed
- More effective if used in a series at 300' to 500' spacing or in conjunction with other traffic calming devices
- Can reduce vehicular volumes
- No restrictions to on-street parking
- Does not restrict access to residents
- Requires minimum maintenance
- Minimal impact to emergency response times

DISADVANTAGES:

- May divert traffic to parallel streets that do not have traffic calming measures
- May increase emergency response times
- Not aesthetically pleasing

RAISED CROSSWALKS / SPEED TABLES

Raised crosswalks are flat-topped speed humps often constructed with brick or textured materials on the flat section with crosswalk markings and signage to channel pedestrian crossings. They provide

pedestrians with a level street crossing and by raising the level of crossing pedestrians they are more visible to approaching motorist. When there is no pedestrian crossing marked, Raised Crosswalks are called Speed Tables.

APPLICATIONS:

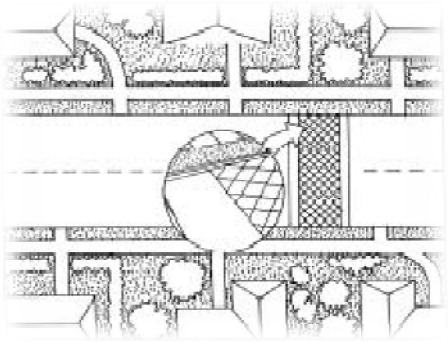
Locations where pedestrian crossings occur at unexpected locations and vehicle speeds are excessive.

ADVANTAGES:

- Improve safety for both pedestrians and vehicles
- Can have positive aesthetic value
- Effective in reducing speeds, though not to the extent of speed humps

DISADVANTAGES:

- Increases emergency response times
- Textured materials, if used, can be expensive
- Impacts on drainage should be considered
- May increase noise and air pollution
- Difficulty in snow removal

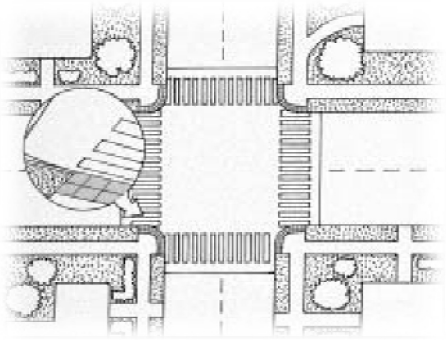


RAISED INTERSECTIONS

Raised intersections are flat raised areas covering an entire intersection, with ramps on all approaches and often with bricks or other textured materials on the flat sections. They usually rise to the level of the sidewalk, or slightly below to provide a "lip" that is detectable by the visually impaired. By modifying the level of the intersection, the crosswalks are more readily perceived by motorists to be "pedestrian territory."

APPLICATIONS:

- Intersections with substantial pedestrian activity
- Areas where other traffic-calming measures would be unacceptable because they take away scarce parking spaces



ADVANTAGES:

- Improve safety for both pedestrians and vehicles
- Can have positive aesthetic value
- Can calm two streets at once

DISADVANTAGES:

- Increases emergency response times
- Tends to be expensive, varying by materials used
- Impact to drainage needs should be considered
- Less effective in reducing speeds than speed humps or raised crosswalks

ROUNDABOUTS

Roundabouts require vehicles to circulate counterclockwise around a center island. Roundabouts may eliminate the need for traffic signals for motorists. Unlike many other forms of traffic calming, roundabout benefits are aimed primarily at motorists. The installation of roundabouts prioritizes improving traffic flow, maximizing vehicular capacity, and eliminating the need for stop signs and traffic signals. When designed correctly, roundabouts include raised splitter islands to channel incoming traffic approaching from the right.

APPLICATIONS:

Calming intersections, especially within neighborhoods where larger vehicles, speeds, volumes and safety are problems

ADVANTAGES:

- Roundabouts are very effective in moderating speeds and improving safety
- Can have positive aesthetic value
- Can calm two streets at once
- Designed to accommodate wider range of vehicles

DISADVANTAGES:

- Can increases emergency response times
- Additional right-of-way will likely be needed
- May require the elimination of some on street parking
- Landscaping must be maintained, either by the residents or by municipality
- Expensive to install

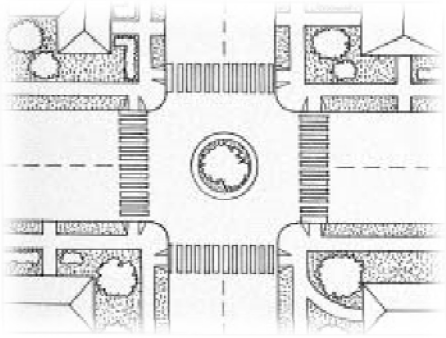
TRAFFIC CIRCLES

Traffic Circles are raised islands, placed in intersections, around which traffic circulates. They are designed according to the existing geometry of each intersection and sized to accommodate the passage of an emergency vehicle.

APPLICATIONS:

- Calming intersections, especially within neighborhoods where large vehicles are not a major concern, but speeds, volumes and safety are problems

ADVANTAGES:



- Traffic circles are very effective in moderating speeds and improving safety
- Can have positive aesthetic value
- Can calm two streets at once

DISADVANTAGES:

- Difficult for large vehicles (such as fire trucks) to circumnavigate
- May require the elimination of some on street parking
- Landscaping must be maintained, either by the residents or by municipality
- Expensive to install

CHICANES

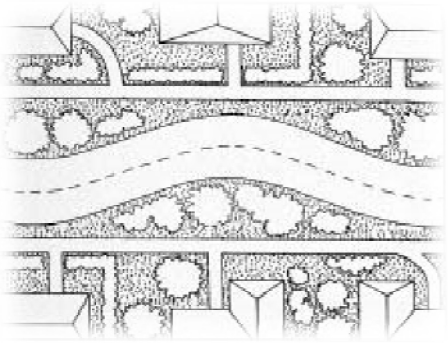
Chicanes are curb extensions that alternate from one side of the street to the other, forming S-shaped curves. Chicanes can also be created by alternating on street parking, either diagonally or parallel, between one side of the street and the other. Each parking bay can be created either by restriping the roadway or by installing raised landscaping islands at the end of each parking bay.

APPLICATIONS:

- Locations where speeds are a problem but noise associated with the speed humps and related measures would be unacceptable

ADVANTAGES:

- Discourage high speeds by forcing a change in path or direction
- Easily negotiable by large vehicles (such as fire trucks)



DISADVANTAGES:

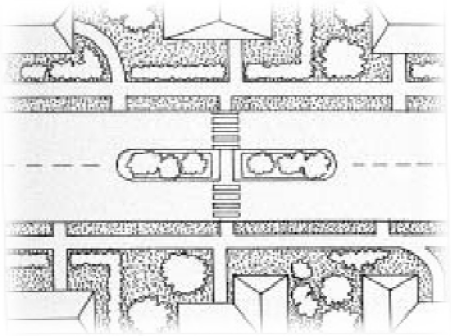
- Must be designed carefully to discourage drivers from deviating out of the appropriate lane
- Curb realignment and landscaping can be costly, especially if there are drainage issues
- May require the elimination of some on-street parking

CENTER ISLAND NARROWINGS

A center island narrowing is a raised island located along the centerline of a street that narrows the travel lanes at that location. Center islands Narrowings are often landscaped to provide a visual amenity. Placed at the entrance to a neighborhood, and often combined with a textured pavement, they are often called "gateway islands." Fitted with a gap to allow pedestrians to walk through at the crosswalk, they are also referred to as "pedestrian refuges." Center island narrowings are also found to be very effective in reducing speeds around curves. Other names for center island narrowings include midblock medians, median slow points, or median chokers

APPLICATIONS:

- Entrances to residential areas
- Wide street where pedestrians need to cross
- Curves



ADVANTAGES:

- Increase pedestrian safety
- Can have positive aesthetic value
- May reduce traffic volumes

DISADVANTAGES:

- Speed reduction effect is somewhat limited because vehicles do not have to alter their path.
- May require elimination of some on-street parking

CHOKERS

Chokers are curb extensions at mid-block locations that narrow a street by widening the sidewalk or planting strip. If marked as crosswalks, they also known as safe crosses. Two-lane chokers leave the street cross-section with two lanes that are narrower than the normal cross section. One-lane chokers narrow the width to allow travel in only one direction at a time, operating similarly to one-lane bridges.

APPLICATIONS:

Areas with substantial speed problems and no on-street parking shortage

ADVANTAGES:

- Easily negotiable by large vehicles (such as fire trucks)
- Can have positive aesthetic value
- May reduce both speeds and volumes

DISADVANTAGES:

- Speed reduction effect is somewhat limited because vehicles do not have to alter their path
- May require bicyclist to briefly merge with vehicular traffic
- May require the elimination of some on-street parking

TABLE F-1

POTENTIAL IMPACTS OF TRAFFIC CALMING TECHNIQUES

TRAFFIC MANAGEMENT DEVICE	POTENTIAL BENEFITS			POTENTIAL DISADVANTAGES			COST
	SPEED REDUCTION	VOLUME REDUCTION	CONFLICT REDUCTION	LIMITS LOCAL ACCESS	INCREASES EMERGENCY RESPONSE TIME	EXTENT OF MAINTENANCE REQUIRED	
SPEED TABLES	●	◉	●	◎	◉	◉	$ - $$
CHOKERS	◉	◎	◎	◎	◎	◉	$ - $$
TRAFFIC CIRCLE	●	◉	●	◎	◉	◉	$$ - $$$
MEDIAN BARRIER	◉	◎	◉	◉	◎	◉	$ - $$
LOWER SPEED LIMIT	◉	◎	◎	◎	◎	◎	$
CHICANE	●	●	●	◎	◉	◉	$$ - $$$
CURB EXTENSION	◉	◎	◎	◎	◎	◉	$ - $$
EDUCATION	◉	◎	◉	◎	◎	◎	$
ENFORCEMENT	◉	◎	◉	◎	◎	◎	$ - $$

● SUBSTANTIAL BENEFITS / DISADVANTAGES
◉ MINOR BENEFITS / DISADVANTAGES
◎ NO BENEFITS / DISADVANTAGES

$ LOW COST
$$ MODERATE COST
$$$ HIGH COST

Appendix G

Neighborhood Traffic Calming Program
FAQ's
(Frequently Asked Questions)

NEIGHBORHOOD TRAFFIC CALMING PROGRAM
FAQ

Q: What is "traffic calming"?

A: Traffic calming is the use of roadway geometrics and other physical measures to reduce unwanted effects of vehicular traffic, including excessive speeds, volumes (number of cars), and noise.

Q: What types of roadway geometrics or physical measures are used by Syracuse City?

A: The City will consider using, the following types of traffic calming measures: half street closures, median barriers, forced turn islands, speed cushions, speed tables, raised intersections, roundabouts, traffic circles, chicanes, center island narrowings, & chokers. "Dips", or valley gutters, are installed only for drainage purposes and will not be installed for traffic calming purposes, due to significant impacts on emergency vehicle response time. Speed humps and rumble strips are not recommended devices in this policy.

Q: Are certain traffic calming measures better than others?

A: There isn't one method that is "best"; each measure has its pros and cons. Moreover, it depends on whether the desired effect is to reduce volume or to reduce speed.

Measures such as diverters or road closures primarily attempt to reduce traffic volumes along a local street. Measures such as speed tables and "chokers" attempt to reduce vehicle speeds. Some of these measures are at least partially successful at reducing both speeds and volumes.

In general, the more restrictive the measure (e.g., speed tables, diverters, road closures), the greater effect it will have on reducing speeds or volumes, but it will also have a negative impact on those vehicles that may need to exceed the speed limit - for example, emergency vehicles. Also, the measures apply to everyone, so that residents are subjected to the same restrictions that are placed on the offending drivers. Drivers who do obey the speed limit may resent the more restrictive measures, and may complain that they are being penalized for the actions of a minority.

Less restrictive measures (such as medians, traffic circles, and curb-outs) have a less pronounced effect on reducing overall speeds or volumes, but do not have as adverse an impact upon emergency vehicles.

Q: What is the "85th Percentile Speed"?

A: The 85th percentile speed is the most common measure that traffic engineers use when trying to describe the speed of a group of vehicles; for example, all cars traveling northbound on 1500 West at 3200 South over a 24 hour period. Rather than an "average speed" of the pack, it is the speed that 85% of the cars are traveling at or below.

It is important to remember that 15% of the measured speeds are faster than this value, so that even though a street has an 85th percentile speed of (say) 25 MPH, it doesn't mean that there are not some cars traveling 45 MPH or more.

Q: How do I request traffic calming for my street?

A: A homeowner's association or homeowner's group consisting of at least three (3) separate occupied household residents within the general area must submit a Citizen Action Request application (CAR). This application can be downloaded from the Syracuse City website or picked up from the Syracuse City offices located at 1979 West 1900 South. The request must identify the perceived traffic problem and must include contact information for a representative (the requester) of the association / group. Individual citizens are not eligible to initiate projects for the Neighborhood Traffic Calming Program.

Q: Do residents who don't live on a street in question, but who use that same street to get to and from their house, get a "vote" in whether traffic calming devices are to be installed on that street?

A: No. People who regularly traverse a street, but don't live on it, are far less likely to vote "Yes" regarding installation of devices that will force them to drive the speed limit. They do not live on the street, and therefore have no motivation to solve the speeding or cut-through traffic problems.

By contrast, people who live on the street in question have to deal with adverse traffic problems 24 hours a day, 7 days a week. They have more of a stake in this process, and they are the ones who must make a decision: whether they are willing to trade personal inconvenience for slower (or less) traffic on their street.

Q: Why all of this red tape? Since we have a problem, why can't the City just come out and install the devices? Why can't we just circulate a petition, and if everyone on our street wants them, the City will come out and install them?

A: Syracuse City has an established a set of guidelines or criteria in which these requests can be accurately be evaluated or even warrant for such calming devices. The City has limited available funding set aside for traffic calming, thus the City has to look at each request case by case and then rate them by priority and severity. A neighborhood can elect to pay for 100% of the cost to construct the approved device as long as it has been warranted through the guidelines of the Neighborhood Traffic Calming program.

Appendix H

Resolutions

APPENDIX G – SYRACUSE COST ESTIMATES

Project Summary (All Projects)					
Project	**Location**	**Total Price**	**Funding Source**	**Syracuse City %**	**Syracuse City Total**
1	SR-198 Extension: 2000 West to 4000 West	$21,690,000	UDOT	0%	$0
2	2500 West Extension: 700 South to SR-198	$1,860,000	City	8%	$160,000
3	3250 West: 700 South to SR-198	$1,260,000	City	8%	$110,000
4	450 South: 1550 West to 2000 West	$2,660,000	City	25%	$670,000
5	1200 South: Extension to 3000 West	$820,000	City	8%	$70,000
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	$2,230,000	UDOT	0%	$0
7	2200 South Extension: End of Existing to 4000 West	$1,150,000	City	8%	$100,000
8	Doral Drive Connection: 2200 South to 2050 South	$550,000	City	8%	$50,000
9	3000 South: 3000 West to 2400 West (New Alignment)	$1,650,000	City	8%	$140,000
10	2400 West: 3000 South to City Boundary	$1,920,000	City	8%	$160,000
11	1475 West Connection: 1950 South to 2050 South	$190,000	City	8%	$20,000
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	$1,030,000	City/WFRC	8%	$80,000
13	500 West (3700 West Layton): 2000 South to 3000 South (Syracuse Portion)	$4,880,000	City	100%	$4,880,000
14	1000 West: SR-198 to Bluff Street (Syracuse Portion)	$8,580,000	City	100%	$8,580,000
15	2000 West: SR-198 to 1700 South	$9,340,000	UDOT	0%	$0
16	2000 West: 1700 South to 2700 South	$4,750,000	City	100%	$4,750,000
17	Bluff Street: 1770 South to 1000 West	$12,140,000	City	100%	$12,140,000
18	1700 South: 3000 West to 2000 West	$5,410,000	UDOT	0%	$0
19	Bluff Street: Connection to Layton Parkway	$2,660,000	City	25%	$670,000
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	$4,230,000	City/WFRC	8%	$340,000
21	Roundabout: 3000 West & 700 South	$380,000	City	100%	$380,000
22	Signal: 500 West & 2700 South	$270,000	City	100%	$270,000
23	Roundabout: Gentile Street & Bluff Street	$380,000	City	100%	$380,000
24	Roundabout: 3000 West & 2700 South	$380,000	City	100%	$380,000
25	Roundabout: 4000 West & 700 South	$380,000	City	100%	$380,000
	Total	**$90,790,000**			**$34,710,000**

Project Summary (10 Year Projects)					
Project	**Location**	**Total Price**	**Funding Source**	**Syracuse City %**	**Syracuse City Total**
1	SR-198 Extension: 2000 West to 4000 West	$21,690,000	UDOT	0%	$0
2	2500 West Extension: 700 South to SR-198	$1,860,000	City	8%	$160,000
4	450 South: 1550 West to 2000 West	$2,660,000	City	25%	$670,000
5	1200 South: Extension to 3000 West	$820,000	City	8%	$70,000
6	Bluff Street Re-Route due to West Davis Corridor (New Portion)	$2,230,000	UDOT	0%	$0
12	500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)	$1,030,000	City/WFRC	8%	$80,000
14	1000 West: SR-198 to Bluff Street (Syracuse Portion)	$8,580,000	City	100%	$8,580,000
15	2000 West: SR-198 to 1700 South	$9,340,000	UDOT	0%	$0
16	2000 West: 1700 South to 2700 South	$4,750,000	City	100%	$4,750,000
18	1700 South: 3000 West to 2000 West	$5,410,000	UDOT	0%	$0
20	Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)	$4,230,000	City/WFRC	8%	$340,000
21	Roundabout: 3000 West & 700 South	$380,000	City	100%	$380,000
	Total	**$62,980,000**			**$15,030,000**

Syracuse City
Transportation Improvement Program (TIP)
Unit Costs: With West Davis Corridor

Item	Unit	Unit Cost
Parkstrip	S.F.	$1.00
Removal of Existing Asphalt	S.Y.	$2.50
Clearing and Grubbing	Acre	$2,000.00
Roadway Excavation	C.Y.	$10.50
HMA Concrete	Ton	$60.00
Untreated Base Course	C.Y.	$15.00
Granular Borrow	C.Y.	$40.00
Curb and Gutter (2.5' width)	L.F.	$11.50
Sidewalk (4' width)	L.F.	$25.00
Drainage	L.F.	$80.00
Right of Way	S.F.	$15.00
Bridge/Culvert	S.F.	$225.00
Traffic Signal	Each	$180,000

Contingency	25%

Mobilization	10%

Preconstruction Engineering	8%
Construction Engineering	8%

Syracuse City TMP
Developer's Responsibility vs. City's Responsibility

Item	Unit	Unit Cost	100' Length of Local		100' Length of Low Volume Local		100' Length of Collector		100' Length of Minor Arterial		100' Length of Arterial		100' Length of Principal Arterial	
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	1200	$1,200	2200	$2,200	800	$800	1000	$1,000	600	$600	600	$600
Removal of Existing Asphalt	S.Y.	$2.50	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Clearing and Grubbing	Acre	$2,000.00	0.14	$275	0.14	$275	0.15	$303	0.19	$386	0.25	$505	0.31	$615
Roadway Excavation	C.Y.	$10.50	370.4	$3,889	277.8	$2,917	463.0	$4,861	611.1	$6,417	842.6	$8,847	1064.8	$11,181
HMA Concrete	Ton	$60.00	77.5	$4,650	58.1	$3,488	96.9	$5,813	127.9	$7,673	176.3	$10,579	222.8	$13,369
Untreated Base Course	C.Y.	$15.00	98.8	$1,481	74.1	$1,111	123.5	$1,852	163.0	$2,444	224.7	$3,370	284.0	$4,259
Granular Borrow	C.Y.	$40.00	172.8	$6,914	129.6	$5,185	216.0	$8,642	285.2	$11,407	393.2	$15,728	496.9	$19,877
Curb and Gutter (2.5' width)	L.F.	$11.50	200	$2,300	200	$2,300	200	$2,300	200	$2,300	200	$2,300	200	$2,300
Sidewalk (4' width)	L.F.	$25.00	800	$20,000	800	$20,000	800	$20,000	800	$20,000	800	$20,000	800	$20,000
Drainage	L.F.	$80.00	100	$8,000	100	$8,000	100	$8,000	100	$8,000	100	$8,000	100	$8,000
Right of Way	S.F.	$15.00	6000	$90,000	6000	$90,000	6600	$99,000	8400	$126,000	11000	$165,000	13400	$201,000
			-	-	-	-	-	-	-	-	-	-	-	-
Bridge/Culvert	S.F.	$225.00	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Traffic Signal	Each	$180,000	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Subtotal				$138,709		$135,476		$151,570		$185,627		$234,930		$281,200
Contingency			25%	$34,677		$33,869		$37,893		$46,407		$58,732		$70,300
Mobilization			10%	$13,871		$13,548		$15,157		$18,563		$23,493		$28,120
Preconstruction Engineering			8%	$11,097		$10,838		$12,126		$14,850		$18,794		$22,496
Construction Engineering			8%	$11,097		$10,838		$12,126		$14,850		$18,794		$22,496
Total Project Cost				$209,451		$204,569		$228,871		$280,296		$354,744		$424,613
Developers Responsibility			100%	$209,451	100%	$204,569	92%	$209,451	75%	$209,451	59%	$209,451	49%	$209,451
Syracuse City's Responsibility			0%	$0	0%	$0	8%	$19,420	25%	$70,845	41%	$145,293	51%	$215,161

Overall Assumptions:												
HMA Pavement Density (pcf) =		155		155		155		155		155		155
HMA Thickness (in) =		3		3		3		3		3		3
Untreated Base Course Thickness (in) =		8		8		8		8		8		8
Granual Borrow Thickness (in) =		14		14		14		14		14		14
Roadway Excavation Depth (ft) =		2.5		2.5		2.5		2.5		2.5		2.5
Sidewalk Width (ft) =		4		4		4		4		4		4

Syracuse City
Transportation Master Plan
SR-198 Extension: 2000 West to 4000 West

Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	72,000	$72,000
Removal of Existing Asphalt	S.Y.	$2.50	53,333	$133,333
Clearing and Grubbing	Acre	$2,000	13.77	$27,548
Roadway Excavation	C.Y.	$10.50	51,111	$536,667
HMA Concrete	Ton	$60.00	10,695	$641,700
Untreated Base Course	C.Y.	$15.00	13,630	$204,444
Granular Borrow	C.Y.	$40.00	23,852	$954,074
Curb and Gutter (2.5' width)	L.F.	$11.50	24,000	$276,000
Sidewalk (4' width)	L.F.	$25.00	24,000	$600,000
Drainage	L.F.	$80.00	24,000	$1,920,000
Right of Way	S.F.	$15.00	600,000	$9,000,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$14,365,767**

Contingency	25%	$3,591,442
Mobilization	10%	$1,436,577
Preconstruction Engineering	8%	$1,149,261
Construction Engineering	8%	$1,149,261
Total Project Costs		**$21,690,000**

Syracuse City's Responsibility Via Impact Fee's	**0%**
	$0

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
2500 West Extension: 700 South to SR-198

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	21,600	$21,600
Removal of Existing Asphalt	S.Y.	$2.50	12,000	$30,000
Clearing and Grubbing	Acre	$2,000	0.37	$744
Roadway Excavation	C.Y.	$10.50	1,250	$13,125
HMA Concrete	Ton	$60.00	262	$15,694
Untreated Base Course	C.Y.	$15.00	333	$5,000
Granular Borrow	C.Y.	$40.00	583	$23,333
Curb and Gutter (2.5' width)	L.F.	$11.50	5,400	$62,100
Sidewalk (4' width)	L.F.	$25.00	5,400	$135,000
Drainage	L.F.	$80.00	5,400	$432,000
Right of Way	S.F.	$15.00	16,200	$243,000
House Acquisition	Each	$250,000	1	$250,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,231,596**

Contingency	25%	$307,899
Mobilization	10%	$123,160
Preconstruction Engineering	8%	$98,528
Construction Engineering	8%	$98,528
Total Project Costs		**$1,860,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$160,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
3250 West: 700 South to SR-198

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	18,400	$18,400
Removal of Existing Asphalt	S.Y.	$2.50	10,222	$25,556
Clearing and Grubbing	Acre	$2,000	0.32	$634
Roadway Excavation	C.Y.	$10.50	1,065	$11,181
HMA Concrete	Ton	$60.00	223	$13,369
Untreated Base Course	C.Y.	$15.00	284	$4,259
Granular Borrow	C.Y.	$40.00	497	$19,877
Curb and Gutter (2.5' width)	L.F.	$11.50	4,600	$52,900
Sidewalk (4' width)	L.F.	$25.00	4,600	$115,000
Drainage	L.F.	$80.00	4,600	$368,000
Right of Way	S.F.	$15.00	13,800	$207,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$836,174**

Contingency	25%	$209,044
Mobilization	10%	$83,617
Preconstruction Engineering	8%	$66,894
Construction Engineering	8%	$66,894
Total Project Costs		**$1,260,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$110,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
450 South: 1550 West to 2000 West

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	25,000	$25,000
Removal of Existing Asphalt	S.Y.	$2.50	11,111	$27,778
Clearing and Grubbing	Acre	$2,000	1.38	$2,755
Roadway Excavation	C.Y.	$10.50	4,861	$51,042
HMA Concrete	Ton	$60.00	1,017	$61,031
Untreated Base Course	C.Y.	$15.00	1,296	$19,444
Granular Borrow	C.Y.	$40.00	2,269	$90,741
Curb and Gutter (2.5' width)	L.F.	$11.50	5,000	$57,500
Sidewalk (4' width)	L.F.	$25.00	5,000	$125,000
Drainage	L.F.	$80.00	5,000	$400,000
Right of Way	S.F.	$15.00	60,000	$900,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,760,291**

Contingency	25%	$440,073
Mobilization	10%	$176,029
Preconstruction Engineering	8%	$140,823
Construction Engineering	8%	$140,823
Total Project Costs		**$2,660,000**

Syracuse City's Responsibility Via Impact Fee's	**25%**
	$670,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
1200 South: Extension to 3000 West

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	12,000	$12,000
Removal of Existing Asphalt	S.Y.	$2.50	6,667	$16,667
Clearing and Grubbing	Acre	$2,000	0.21	$413
Roadway Excavation	C.Y.	$10.50	694	$7,292
HMA Concrete	Ton	$60.00	145	$8,719
Untreated Base Course	C.Y.	$15.00	185	$2,778
Granular Borrow	C.Y.	$40.00	324	$12,963
Curb and Gutter (2.5' width)	L.F.	$11.50	3,000	$34,500
Sidewalk (4' width)	L.F.	$25.00	3,000	$75,000
Drainage	L.F.	$80.00	3,000	$240,000
Right of Way	S.F.	$15.00	9,000	$135,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$545,331**

Contingency	25%	$136,333
Mobilization	10%	$54,533
Preconstruction Engineering	8%	$43,626
Construction Engineering	8%	$43,626
Total Project Costs		**$820,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$70,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Bluff Street Re-Route due to West Davis Corridor (New Portion)

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	21,000	$21,000
Removal of Existing Asphalt	S.Y.	$2.50	9,333	$23,333
Clearing and Grubbing	Acre	$2,000	1.16	$2,314
Roadway Excavation	C.Y.	$10.50	4,083	$42,875
HMA Concrete	Ton	$60.00	854	$51,266
Untreated Base Course	C.Y.	$15.00	1,089	$16,333
Granular Borrow	C.Y.	$40.00	1,906	$76,222
Curb and Gutter (2.5' width)	L.F.	$11.50	4,200	$48,300
Sidewalk (4' width)	L.F.	$25.00	4,200	$105,000
Drainage	L.F.	$80.00	4,200	$336,000
Right of Way	S.F.	$15.00	50,400	$756,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,478,644**

Contingency	25%	$369,661
Mobilization	10%	$147,864
Preconstruction Engineering	8%	$118,292
Construction Engineering	8%	$118,292
Total Project Costs		**$2,230,000**

Syracuse City's Responsibility Via Impact Fee's	**0%**
	$0

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
2200 South Extension: End of Existing to 4000 West

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	16,800	$16,800
Removal of Existing Asphalt	S.Y.	$2.50	9,333	$23,333
Clearing and Grubbing	Acre	$2,000	0.29	$579
Roadway Excavation	C.Y.	$10.50	972	$10,208
HMA Concrete	Ton	$60.00	203	$12,206
Untreated Base Course	C.Y.	$15.00	259	$3,889
Granular Borrow	C.Y.	$40.00	454	$18,148
Curb and Gutter (2.5' width)	L.F.	$11.50	4,200	$48,300
Sidewalk (4' width)	L.F.	$25.00	4,200	$105,000
Drainage	L.F.	$80.00	4,200	$336,000
Right of Way	S.F.	$15.00	12,600	$189,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$763,463**

Contingency	25%	$190,866
Mobilization	10%	$76,346
Preconstruction Engineering	8%	$61,077
Construction Engineering	8%	$61,077
Total Project Costs		**$1,150,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$100,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Doral Drive Connection: 2200 South to 2050 South

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	8,000	$8,000
Removal of Existing Asphalt	S.Y.	$2.50	4,444	$11,111
Clearing and Grubbing	Acre	$2,000	0.14	$275
Roadway Excavation	C.Y.	$10.50	463	$4,861
HMA Concrete	Ton	$60.00	97	$5,813
Untreated Base Course	C.Y.	$15.00	123	$1,852
Granular Borrow	C.Y.	$40.00	216	$8,642
Curb and Gutter (2.5' width)	L.F.	$11.50	2,000	$23,000
Sidewalk (4' width)	L.F.	$25.00	2,000	$50,000
Drainage	L.F.	$80.00	2,000	$160,000
Right of Way	S.F.	$15.00	6,000	$90,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$363,554**

Contingency	25%	$90,889
Mobilization	10%	$36,355
Preconstruction Engineering	8%	$29,084
Construction Engineering	8%	$29,084
Total Project Costs		**$550,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$50,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
3000 South: 3000 West to 2400 West (New Alignment)

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	24,000	$24,000
Removal of Existing Asphalt	S.Y.	$2.50	13,333	$33,333
Clearing and Grubbing	Acre	$2,000	0.41	$826
Roadway Excavation	C.Y.	$10.50	1,389	$14,583
HMA Concrete	Ton	$60.00	291	$17,438
Untreated Base Course	C.Y.	$15.00	370	$5,556
Granular Borrow	C.Y.	$40.00	648	$25,926
Curb and Gutter (2.5' width)	L.F.	$11.50	6,000	$69,000
Sidewalk (4' width)	L.F.	$25.00	6,000	$150,000
Drainage	L.F.	$80.00	6,000	$480,000
Right of Way	S.F.	$15.00	18,000	$270,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,090,662**

Contingency	25%	$272,666
Mobilization	10%	$109,066
Preconstruction Engineering	8%	$87,253
Construction Engineering	8%	$87,253
Total Project Costs		**$1,650,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$140,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
2400 West: 3000 South to City Boundary

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	28,000	$28,000
Removal of Existing Asphalt	S.Y.	$2.50	15,556	$38,889
Clearing and Grubbing	Acre	$2,000	0.48	$964
Roadway Excavation	C.Y.	$10.50	1,620	$17,014
HMA Concrete	Ton	$60.00	339	$20,344
Untreated Base Course	C.Y.	$15.00	432	$6,481
Granular Borrow	C.Y.	$40.00	756	$30,247
Curb and Gutter (2.5' width)	L.F.	$11.50	7,000	$80,500
Sidewalk (4' width)	L.F.	$25.00	7,000	$175,000
Drainage	L.F.	$80.00	7,000	$560,000
Right of Way	S.F.	$15.00	21,000	$315,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,272,439**

Contingency	25%	$318,110
Mobilization	10%	$127,244
Preconstruction Engineering	8%	$101,795
Construction Engineering	8%	$101,795
Total Project Costs		**$1,920,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$160,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
1475 West Connection: 1950 South to 2050 South

Collector

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	2,800	$2,800
Removal of Existing Asphalt	S.Y.	$2.50	1,556	$3,889
Clearing and Grubbing	Acre	$2,000	0.05	$96
Roadway Excavation	C.Y.	$10.50	162	$1,701
HMA Concrete	Ton	$60.00	34	$2,034
Untreated Base Course	C.Y.	$15.00	43	$648
Granular Borrow	C.Y.	$40.00	76	$3,025
Curb and Gutter (2.5' width)	L.F.	$11.50	700	$8,050
Sidewalk (4' width)	L.F.	$25.00	700	$17,500
Drainage	L.F.	$80.00	700	$56,000
Right of Way	S.F.	$15.00	2,100	$31,500
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$127,244**

Contingency	25%	$31,811
Mobilization	10%	$12,724
Preconstruction Engineering	8%	$10,180
Construction Engineering	8%	$10,180
Total Project Costs		**$190,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$20,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
500 West (3700 West Layton) Extension to 1700 South (Syracuse Portion)

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	7,000	$7,000
Removal of Existing Asphalt	S.Y.	$2.50	8,089	$20,222
Clearing and Grubbing	Acre	$2,000	0.58	$1,157
Roadway Excavation	C.Y.	$10.50	1,167	$12,250
HMA Concrete	Ton	$60.00	244	$14,648
Untreated Base Course	C.Y.	$15.00	311	$4,667
Granular Borrow	C.Y.	$40.00	544	$21,778
Curb and Gutter (2.5' width)	L.F.	$11.50	1,400	$16,100
Sidewalk (4' width)	L.F.	$25.00	1,400	$35,000
Drainage	L.F.	$80.00	1,400	$112,000
Right of Way	S.F.	$15.00	25,200	$378,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$622,821**

Contingency	40%	$249,128
Mobilization	10%	$62,282
Preconstruction Engineering	8%	$49,826
Construction Engineering	8%	$49,826
Total Project Costs		**$1,030,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$80,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Note: Syracuse City is responsible for 18' of the new right of way. Of the 18', 9' will be sidewalk and parkstrip and the other 9' will be roadway pavement. The city will pay for one side of the sidewalk, curb & gutter and drainage.

Syracuse City
Transportation Master Plan
500 West (3700 West Layton): 2000 South to 3000 South (Syracuse Portion)

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	28,000	$28,000
Removal of Existing Asphalt	S.Y.	$2.50	35,467	$88,667
Clearing and Grubbing	Acre	$2,000	0.64	$1,286
Roadway Excavation	C.Y.	$10.50	2,074	$21,778
HMA Concrete	Ton	$60.00	434	$26,040
Untreated Base Course	C.Y.	$15.00	553	$8,296
Granular Borrow	C.Y.	$40.00	968	$38,716
Curb and Gutter (2.5' width)	L.F.	$11.50	11,200	$128,800
Sidewalk (4' width)	L.F.	$25.00	11,200	$280,000
Drainage	L.F.	$80.00	11,200	$896,000
Right of Way	S.F.	$15.00	28,000	$420,000
House Acquisition	Each	$250,000	4	$1,000,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$2,937,582**

Contingency	40%	$1,175,033
Mobilization	10%	$293,758
Preconstruction Engineering	8%	$235,007
Construction Engineering	8%	$235,007
Total Project Costs		**$4,880,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$4,880,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Note: Syracuse City is responsible for 18' of the new right of way. Of the 18', 9' will be sidewalk and parkstrip and the other 9' will be roadway pavement. The city will pay for one side of the sidewalk, curb & gutter and drainage.

Syracuse City
Transportation Master Plan
1000 West: SR-198 to Bluff Street (Syracuse Portion)

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	141,000	$141,000
Removal of Existing Asphalt	S.Y.	$2.50	62,667	$156,667
Clearing and Grubbing	Acre	$2,000	1.29	$2,590
Roadway Excavation	C.Y.	$10.50	27,417	$287,875
HMA Concrete	Ton	$60.00	5,737	$344,216
Untreated Base Course	C.Y.	$15.00	7,311	$109,667
Granular Borrow	C.Y.	$40.00	12,794	$511,778
Curb and Gutter (2.5' width)	L.F.	$11.50	28,200	$324,300
Sidewalk (4' width)	L.F.	$25.00	28,200	$705,000
Drainage	L.F.	$80.00	28,200	$2,256,000
Right of Way	S.F.	$15.00	56,400	$846,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$5,685,092**

Contingency	25%	$1,421,273
Mobilization	10%	$568,509
Preconstruction Engineering	8%	$454,807
Construction Engineering	8%	$454,807
Total Project Costs		**$8,580,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$8,580,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
2000 West: SR-198 to 1700 South

Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	46,800	$46,800
Removal of Existing Asphalt	S.Y.	$2.50	57,200	$143,000
Clearing and Grubbing	Acre	$2,000	5.37	$10,744
Roadway Excavation	C.Y.	$10.50	14,444	$151,667
HMA Concrete	Ton	$60.00	3,023	$181,350
Untreated Base Course	C.Y.	$15.00	3,852	$57,778
Granular Borrow	C.Y.	$40.00	6,741	$269,630
Curb and Gutter (2.5' width)	L.F.	$11.50	15,600	$179,400
Sidewalk (4' width)	L.F.	$25.00	15,600	$390,000
Drainage	L.F.	$80.00	15,600	$1,248,000
Right of Way	S.F.	$15.00	234,000	$3,510,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$6,188,368**

Contingency	25%	$1,547,092
Mobilization	10%	$618,837
Preconstruction Engineering	8%	$495,069
Construction Engineering	8%	$495,069
Total Project Costs		**$9,340,000**

Syracuse City's Responsibility Via Impact Fee's	**0%**
	$0

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
2000 West: 1700 South to 2700 South

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	53,000	$53,000
Removal of Existing Asphalt	S.Y.	$2.50	26,500	$66,250
Clearing and Grubbing	Acre	$2,000	2.19	$4,380
Roadway Excavation	C.Y.	$10.50	7,852	$82,444
HMA Concrete	Ton	$60.00	1,643	$98,580
Untreated Base Course	C.Y.	$15.00	2,094	$31,407
Granular Borrow	C.Y.	$40.00	3,664	$146,568
Curb and Gutter (2.5' width)	L.F.	$11.50	10,600	$121,900
Sidewalk (4' width)	L.F.	$25.00	10,600	$265,000
Drainage	L.F.	$80.00	10,600	$848,000
Right of Way	S.F.	$15.00	95,400	$1,431,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$3,148,530**

Contingency	25%	$787,132
Mobilization	10%	$314,853
Preconstruction Engineering	8%	$251,882
Construction Engineering	8%	$251,882
Total Project Costs		**$4,750,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$4,750,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Bluff Street: 1770 South to 1000 West

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	131,000	$131,000
Removal of Existing Asphalt	S.Y.	$2.50	58,222	$145,556
Clearing and Grubbing	Acre	$2,000	5.41	$10,826
Roadway Excavation	C.Y.	$10.50	25,472	$267,458
HMA Concrete	Ton	$60.00	5,330	$319,804
Untreated Base Course	C.Y.	$15.00	6,793	$101,889
Granular Borrow	C.Y.	$40.00	11,887	$475,481
Curb and Gutter (2.5' width)	L.F.	$11.50	26,200	$301,300
Sidewalk (4' width)	L.F.	$25.00	26,200	$655,000
Drainage	L.F.	$80.00	26,200	$2,096,000
Right of Way	S.F.	$15.00	235,800	$3,537,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$8,041,314**

Contingency	25%	$2,010,329
Mobilization	10%	$804,131
Preconstruction Engineering	8%	$643,305
Construction Engineering	8%	$643,305
Total Project Costs		**$12,140,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$12,140,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
1700 South: 3000 West to 2000 West

Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	28,800	$28,800
Removal of Existing Asphalt	S.Y.	$2.50	21,333	$53,333
Clearing and Grubbing	Acre	$2,000	2.20	$4,408
Roadway Excavation	C.Y.	$10.50	20,444	$214,667
HMA Concrete	Ton	$60.00	4,278	$256,680
Untreated Base Course	C.Y.	$15.00	5,452	$81,778
Granular Borrow	C.Y.	$40.00	9,541	$381,630
Curb and Gutter (2.5' width)	L.F.	$11.50	9,600	$110,400
Sidewalk (4' width)	L.F.	$25.00	9,600	$240,000
Drainage	L.F.	$80.00	9,600	$768,000
Right of Way	S.F.	$15.00	96,000	$1,440,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$3,579,695**

Contingency	25%	$894,924
Mobilization	10%	$357,970
Preconstruction Engineering	8%	$286,376
Construction Engineering	8%	$286,376
Total Project Costs		**$5,410,000**

Syracuse City's Responsibility Via Impact Fee's	**0%**
	$0

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Bluff Street: Connection to Layton Parkway

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	25,000	$25,000
Removal of Existing Asphalt	S.Y.	$2.50	11,111	$27,778
Clearing and Grubbing	Acre	$2,000	1.38	$2,755
Roadway Excavation	C.Y.	$10.50	4,861	$51,042
HMA Concrete	Ton	$60.00	1,017	$61,031
Untreated Base Course	C.Y.	$15.00	1,296	$19,444
Granular Borrow	C.Y.	$40.00	2,269	$90,741
Curb and Gutter (2.5' width)	L.F.	$11.50	5,000	$57,500
Sidewalk (4' width)	L.F.	$25.00	5,000	$125,000
Drainage	L.F.	$80.00	5,000	$400,000
Right of Way	S.F.	$15.00	60,000	$900,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$1,760,291**

Contingency	25%	$440,073
Mobilization	10%	$176,029
Preconstruction Engineering	8%	$140,823
Construction Engineering	8%	$140,823
Total Project Costs		**$2,660,000**

Syracuse City's Responsibility Via Impact Fee's	**25%**
	$670,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Bluff Street & Gentile Street: 1000 West to 500 West (3700 West Layton)

Minor Arterial

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	45,000	$45,000
Removal of Existing Asphalt	S.Y.	$2.50	20,000	$50,000
Clearing and Grubbing	Acre	$2,000	1.86	$3,719
Roadway Excavation	C.Y.	$10.50	8,750	$91,875
HMA Concrete	Ton	$60.00	2,441	$146,475
Untreated Base Course	C.Y.	$15.00	2,333	$35,000
Granular Borrow	C.Y.	$40.00	4,083	$163,333
Curb and Gutter (2.5' width)	L.F.	$11.50	9,000	$103,500
Sidewalk (4' width)	L.F.	$25.00	9,000	$225,000
Drainage	L.F.	$80.00	9,000	$720,000
Right of Way	S.F.	$15.00	81,000	$1,215,000
Bridge/Culvert	S.F.	$225.00	0	$0
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$2,798,902**

Contingency	25%	$699,726
Mobilization	10%	$279,890
Preconstruction Engineering	8%	$223,912
Construction Engineering	8%	$223,912
Total Project Costs		**$4,230,000**

Syracuse City's Responsibility Via Impact Fee's	**8%**
	$340,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Note: Includes re-alignment at the intersection of 1000 West and Bluff Street

Syracuse City
Transportation Master Plan
Roundabout: 3000 West & 700 South

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	0	$0
Removal of Existing Asphalt	S.Y.	$2.50	0	$0
Clearing and Grubbing	Acre	$2,000	0.00	$0
Roadway Excavation	C.Y.	$10.50	0	$0
HMA Concrete	Ton	$60.00	0	$0
Untreated Base Course	C.Y.	$15.00	0	$0
Granular Borrow	C.Y.	$40.00	0	$0
Curb and Gutter (2.5' width)	L.F.	$11.50	0	$0
Sidewalk (4' width)	L.F.	$25.00	0	$0
Drainage	L.F.	$80.00	0	$0
Right of Way	S.F.	$15.00	0	$0
Roundabout	Each	$250,000	1	$250,000
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$250,000**

Contingency	25%	$62,500
Mobilization	10%	$25,000
Preconstruction Engineering	8%	$20,000
Construction Engineering	8%	$20,000
Total Project Costs		**$380,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$380,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Signal: 500 West & 2700 South

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	0	$0
Removal of Existing Asphalt	S.Y.	$2.50	0	$0
Clearing and Grubbing	Acre	$2,000	0.00	$0
Roadway Excavation	C.Y.	$10.50	0	$0
HMA Concrete	Ton	$60.00	0	$0
Untreated Base Course	C.Y.	$15.00	0	$0
Granular Borrow	C.Y.	$40.00	0	$0
Curb and Gutter (2.5' width)	L.F.	$11.50	0	$0
Sidewalk (4' width)	L.F.	$25.00	0	$0
Drainage	L.F.	$80.00	0	$0
Right of Way	S.F.	$15.00	0	$0
Roundabout	Each	$250,000	0	$0
Traffic Signal	Each	$180,000	1	$180,000
			Subtotal	**$180,000**

Contingency	25%	$45,000
Mobilization	10%	$18,000
Preconstruction Engineering	8%	$14,400
Construction Engineering	8%	$14,400
Total Project Costs		**$270,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$270,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Roundabout: Gentile Street & Bluff Street

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	0	$0
Removal of Existing Asphalt	S.Y.	$2.50	0	$0
Clearing and Grubbing	Acre	$2,000	0.00	$0
Roadway Excavation	C.Y.	$10.50	0	$0
HMA Concrete	Ton	$60.00	0	$0
Untreated Base Course	C.Y.	$15.00	0	$0
Granular Borrow	C.Y.	$40.00	0	$0
Curb and Gutter (2.5' width)	L.F.	$11.50	0	$0
Sidewalk (4' width)	L.F.	$25.00	0	$0
Drainage	L.F.	$80.00	0	$0
Right of Way	S.F.	$15.00	0	$0
Roundabout	Each	$250,000	1	$250,000
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$250,000**

Contingency	25%	$62,500
Mobilization	10%	$25,000
Preconstruction Engineering	8%	$20,000
Construction Engineering	8%	$20,000
Total Project Costs		**$380,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$380,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Roundabout: 3000 West & 2700 South

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	0	$0
Removal of Existing Asphalt	S.Y.	$2.50	0	$0
Clearing and Grubbing	Acre	$2,000	0.00	$0
Roadway Excavation	C.Y.	$10.50	0	$0
HMA Concrete	Ton	$60.00	0	$0
Untreated Base Course	C.Y.	$15.00	0	$0
Granular Borrow	C.Y.	$40.00	0	$0
Curb and Gutter (2.5' width)	L.F.	$11.50	0	$0
Sidewalk (4' width)	L.F.	$25.00	0	$0
Drainage	L.F.	$80.00	0	$0
Right of Way	S.F.	$15.00	0	$0
Roundabout	Each	$250,000	1	$250,000
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$250,000**

Contingency	25%	$62,500
Mobilization	10%	$25,000
Preconstruction Engineering	8%	$20,000
Construction Engineering	8%	$20,000
Total Project Costs		**$380,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$380,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
HMA Thickness (in) =	3
Untreated Base Course Thickness (in) =	8
Granual Borrow Thickness (in) =	14
Roadway Excavation Depth (ft) =	2.5
Sidewalk Width (ft) =	4

Syracuse City
Transportation Master Plan
Roundabout: 4000 West & 700 South

Costs

Item	Unit	Unit Cost	Quantity	Cost
Parkstrip	S.F.	$1.00	0	$0
Removal of Existing Asphalt	S.Y.	$2.50	0	$0
Clearing and Grubbing	Acre	$2,000	0.00	$0
Roadway Excavation	C.Y.	$10.50	0	$0
HMA Concrete	Ton	$60.00	0	$0
Untreated Base Course	C.Y.	$15.00	0	$0
Granular Borrow	C.Y.	$40.00	0	$0
Curb and Gutter (2.5' width)	L.F.	$11.50	0	$0
Sidewalk (4' width)	L.F.	$25.00	0	$0
Drainage	L.F.	$80.00	0	$0
Right of Way	S.F.	$15.00	0	$0
Roundabout	Each	$250,000	1	$250,000
Traffic Signal	Each	$180,000	0	$0
			Subtotal	**$250,000**

Contingency	25%	$62,500
Mobilization	10%	$25,000
Preconstruction Engineering	8%	$20,000
Construction Engineering	8%	$20,000
Total Project Costs		**$380,000**

Syracuse City's Responsibility Via Impact Fee's	**100%**
	$380,000

Overall Assumptions:

HMA Pavement Density (pcf) =	155
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