2015

MADISON COUNTY
TRANSPORTATION MASTER PLAN

HORROCKS ENGINEERS

Acknowledgements

There have been many that have contributed to the input of this transportation master plan update. We thank the Madison County Commissioners and the members of the Madison County Rural Planning Organization (RPO).

Madison County Commissioners:

Kimber Ricks, Chairman

Jon Weber

Todd Smith

Madison County Rural Planning Organization (RPO)

Richard Woodland, Mayor City of Rexburg

Glen Dalling, Mayor of Sugar City

W. Lamont Merrill, Mayor of Sugar City

Jon Weber, Madison County Commissioner (Chair)

Bill Shaw, Strategic Planning and Community Involvement at Idaho Transportation Department

Eric Conrad, University Services with BYUI

John Millar, Public Works Director

Keith Davidson, Assistant Engineer

Scott Johnson, Economic Development

Reo Jensen, Madison County

Cindy Roberson, Madison County

Special Thanks to:

Deedee Tucker, City of Rexburg

Daniel Torres, City of Rexburg

Brent McFadden, Madison County P&Z

Craig Rindlisbacher, Madison County GIS

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Executive Summary

Introduction

The Madison County transportation systems spans a diverse landscape and serves a variety of users. Although airports and railroads serve an important role in the transportation system, roadways are the most widely used and most important feature of the transportation system. Daily commuters, farm-to-market truck haulers, recreation for local as well as regional travelers use the roadway system in Madison County every day.

As we remember what the road system has been in the past and what it is today, we envision what the County current and impending needs are, and look to the future. What will the transportation system be for our grandchildren and their grandchildren? Will decisions made today have a lasting impact on decisions they make to live and work in Madison County. The area is growing with a thriving University and a desire by businesses to locate in Madison County.

Over the next 25 years it is anticipated that the number and mix of roadway users will continue to grow. Transportation that accommodates this growth will ensure the continuation of the strong economic vitality and exceptional quality of life which currently exists in Madison County.

Existing Roadway Network

The existing roadway network consists of local, collector and arterial streets as well as the state highway US-20. Each of these roadway classifications serves a different yet important function in the roadway system.

Traffic volume and turning movement data was collected throughout the County to establish a baseline of existing traffic volumes. These volumes were compared to the capacity of the individual roadways in the network to determine any existing deficiencies. Level of Service (LOS) is a performance metric used by the Federal Highway Administration to categorize congestion on roadways. A letter grade A, B, and C being acceptable. LOS D, E, and F are considered unacceptable. Every roadway segment in the County is operating at an acceptable level of service. There are however, a number of intersections that are experiencing excessive delays. These are as follows:

- 2nd East and Teton Village Road
- 2nd East and the Walmart Entrance
- US-20 Ramps at Main Street
- US-20 Ramps at University Boulevard

Several bridges in the area are in need of attention according to the National Bridge Inventory Database. Idaho Transportation Department (ITD) owns 32 bridges in Madison County, one of which is structurally deficient and one of which is functionally obsolete. The County owns 39 bridges, three are structurally deficient and two are eligible for federal aid with a sufficiency rating of less than fifty. The Twin Bridges are also in need of channel correction. The City of Rexburg maintains 8 bridges, of which one is structurally deficient and one is federal aid eligible. The only bridge in Sugar City is functionally obsolete.

In addition to roadways, the jointly owned Rexburg-Madison County airport is operational and serves primarily private and agricultural aircraft. A committee currently exists to evaluate future airport needs

and the potential for relocation as an expansion becomes necessary. There are 52 miles of railroad along the Yellowstone branch of the Eastern Idaho Railroad. This stretch moves more than 35,000 car loads per year to the Union Pacific branches.

Future Conditions

Future traffic patterns and the resulting operating conditions of a roadway network are directly related to land use planning and socioeconomic conditions. Socioeconomic data were gathered from the Cities, County, BYU-I and other stakeholders in the area to ensure the best available data were used.

Transportation planning in the region should be a cooperative effort of state and local agencies. One of the purposes of the newly formed RPO is to coordinate this transportation planning process in Madison County.

A large part of the coordinated planning process was the development of a regional travel demand model. This model will serve as a planning tool for the County and RPO for years to come. The travel demand model was the basis for the analysis of future traffic growth in the County and helped determine not only the expected problems caused by growth but also the effectiveness of the proposed solutions to those problems.

Three planning years were evaluated; 2020, 2030, and 2040. Growth in the County is expected to continue through these years with populations reaching 46,000 in 2020, 55,000 in 2030, and 64,000 by the year 2040. This growth will significantly influence the roadway network and, as shown in the no-build scenarios presented in this report, will result in unacceptable congestion in the area. Several projects were identified as part of the planning process and range from signal timing projects to interchange reconstructions. Current projects will seek to solve problems such as geometric deficiencies, pedestrian safety, intersection operational failure, and over congested roadways.

In addition to the three planning years studied, a vision scenario was developed to identify potential problems which are likely to occur once the County population exceeds the 64,000 threshold set for the year 2040. These projects include the East Parkway Corridor, 5th West Extension and US-20 overpasses at Moody Road, Poleline Road, and 7th South. These vision projects should considered by the RPO as development and growth occurs.

A total of 22 intersections were studied in depth as part of the TMP. The intersections were evaluated for safety, geometric, and capacity insufficiencies. Of the 22, seven are currently over capacity. Seven have geometric or safety concerns, and 11 (including the original seven) are expected to be over capacity by 2040.

Rural Madison County Improvements

Many of the improvements in and around the City of Rexburg are driven by travel demand and the projected congestion that will occur with the growth. For the rest of the County, including Sugar City, the existing system will provide a projected LOS A through the year 2040. Although not driven by travel demand, the connectivity, safety and utility of the rural part of the County has been studied. A capital improvement plan has been developed for the rural areas of the Counties and priorities have been developed based a consensus of the most pressing needs by input of the public and stakeholders.

Details of the major improvements proposed in the TMP are included in the body of this report. A list is provided here for reference:

- US-20 and State Highway 33
- US-20 West Side Frontage
- US-20 East Side Frontage
- Spot intersection locations throughout the County

Alternative Modes of Transportation

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 as they become appropriate for the community.

It has long been discussed that a vibrant bus system within the community could become a vital link to expanding access to the University for students. A transit system, particularly within the City of Rexburg should be considered in the future plans of the community. While many transit options exist, the most viable and affordable option for the area would be a fixed schedule bus system. The exact location and timing of the bus routes will require further study. The Community Transportation Association of America public transit start-up feasibility study will form part of this further analysis.

Pedestrians and Bicyclists are an essential element to the transportation master plan. The City of Rexburg has a high volume of pedestrian activity in and around the BYUI campus. Sidewalks should be considered a priority for any new roadways or capacity improvements. Improving the sidewalk connectivity between the downtown area and the campus is essential. Regional bike plans exist and should be used to determine the most appropriate location for bike lanes and trails within the County. Each of the roadway cross sections should include the ability to accommodate bicyclists either with on-street facilities such as bike lanes or “sharrows” or off-street facilities such as multi-use pathways and trails.

Other Elements of the Transportation Master Plan

Traffic Impact Studies should be required for all developments that may have a detrimental impact on the transportation network. Traffic Impact Studies give the County and Cities the ability to determine what effects a proposed development will have on the street network and how to plan accordingly. Guidelines to when and where a Traffic Impact Study is required are given in the appendix of this report. The guidelines also show the information that should be included in the study.

Intelligent Transportation Systems (ITS) can greatly improve the function of any roadway. ITS elements include signal detection, traffic volume recorders, traffic cameras, variable message signs, and advanced warning signs. Each of these elements allow traffic engineers to monitor traffic patterns and adjust to maximize traffic flows accordingly. The ITS can also provide valuable information to the traveling public to assist in travel decisions. A traffic operations center should be set up in the County to monitor the proposed ITS elements.

Access Management is a standard or set of guidelines used to control access on major roads. Controlling access improves the safety of a roadway and increases capacity. The State of Idaho has an access management program for the state roads. It is recommended that the County adopt the same standards for locally owned roads of similar function.

Madison County must be an integral player in regional planning. The formation of the RPO has taken a large step in the right direction to accomplish this goal. The County must continue to work with ITD and neighboring jurisdictions to guarantee that transportation planning is all encompassing.

Many of the projects identified in this report will not be needed for 10, 20, or perhaps 30 years. It is vital that the County takes the necessary steps now to prepare for these projects. The simplest way to make sure that these projects are still possible in the future is through Corridor Preservation. This is a technique used to preserve areas of Right-of-Way, with sufficient width to accommodate a future planned roadway. As rural areas develop, the County and Cities must be proactive in procuring the necessary right-of-way for planned projects as it becomes available. Maintaining access management standards on these corridors is also important.

Travel Demand Management is the practice of encouraging people out of single occupancy vehicle use. Several strategies exist and could be employed by the members of the RPO including a ride share program, transit, incentives for carpooling, variable work schedules, etc.

Traffic Calming and Safety are also an important part of any transportation network. Ensuring the safety of motorists and pedestrians should be the highest priority on any transportation project. Traffic calming can help reduce speeds and volumes on roadways, but should be used with caution and only where appropriate. A guide to traffic calming is provided in this report.

Capital Facilities Plan

The most important element of the TMP is the Capital Facilities Plan. This section of the report includes all of the recommended projects to mitigate any existing and future transportation deficiencies. The report includes the nature of each project, the timing of the project and a planning level cost estimate for each project. The total cost of all of the proposed capital improvement projects combined for ITD, the Cities and the County in Madison County, excluding those already programmed or completed, is **$58,911,000**.

Public Involvement

In addition to multiple updates to the Madison County commissioners and the members of the Rexburg City Council, the public was also invited to attend a series of two public meetings. The meetings allowed the public to express ideas and concerns related to the topics presented. The meetings were advertised via web site, television, radio, and via social media. Receipt of social media invitations confirmed that more than 12,000 residents of Madison County were able to open and view the invitation. In addition, Kelly Hoopes of Horrocks Engineers discussed the project and the intent of the master plan update on local television news channels on two different occasions.

The first public meeting was held on April 1, 2015 in the Madison County Commissioners chambers. The second meeting was held the following night on April 2, 2015 in the City of Rexburg City Council chambers.

Each meeting presented the same information in an open house format. Exhibits of the various discoveries and alternatives of the study were presented. Many in attendance came simply to learn with no comments. Others expressed comments verbally and in writing.

The primary concern expressed by the majority of attendees was the congestion on 2nd East between Main Street and 7th North. The alternative presented as a couplet on 3rd East concerned some residents who live along that corridor.

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Introduction

Overview and History

Madison County, Idaho is located in the Upper Snake River Valley. Established in 1913, it has a rich heritage with roots of pioneer families that first settled in the area. These pioneers quickly began farming and cultivating the land. They built farms, roads and the first irrigation systems. Before January 1, 1914, the County was part of neighboring Fremont County. The newly established County was named for American president James Madison. Over the years there has been growth and change to the area. There are just under 40,000 people residing in Madison County today. Between the 2000 and 2010 censuses, the population grew from 27,466 to 37,596, an increase of approximately 37%. A map of Madison County is shown in **Figure 2**.

The majority of the people living in Madison County live within the City of Rexburg, accounting for 25,536 people in 2010 (68% of the County population). Less than one third of the population live outside of the City in the rural areas and smaller towns. There are several smaller communities in Madison County including Sugar City, Salem, Lyman, Plano, Sunnydell, Independence, Moody, Thornton, Hibbard, Burton, Edmonds and Archer. Sugar City is the largest of these Cities (1,509 population in 2010) and is located on the northern border of Madison County. Many of these towns are brought together by common schools and churches.

Madison County, particularly the City of Rexburg, has experienced a significant amount of growth and development over the last several years. This growth is expected to continue in the future, as shown in **Figure 1**. By the year 2040 the population is projected to be approximately 64,000 people.

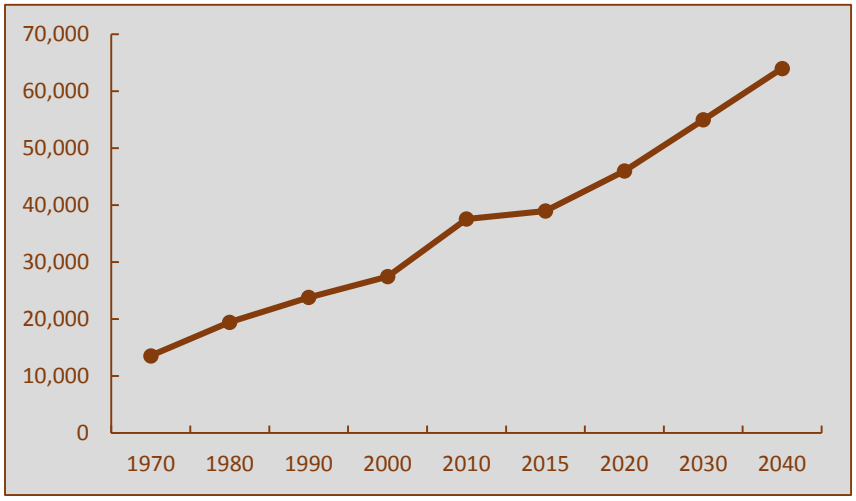
Table 1 shows the existing population numbers from the year 1970 to the projected population year of 2040. In order to keep pace with the projected population growth, a comprehensive transportation plan must be developed and regularly maintained. The purpose of this plan is to incorporate the goals of Madison County, the City of Rexburg, Sugar City and the Idaho Department of Transportation regarding the transportation systems within their jurisdiction.

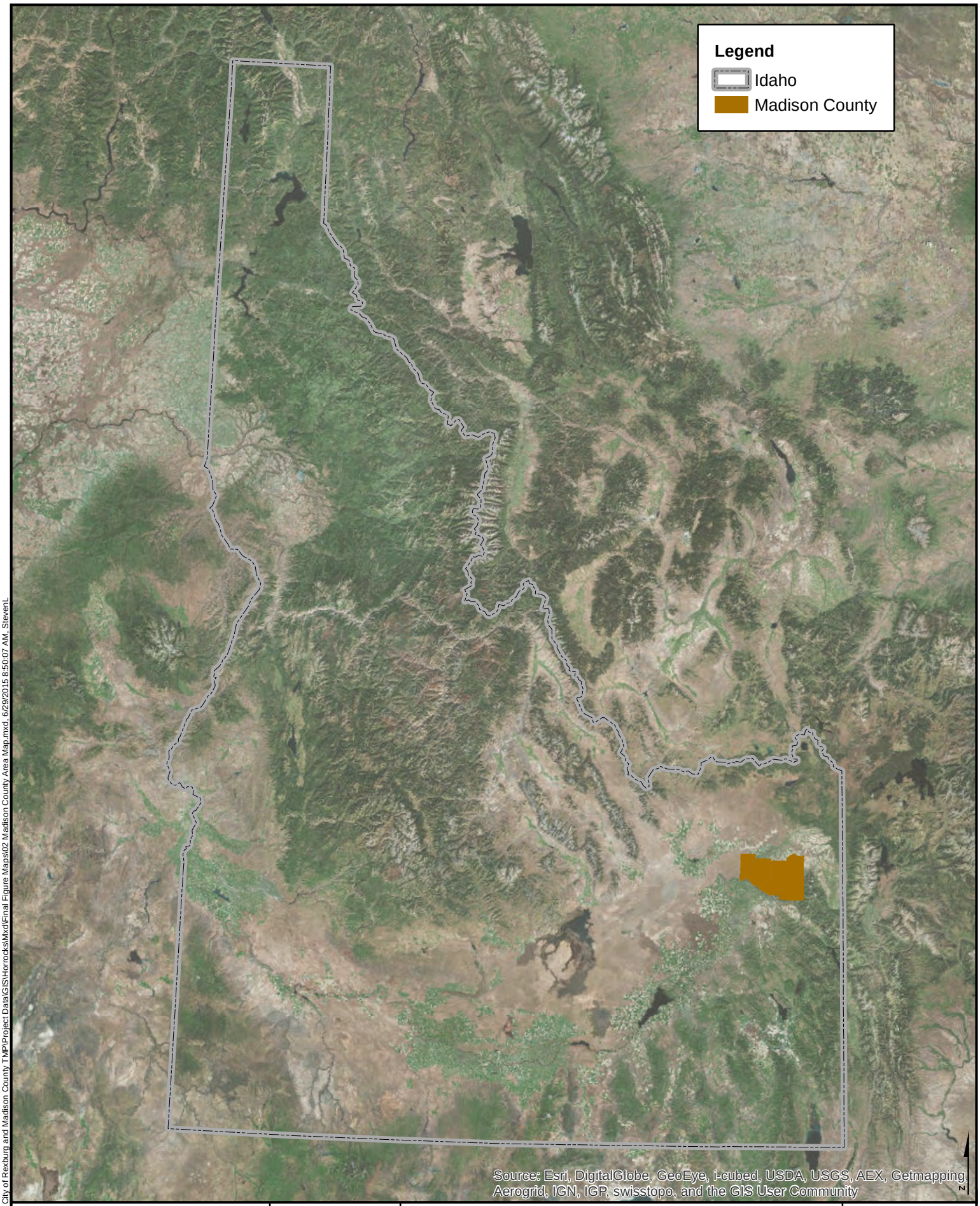
One of the key traffic generators in the County is Brigham Young University Idaho (BYU-I). Established in 1888 as Bannock Stake Academy, BYU-I has become one of the region's premier higher eductation establishments. With a campus consisting of over 40 buildings spanning 430 acres, BYU-I serves students from over 80 countries worldwide. More than 28,000 students attend each year with over 16,000 full-time students at any given time.

Table 1 Population Data

Year	Population
1970	**13,579**
1980	**19,480**
1990	**23,823**
2000	**27,466**
2010	**37,596**
2015	**39,000**
2020	**46,000**
2030	**55,000**
2040	**64,000**

Figure 1 Madison County Population Projections





HORROCKS ENGINEERS
5700 E Franklin Rd,
Suite 160
Nampa, ID 83687
(208) 463-4197

Madison County Transportation Master Plan
Madison County Area Map

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Figure 2

This Transportation Master Plan (TMP) contains an analysis of the existing transportation network and conditions. Any major deficiencies are itemized and possible improvement or mitigation alternatives are discussed. An analysis of the future transportation network is also included for the horizon years 2020, 2030 and 2040. 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 in planning for future transportation projects within the County as well as working with other agencies such as ITD and neighboring Counties. This TMP is intended to be a useful tool to aid in planning and maintaining the overall transportation network within the County.

Review of 2004 Transportation Master Plan

The *Madison County Transportation Plan* was adopted in 2004 by the County and the Cities of Rexburg and Sugar City. The East Parkway project was identified regional project of highest priority.

One of the elements of the 2015 TMP is an analysis of what has been completed from the 2004 planning document and to determine if those modifications met the needs as defined in the study.

The 2004 plan recommended 21 projects (9 local and 12 ITD) in years 1-5 and 19 projects (15 local and 4 ITD) in years 6-10. These projects are summarized in **Table 2, Table 3, Table 4, and Table 5**. There were also 19 projects recommended for years beyond the 10 year planning horizon.

Table 2 2004 Transportation Master Plan Projects CIP years 1-5

Item	Project	Roadway
1	**Complete South Arterial – Yellowstone to 7th South**	**S. Arterial**
2	**Conduct East Parkway Corridor Study**	**East Pkwy**
3	**Begin East Parkway 2nd West to 2nd East**	**East Pkwy**
4	**Add East Pkwy – Barney Dairy Rd to 7th North (Bridge)**	**East Pkwy**
5	**Add East Pkwy – 7th South to Barney Dairy Road**	**East Pkwy**
6	**Extend 7th South to East Pkwy**	**7th South**
7	**Widen 7th South from 2nd West to 2nd East**	**7th South**
8	**Corridor Study – 2nd West – S. Arterial to 400 West**	**2nd West**
9	**Safety Study on 2nd East – 7th South to Main**	**2nd East**
10	**Safety Study on 2nd East – Main to 7th North**	**2nd East**
11	**Improve Intersection – 2nd East / 4th North**	**2nd East**
12	**Widen Approaches – 2nd East and 7th North**	**2nd East**
13	**Widen Approaches – 2nd East/Salem Highway/SH-33**	**2nd East**
14	**Main Street Safety Study – US 20 WB to 2nd East**	**Main St**
15	**Intersection Improvement – Main St and 2nd West**	**Main**
16	**Intersection Improvements – Main St and 2nd East**	**Main**

Item	Project	Roadway
17	**Widen SH-33 US 20 to 12th West**	**SH-33**
18	**Improve US 20 / SH 33 and 12th West**	**SH-33**
19	**Intersection Improvements – SH 33 and 12th West**	**SH-33**
20	**Sugar City East Parkway Alignment / West Circulation Study**	**East Pkwy**
21	**"S" Curve Safety Study – SH 33**	**SH-33**

Table 3 2004 Transportation Master Plan Projects CIP Years 6-10

Item	Project	Roadway
1	**Install Emergency Preempt System at Signals**	**All**
2	**Improve Continuity from 2nd East to Barney Dairy Rd**	**Barney Dairy Rd**
3	**Widen University Blvd – 12th West to US 20**	**University Blvd**
4	**Improve Intersection – Salem Highway / 14th North to Moody**	**Salem Highway**
5	**Widen Salem Highway 1800 North to US 20**	**Salem Highway**
6	**Widen Salem Highway within US 20 Interchange**	**Salem Highway**
7	**Reduce Intersection Angle – SH 33 / 9th East (7th West)**	**SH 33**
8	**Reduce Intersection Angle – SH 33 / 14th North (Moody Hwy)**	**SH 33**
9	**Widen SH 33 – 2nd East to 14th North (Moody Hwy); Reconstruct SH 33 "S" Curves as necessary**	**SH 33**
10	**Extend Airport**	**Airport Rd**
11	**Extend 2nd West south to Poleline Rd**	**2nd West**
12	**Add 5000 South – US 20 to Arch-Lyman Hwy**	**5000 South**
13	**Study Hibbard Hwy along 3000 West**	**Hibbard Hwy**
14	**Extend Hibbard Hwy – 3200 South to US 20**	**Hibbard Hwy**
15	**Extend Hibbard Hwy – 5200 South to 3400 West**	**Hibbard Hwy**

Table 4 2004 Transportation Master Plan Projects CIP years 11-15

Item	Project	Roadway
1	**West Arterial – 2nd North to 2nd East**	**W. Arterial**
2	**Reconfigure 2nd South / 2nd West Intersection**	**2nd South**
3	**Complete East Parkway from 7th North to SH 33**	**East Pkwy**
4	**Complete East Parkway from 2nd East to 1000 East**	**East Pkwy**
5	**Intersection Geometry – Poleline / 3000 East**	**Poleline Rd**
6	**Widen 12th West – University Blvd to SH 33**	**12th West**

Item	Project	Roadway
7	**Widen 12th West – SH 33 to 7th North**	**12th West**
8	**Add road from East Parkway to 16th E south to Barney Dairy Rd**	**East Pkwy**
9	**Improve Yellowstone / South Arterial Intersection**	**Yellowstone**
10	**Widen Yellowstone – Archer Lyman Hwy to South Arterial**	**Yellowstone**
11	**Extend 2nd West south to 400 West**	**2nd West**

Table 5 2004 Transportation Master Plan Projects CIP years 16-20

Item	Project	Roadway
1	**Extend University Blvd – 12th West to 5000 West**	**University Blvd**
2	**Corridor Study – 400 West from 7800 S to 5500 S**	**400 East**
3	**Extend 4700 South – US 20 to 4000 West**	**4700 South**
4	**Widen 2nd East – 7th South to Main**	**2nd East**
5	**Improve Intersection – 2nd East / 2nd South**	**2nd South**
6	**Widen 2nd West – 4th South to 7th South**	**2nd West**
7	**Widen Salem Highway – US 20 to 4000 North**	**Salem Highway**
8	**West Arterial – 2nd North to 2nd East**	**W. Arterial**

Between 2004 and 2015, the south arterial between Yellowstone Road and 7th South has been completed. This roadway has become a vital link between the University Interchange and the City. This segment is also referred to as the "South Rexburg Arterial". The East Parkway Corridor Plan was studied and completed in March of 2013. Over this time, the general growth within the County and around the City of Rexburg has shifted from a pattern of growth on the north and east of the City to a pattern of growth on the southwest of the City. The overall plan, as presented in 2004, centered on this growth and the network implementation of the East Parkway. While it is believed that many of these projects as listed will yet be needed in the future, it is not foreseen that the East Parkway will be the most necessary component of the Madison County transportation system between the time of this update in 2015 and the year 2040. The corridor and the connections as shown in the 2013 corridor study should be preserved as developments are planned on the east side of Rexburg.

Existing Roadway Network

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

- 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 of Rexburg and Madison County. This data includes population, household size, zoning, land use, BYU-I plans, and economic development plans.

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 this TMP, 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 6**:

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. Residential subdivision streets are an example of a local street.

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. An example of a collector street is Pioneer Road.

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. Main Street and 2nd East are Arterial Streets.

Highways – These facilities are provided to service long distance trips between Cities and Counties, but do not have the limited access provided by freeways and expressways. US-20 is a highway.

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 6 Street Functional Classification

Characteristic	Functional Classification			
	Highway	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	See IDAPA	See IDAPA	See IDAPA	See IDAPA
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	Provides link between Local and Arterial Network	Through traffic should be discouraged

Roadway Cross Sections

Table 7 shows some general guidelines for each roadway type as described in the aforementioned tables. **Figure 3** shows the functional classification of each of the roadways in Madison County.

Table 7 Roadway Functional Classification Characteristics

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

Legend

Functional Class

- Highway
- Major Arterial
- Minor Arterial
- Collector
- Local/County Road
- Rexburg City Limits
- Madison County Border

FREMONT
MADISON
Teton River
Teton
Newdale
MADISON
1721 m
1809 m
TETON
BALDY KNOL
Crooked Creek
CANYON CREEK BUTTE
LONG HOLLOW
Ponn Creek
Wright Creek
Worm Creek
Carlton Creek
MADISON
TETON
2508 m
2480 m
ID-33
JEFFERSON
1711 m
MENAN BUTTES
Deer Park Wildlife area
SOMMERS BUTTE
WEBSTER BUTTE
DRY CANYON
WHITE OWL BUTTE
1930m
1086 m
1594 m
1604 m
Menan
1513 m
Lewisville
1501 m
MSVILLE
NOLLS
Rigby H.S.
US 20 E—US 20 W
Ririe
JEFFERSON
Meadow Creek
South Meadow Creek
Spring Creek
Sheep Creek
Canyon Creek
Calamity Creek
RYAN PEAK
North Fork Canyon Creek
Lyons Creek
FARNES MOUNTAIN
ARGUMENT RIDGE
PROSPECT PEAK
GARNS MOUN
2529 m
THOUSAND SPRINGS VALLEY
LOOKOUT MOUNTAIN
2284 m
HELL HOLE CANYON
BURNS CANYON
PINEY PEAK
2749m
2076 m
MADISON
BONNEVILLE
Targhee National Forest
WHEATON MOUNTAIN

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

Existing Network

Rexburg City Master Transportation Plan

0.5 0 0.5 Miles

N

DATE 10/2/2015
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Figure 1

Traffic Volumes and Level of Service

An extensive data collection effort was performed in conjunction with the preparation of the TMP. This included collected data from the Cities, towns, and County as well as new daily traffic counts and new turning movement counts. Travel volume data form the basis of the travel demand model calibration and serve to show any capacity deficiencies that may exist today. The daily counts are average daily traffic (ADT) volumes. This refers to a normal day (Tuesday-Thursday) where no special events, construction activity, or adverse weather may contribute to abnormal traffic conditions. Data for roadways where traffic counts were not collected were obtained through a custom built Travel Demand Model.

Using the existing traffic conditions based on the Travel Demand Model, existing count data, and roadway functional classification, the existing roadway capacity deficiency in the County can be measured using a measurement 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 data collected from the City, County, neighboring Counties, ITD, and new daily traffic counts on many of the City and County roads. These volume data form the basis of the custom built travel demand model calibration and serve to show any capacity deficiencies that may exist today. **Figure 4** shows the locations around the City/County where 24 hour traffic data was collected. The numbers shown are average weekday traffic volumes (ADT).

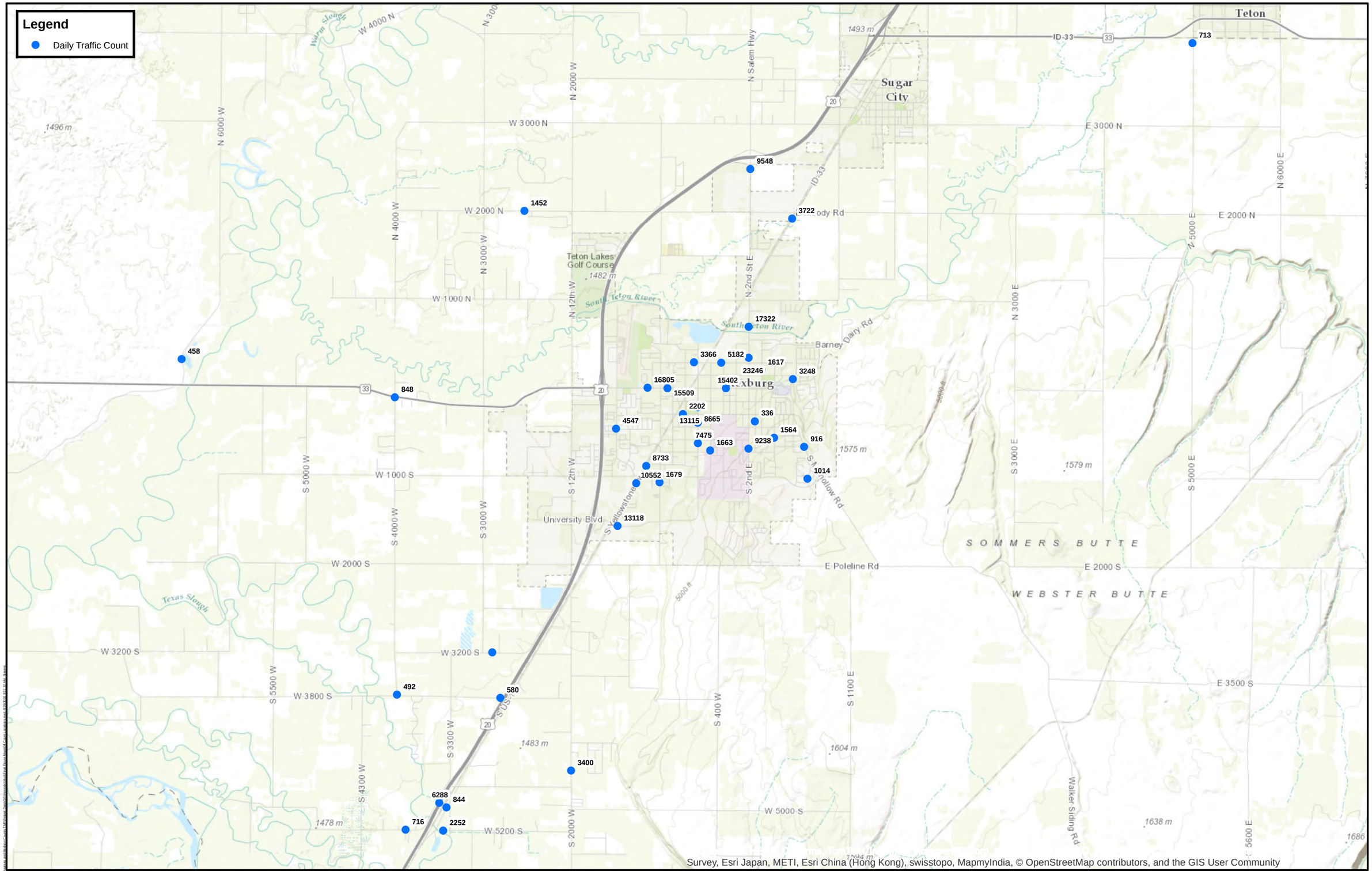

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Figure 4 Count Locations

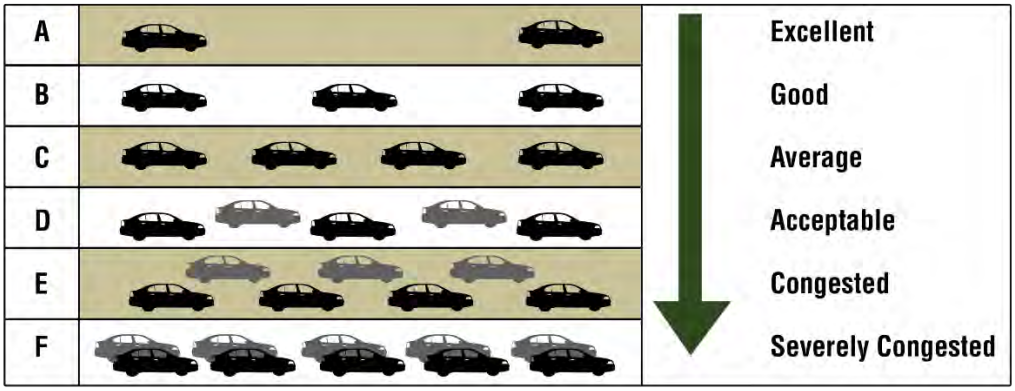
Madison County Transportation Master Plan

1 0 1 Miles

Level of Service

Level of Service (LOS) is a term defined by the Federal Highway Administration (FHWA) to categorize 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. In this TMP, LOS C is the accepted minimum standard for the street network and intersections. **Figure 5** is a graphical representation of LOS on roadway segments. **Figure 6** shows the existing LOS on the County roadway network.

Figure 5 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. Where the number of vehicles traveling on a roadway exceeds the number of vehicles that can be reasonably accommodated without undue speed reduction, the roadway is defined as LOS F.

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

Intersection and roadway segment LOS problems must be solved independently of each other as the treatment required to mitigate the congestion is different in each case. 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 8**, **Table 9**, and **Table 10** summarize major roadway LOS conditions within the City. These values are based on the Highway Capacity Manual (HCM) principles and regional experience.

Table 8 Suburban Highway 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 9 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 10 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 8**, **Table 9**, and **Table 10**, 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 highway lane (40,000).

Existing traffic volumes along with the parameters in **Table 8**, **Table 9** and **Table 10** were used to determine the LOS for each roadway segment in Madison County, as shown in **Figure 6**.

Legend

Level of Service

- Acceptable (LOS A-B)
- Acceptable (LOS C)
- Local/County Road
- Rexburg City Limits

4000 Daily Volume

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

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Figure 6 Existing Roadway Level of Service

Madison County Transportation Master Plan

1 0 1 Miles

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DATE

There are currently no roadway segments in the County that are operating below LOS C. LOS C is experienced for travelers on Main Street between 2nd West and 2nd East and also on 2nd East between Main Street and 4th North. This same area, as well as the area of 2nd East North of 4th North, does however experience excessive delays during the peak times of day due to failing intersections. **Table 11** shows the LOS during the pm peak hour for the signals on 2nd East. Under the current intersection configurations and timings, the signals on 2nd East at Teton Village Road and the Walmart entrance are failing at LOS F and E, respectively. Each of the signals on 2nd East is currently running free and independent of the other signals. Free operations at signals, especially during saturated flows is often desirable. However, in the case of the two closely spaced signals at Teton Village Road and the Walmart entrance, coordinating these signals would significantly improve operations along the corridor. **Table 11** shows that with signal optimization, each of the intersections on 2nd East can be improved to at least LOS C. There is some degradation to the intersection at 1st North but this slight degradation will allow the other coordinated signals to operate at acceptable levels.

Table 11 2nd East Signal Operations

Intersection	Current Signal Timing		Optimized Signal Timing	
	Average Control Delay (sec/veh)	Level of Service	Average Control Delay (sec/veh)	Level of Service
2nd East / Main	19.6	B	17.0	B
2nd East / 1st North	28.5	C	33.5	C
2nd East / 2nd North	32.3	C	18.1	B
2nd East / Teton Village	194.5	F	31.0	C
2nd East / Walmart	68.8	E	22.3	C

Two other areas of the County are currently operating over capacity. These areas are at the US-20 interchanges at Main Street and University Boulevard. Both interchanges are traditional diamond interchanges with unsignalized ramps. During the pm peak hours in particular, the westbound left turning lanes from Main Street onto Southbound US-20 experience severe congestion. This is a result of opposing eastbound traffic, which prevents the left turning vehicles from accessing the highway ramp. A similar situation occurs at University Boulevard during the peak times of the day and especially as the high school west of US-20 lets out or a special event such as graduation or a sporting event takes place. Again, the eastbound traffic flow does not create enough gaps for the left turning vehicles to access the freeway ramps. Signalizing the interchange ramps will mitigate the existing failures and allow for better access to the highway, especially during the peak times. **Table 12** shows the LOS of the highway ramp intersections under the existing conditions during the pm peak hour and the expected LOS when the ramps are signalized.

Table 12 US-20 Intersection Level of Service

Intersection	Unsignalized Intersection LOS	Signalized Intersection LOS
US-20/Main Street (West)	F	B
US-20/Main Street (East)	B	B
US-20/University (West)	F	B
US-20/University (East)	B	A

Bridges

In total there are 80 roadway bridges in Madison County. 32 of the existing bridges are owned by ITD, 39 by Madison County, eight by the City of Rexburg and one by Sugar City. The National Bridge Inventory (NBI) Database provides a methodology to determine the condition of roadway bridges based on the following conditions.

Sufficiency Rating

Bridge sufficiency is a method of evaluating highway bridge data by calculating four separate factors to obtain a numeric value which is indicative of bridge sufficiency to remain in service. The result of this method is a percentage, in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge.

Sufficiency Rating is essentially an overall rating of a bridge's fitness for the duty that it performs based on factors derived from over 20 NBI data fields, including fields that describe Structural Evaluation, Functional Obsolescence, and necessity to the public. A low Sufficiency Rating may be due to structural defects, narrow lanes, low vertical clearance, or any other possible issues. Sufficiency Ratings less than 50 are potentially eligible for federal aid funding.

Structural Evaluation

Structural Evaluation is an appraisal rating that describes an overall rating of the condition of the bridge structure. This is a summary of the separately rated conditions of the structural components of a bridge. This is the most accurate measure according to the NBI for the structural fitness of a bridge.

Status

Functionally Obsolete

Functionally Obsolete is a status used to describe a bridge that is no longer, by design, functionally adequate for its task. Reasons for this status include an insufficient number of lanes to accommodate the traffic flow, a drawbridge on a congested highway, or not enough space for emergency shoulders. Functionally Obsolete does not communicate any structural aspects. A Functionally Obsolete bridge may be perfectly safe and structurally sound, but may contribute to traffic jams or not have a high enough clearance to allow an oversized vehicle to pass under the structure.

Structurally Deficient

Structurally Deficient is a status used to describe a bridge that has one or more structural defects that require attention. This status does not indicate the severity of the defect, but rather that a defect is present. For further details please see the Structural Evaluation and the Condition ratings of each bridge Deck, Substructure, and Superstructure of the nature and severity of the defect(s).

Condition Ratings:

Deck

A bridge deck is the supporting surface of the bridge. It may or may not be covered with a wear surface such as asphalt. The bridge deck is often steel-reinforced concrete and is supported by the Superstructure.

Superstructure

The bridge Superstructure includes the structural elements that support the bridge deck. These may include steel beams, a concrete frame or culvert, steel cables and a floor beam system as used in a suspension bridge, or a steel truss.

Substructure

The bridge Substructure is essentially the bridge's foundation supporting the Superstructure. This includes abutments and piers.

Existing Bridge Conditions

Of the 80 bridges in Madison County, two are functionally obsolete, five are structurally deficient, and two are eligible for federal aid funding with a sufficiency rating less than 50. **Table 13** summarized the condition of the existing bridges in Madison County. The State of Idaho conforms to the national standards for bridge ratings and evaluations. Within this standard a bridge is defined as a structure that spans a distance greater than 20 feet. By this definition, any structure that spans less than 20 feet is considered a culvert. Those structures that are considered culverts are not inspected and monitored as closely as those that are considered bridges. Consequently, an accurate inventory of the condition of the culverts is not often recorded. The culvert near the intersection of 2000 W and 3000 N is high on the priority list for Madison County crews. It will likely be a full replacement with a three-sided stiff-leg box culvert. Additionally improvements to the bridge over the Warm Slough is also required. Improvements may include a full replacement but should include guardrail upgrades as a minimum.

Culvert near int. of 2000W and 3000N1

Table 13 Summary of Bridges in Madison County

Jurisdiction	Functionally Obsolete	Structurally Deficient	Federal Aid Eligible	Other	Total
ITD	1	1	0	-	32
Madison County	0	3	2	Twin Bridges in Need of Channel Correction	39
City of Rexburg	0	1	1	-	8
Sugar City	1	0	0	-	1

Airport

The Rexburg-Madison County Airport is located in Rexburg. It is jointly owned and operated by the City of Rexburg and Madison County. It serves primarily private and agricultural aircraft. The majority of the use comes from private plans that have private hangars located on site. There has been discussions of providing a commercial service, however there is no regularly scheduled service at this airport. There is a single asphalt runway approximately 75 feet in width and 4,200 feet in length. A full length taxiway with several smaller taxiways provide access to the general aviation hangars and facilities.

The City and County have continued to look toward the future by working in committees to discuss the future needs of the airport. As growth occurs, the potential for a greater air service need in Rexburg will grow. The airport configuration in Rexburg is currently landlocked and the ability to grow and expand is limited. Committees have discussed alternatives for possible relocation and expansion. Airport consulting experts have been consulted and studies are being conducted, however there are no defined plans at this time. Results from these studies are not yet finalized and are therefore not included in this master plan.

Rail

The 52 mile long Yellowstone Branch of the Eastern Idaho Railroad (EIRR) passes through Madison County between Idaho Falls and Ashton. The railroad runs parallel to the Old Yellowstone Highway and follows the general path similar to US 20. The Eastern Idaho Railroad started running as a collection of two disconnected clusters of the former Union Pacific branches. EIRR is owned by Watco Inc. and moves more than 35,000 carloads per year to the Union Pacific with interchanges at Idaho Falls on the northern segment and Minidoka on the Southern segment. The annual income of the EIRR is reported to be under 25 million dollars.

Future Conditions

Future traffic patterns and the resulting operating conditions of a roadway network are directly related to land use planning and socioeconomic conditions. Socioeconomic data were gathered from the Cities, the County, BYU-I and other stakeholders in the area to ensure the best available data were used.

Future Socioeconomic Conditions

The majority of the projected socioeconomic data used in this study comes from the City and County economic development group. This data was supplemented and verified using the data provided by the City and County 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 should be a cooperative effort of state and local agencies. One of the purposes of the newly formed RPO is to coordinate this transportation planning process in Madison County.

Future Land Use

In the Land Use Plan, the County has sites planned for agriculture, commercial, industrial, town sites, master planned communities as well as the Bureau of Land Management (BLM), US Forest Service, and Idaho Department of Lands. **Figure 8** shows the latest Land Use Designation Map (updated March 24, 2015) for Madison County. The most current version can be found at ***http://rexburg.org/pages/Maps***.

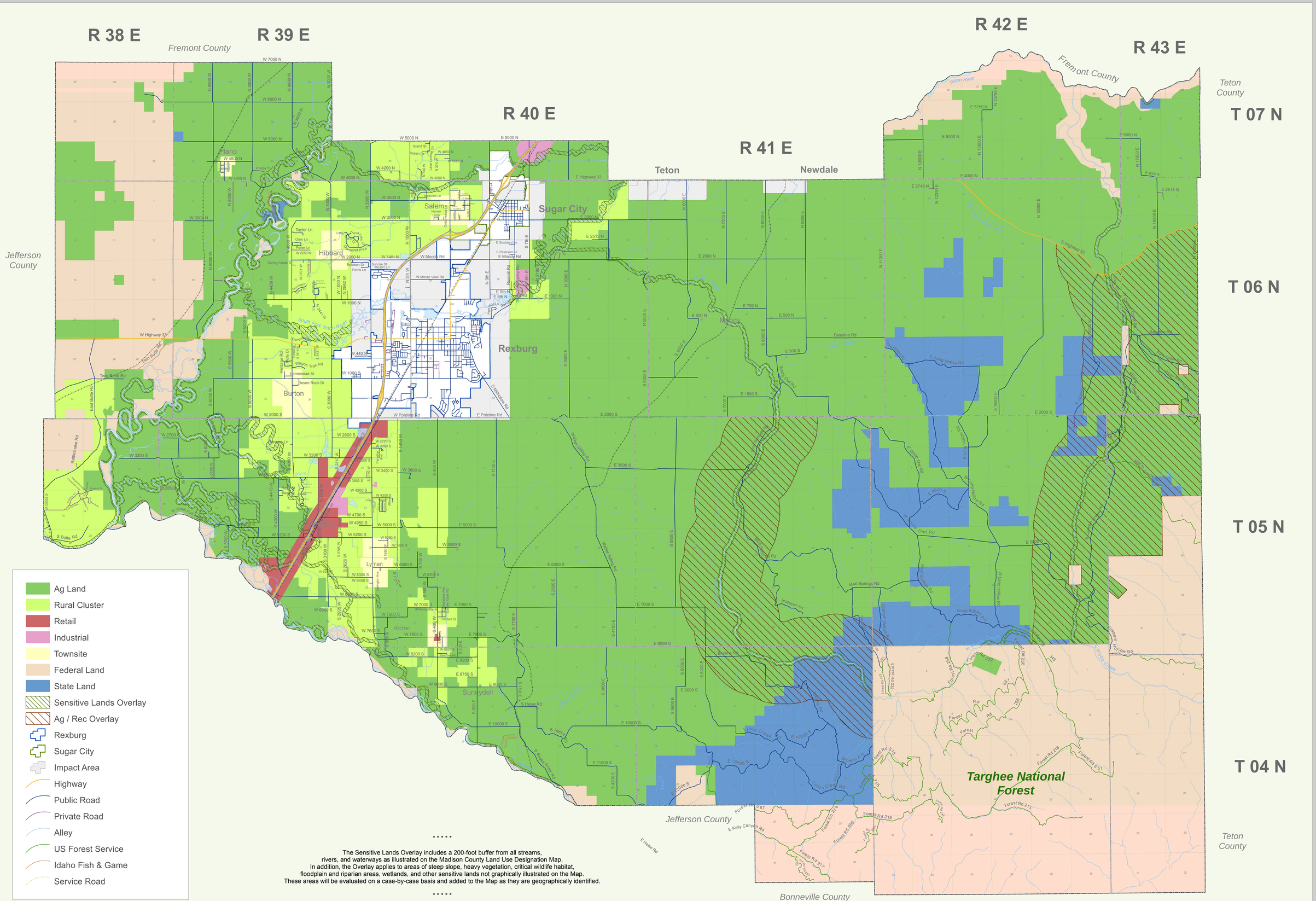

Figure 7 Madison County Land Use

The information contained in this map is for reference purposes only. Madison County and the City of Rexburg cannot be held responsible for misuse of the data.

Updated: 24 March 2015
Adopted: 15 December 2008

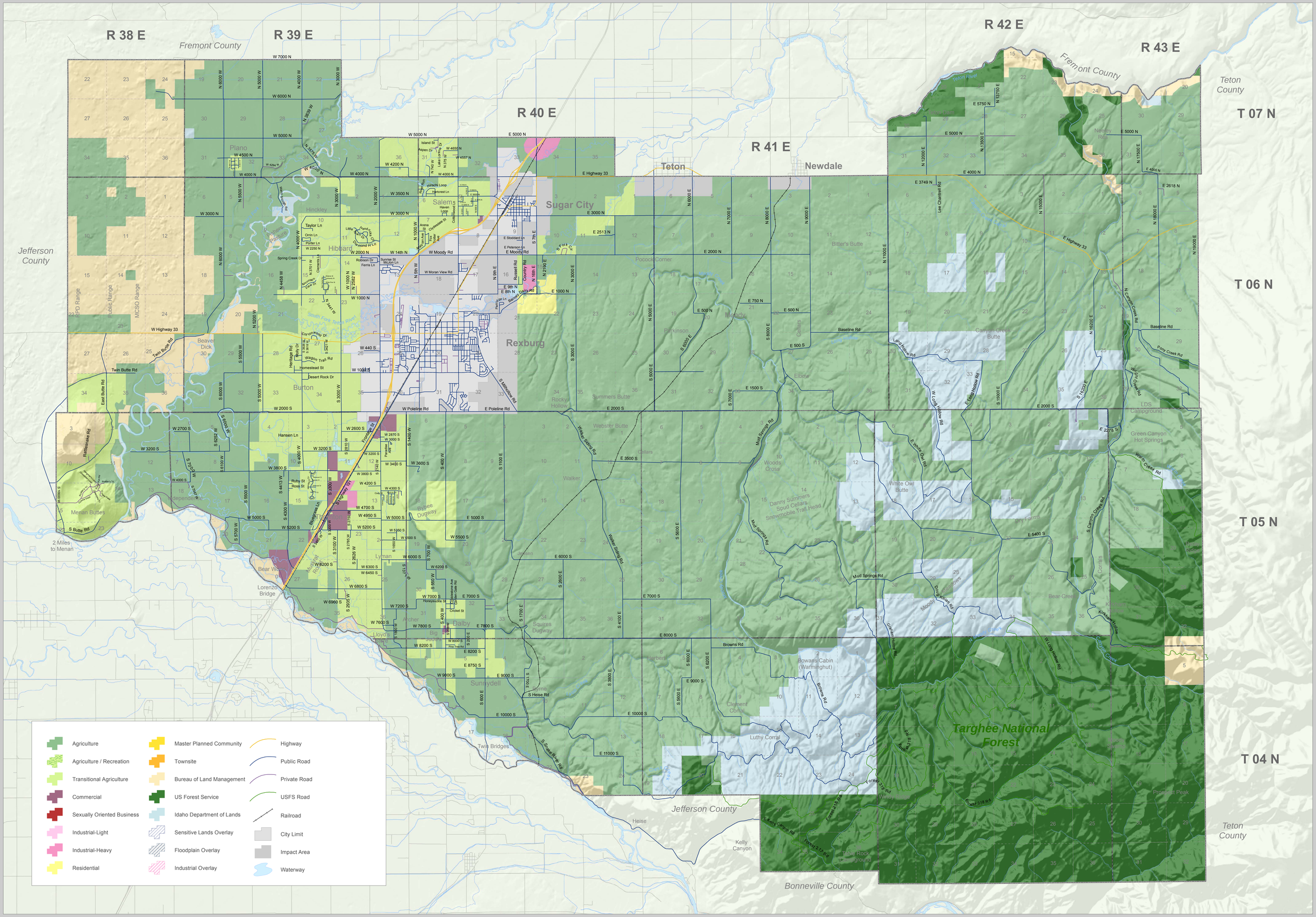

Figure 8 Madison County Zoning

The information contained in this map is for reference purposes only. Madison County and the City of Rexburg cannot be held responsible for misuse of the data.

Updated: 25 March 2015

Travel Model Development

One of the primary outcomes of the Transportation Master Plan was to develop a regional Travel Demand Model for the entire County. This model is intended to be a living model in that it can be run and maintained to project future travel demand for years to come. There are several travel demand modeling software packages available on the market but the model chosen for Madison County was TransCAD.

A travel demand model was developed that is compatible with the surrounding jurisdictions, including Bonneville County and the BMPO. The TransCAD model was built from scratch, as Madison County did not previously have a travel demand model. The input data came from observed traffic counts, trip lengths and types from the BMPO and BTPO, socioeconomic information from the City of Rexburg and Madison County Community Development Department as well as information from the US census, and BYU-I.

The model was calibrated to existing roadway conditions and a root mean squared error calculated. Typically, an acceptable calibration yields an RMSE error less than 40%. The Madison County model RMSE was less than 30% in the existing conditions. Once this calibration was achieved, several model alternatives were processed to get an idea for the traffic conditions that can be expected in the future and then determine the best solutions to solve any potential deficiencies in the roadway network. No-build and build scenarios were developed for the design year 2040, the short term planning horizon year of 2020 and the medium term planning year, 2030.

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 County roadway network. Typically, the no-build scenario acts as a guide for roadway capacity inefficiencies that will need to be improved for each planning year.

Future 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 County will need to be improved. Each horizon year was modeled to determine the best course of action to take to mitigate any future deficiencies. The following sections detail the findings of the travel demand modeling for each of the planning years.

2020 Conditions

With a projected population of 46,000 in 2020, there is moderate but not insignificant growth expected in Madison County. Much of this growth is expected in the commercial areas to the North of Rexburg and some out to the West close to the high school. This new growth will cause volumes on the major roadways in the City to increase and in some cases exceed the allowed capacity.

2020 No Build

Figure 9 shows the projected traffic volumes and LOS on the Madison County roadways if no roadway improvements are made before the year 2020.

Legend

Level of Service

- Acceptable (LOS A-B)
- Acceptable (LOS C)
- Unacceptable (LOS E)
- Local/County Road
- Rexburg City Limits

4000 Daily Volume

Existing Level of Service

2020 No-Build Level of Service

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

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Figure 9 Projected 2020 No-Build Level of Service

Madison County Transportation Master Plan

1 0 1 Miles

DATE

Projected Deficiencies

It is likely that the growth to the North of Rexburg will cause 2nd East to enter a failing condition, particularly between Main Street and 4th North. With volumes expected to exceed 27,000 vehicles per day on this section of roadway, the existing five lane road section will not be able to maintain LOS C or better.

Other parts of 2nd East, around the US-20 intersection and the area between 4th North and 7th North, as well as the south end on campus between 4th South and 7th South will experience some congestion at LOS C. Main Street, between 2nd West and 2nd East, will also experience LOS C.

Solutions to Projected Problems

The areas which are experiencing LOS C should be monitored regularly as they are pushing the limits of acceptability. Care should be taken to ensure that travel demands do not exceed the roadway capacity. If this were to be the case then some of the solutions proposed for the 2030 condition should be advanced to the short term priority list.

2nd East Solution

Travel demand on 2nd East between Main Street and 4th North is expected to be too high to be accommodated on the existing 5-lane roadway section. Several options were explored to mitigate these deficiencies.

One option would be to widen 2nd East to three travel lanes in each direction. Due to the nature of the corridor as the commercial center of Rexburg, such a large cross section would be potentially detrimental to the economic vitality of the area.

The other option is to introduce a one-way couplet to the roadway. This is a common practice in downtown areas with similar configurations utilized to great effect such as in downtown Pocatello and Boise. This is a new concept in Madison County and should be treated with caution and should only be considered along with an extensive public outreach effort. The couplet would essentially limit traffic on 2nd east to three travel lanes in one direction, which would allow for expanded on-street parking, bike facilities and pedestrian facilities. In order for a couplet to function correctly and not require too much out of direction travel, it is preferable that the street used for the opposite direction travel be no more one block away. In this case that would be either on 3rd East or 1st East. In either case, the couplet required in 2020 would include three travel lanes in the opposing direction to 2nd East and would terminate at 4th North where it would join back to 2nd East and continue north as a two-way arterial. **Figure 11** shows a conceptual layout of the 2nd East couplet using 3rd East as the alternate direction and terminating at 4th North.

All of the options discussed above are feasible. This is a large scale project and would likely only be affordable for the City through Federal Funding. Using Federal Funding would mean that a full environmental study would be required to determine which alternative is least impactful. The options discussed here are also very impactful and would require community and political support before any action should be taken. It is recommended that these alternatives be evaluated further in the coming years and as conditions worsen on 2nd East before a major decision is made.

Legend

Functional Class

- Highway
- Major Arterial
- Minor Arterial
- Collector
- Local/County Road
- Rexburg City Limits

2nd East Capacity Improvement Area

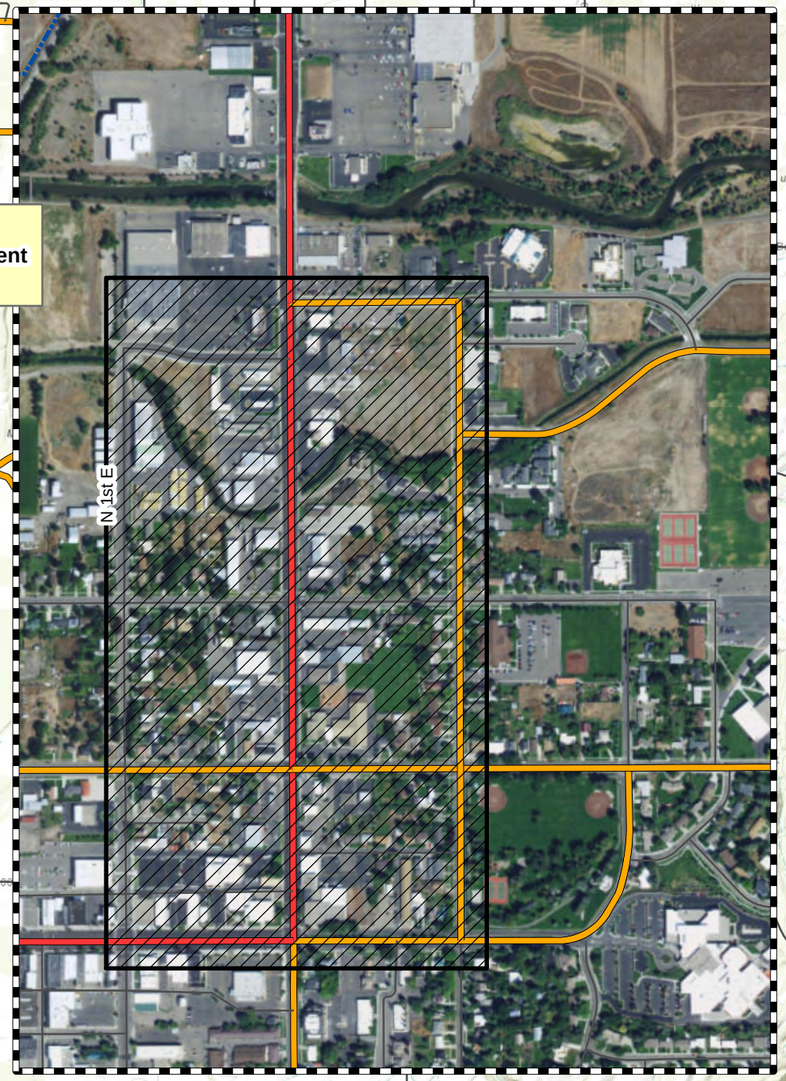

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Figure 10 2020 Solutions to Projected Deficiencies

Madison County Transportation Master Plan

1 0 1 Miles

N

2nd East Couplet
3rd East Option

Main St

Interim Couplet one- way reverts back to two-way if implemented

All traffic on 2nd East flow southward in three lanes

New Railroad Crossing Required

2nd East

3rd East

All traffic on 3rd East flows northward in three lanes

Yellowstone Hwy

New Bridge over the Teton River Required

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.

2030 Conditions

The population of Madison County in 2030 is expected to be approximately 55,000 people. Growth again is expected north of Rexburg and on the west side of US-20. There will also be some growth around the University Boulevard highway interchange.

2030 No Build

Figure 12 shows the projected traffic volumes and LOS on the Madison County roadways if no roadway improvements are made before the year 2030.

Projected Deficiencies

With no roadway improvements several areas of the City of Rexburg are likely to experience failing conditions in 2030. These areas are confined to Main Street and 2nd East but they are extensive along these two corridors. Volumes are expected to exceed capacity of the five lane section on 2nd East between Main Street and 7th North (an extension of the deficiencies noted in the 2020 conditions). 2nd East at the US-20 interchange is also expected to fail as commercial development occurs along the 2nd East corridor and as residential neighborhoods are constructed to the west of Sugar City. This two-lane roadway will not handle the expected traffic in 2030. 2nd East on the eastside of BYU-I campus is also expected to exceed capacity as the University builds new housing and parking for expansion. The final area of failure is Main Street from the 2000 West to 7th West. Currently a five-lane section, the predicted volumes in excess of 24,000 vehicles per day are likely to exceed the capacity in this area as more and more travelers are attracted to the center of town from US-20.

The remainder of Main Street from 7th West to 2nd East will be approaching capacity at a population of 55,000 people in 2030. Again, this should be monitored and the extents of any project mitigated to ensure the Main Street failures are adjusted based on actual conditions.

Solutions to Projected Problems

The areas which are experiencing LOS C should be monitored regularly as they are pushing the limits of acceptability and care should be taken that travel demands do not exceed the roadway capacity. If this were to be the case then some of the solutions proposed for the 2040 condition should be advanced to the medium term priority list. **Figure 13** shows the proposed projects to meet the 2030 travel demands.

2nd East Moody Road to 3000 North

As commercial development increases north of Rexburg and residential development occurs west of Sugar City and north of US-20, the need to provide efficient access to and from US-20 on the north end of town will become paramount. The roadway is currently unimproved with no sidewalk, curb and gutter, etc. There is only one lane in each direction, with no two-way-left-turn lane. As development occurs along this section, these improvements will need to be made along with an expansion to five lanes. This configuration will be consistent with the 2nd East section south of Yellowstone Highway.

2nd East from Main Street to 7th South

Campus oriented traffic along 2nd East will be increasingly attracted to the new commercial development on the north end of 2nd East. This poses significant problems as 2nd East south of Main Street is not

designed to handle the large volume of traffic expected in 2030. The other problem lies in the close proximity to BYU-I and the high pedestrian traffic found on 2nd East through campus. 2nd East is already a hotspot for pedestrian/vehicle crashes and every effort should be made to eliminate these conflicts in the interest of safety. The main area for pedestrian activity lies between 2nd South and 7th South. Reducing the potential for vehicle/pedestrian conflict on this stretch should be a high priority in 2030. This can be achieved by employing some of the traffic calming techniques described in a later section of this report. Calming 2nd East between 2nd South and 7th South will discourage pass-through traffic while still allowing local traffic access to campus and the surrounding neighborhoods. 2nd West, which is already a five-lane road section with enhanced pedestrian facilities, such as a HAWK signal, should be the preferred route for non-local traffic.

2nd South can also be used as an alternative to Main Street between 2nd West and 2nd East, especially with some of the University parking located on 2nd South. This requires increased capacity on 2nd East from 2nd South to Main Street. Widening to four lanes in this area will allow the segment to operate at LOS C or better without too much impact to the existing residences along the roadway.

University Boulevard, High School to 3000 West

With development to the west of the high school, there will be a need for a new connection from the high school to 4000 West. Although in 2030 it is expected that a three lane road will be sufficient, right of way should be preserved for a five-lane cross section.

Legend

Level of Service

- Acceptable (LOS A-B)
- Acceptable (LOS C)
- Unacceptable (LOS D)
- Unacceptable (LOS E)
- Unacceptable (LOS F)
- Local/County Road
- Rexburg City Limits

4000 Daily Volume

Existing Level of Service

2030 No-Build Level of Service

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Figure 12 2030 No-Build LOS

Madison County Master Transportation Plan

0.5 0 0.5 Miles

Legend

Functional Class

- Highway
- Major Arterial
- Minor Arterial
- Collector
- Local/County Road
- Rexburg City Limits

Widen 5 Lanes

Traffic Calming

New 3 Lane Road

Widen 5 Lanes

Widen 5 Lanes

Traffic Calming

New 3 Lane Road

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Figure 13 Solutions to 2030 Problems

Madison County Transportation Master Plan

1 0 1 Miles

2040 Conditions

The population of Madison County in 2040 is expected to be approximately 64,000 people.

2040 No Build

Figure 14 shows the projected traffic volumes and LOS on the Madison County roadways if no roadway improvements are made before the year 2040.

Projected Deficiencies

With no roadway improvements, several areas of the City of Rexburg are likely to experience failing conditions in 2040. In addition to the areas mentioned in the 2020 and 2030 analysis, University Boulevard from 3000 west to Yellowstone Highway is also expected to reach a failing condition by the year 2040.

Solutions to Projected Problems

As with the short and medium term scenario, areas which are experiencing LOS C should be monitored regularly as they push the limits of acceptability and care should be taken that travel demands do not exceed the roadway capacity. The following paragraphs describe the solutions proposed to mitigate the projected traffic congestion in 2040, as graphically represented in **Figure 15**.

2nd East Couplet Extension

The roadway project discussed previously from Main Street to 4th North, whether that be a widening or a couplet, will have to be extended north. By the year 2040 it is anticipated that the project will need to be extended beyond 4th North to Yellowstone Highway. This will require significant right of way purchase through some sensitive agricultural land for the 1st East option, through wetlands for the 3rd East option, or more right-of-way through the commercial corridor. A bridge over the river or bridge widening would be required in each scenario. Due to the large cost of this project, it is likely that federal funding will be required to complete the project. As such, a full scale environmental analysis of the potential impacts of the project will need to be completed and the alternative of least impact selected.

Main Street, 12th West to 5th West

Increased traffic from US-20 will cause Main Street in the vicinity of the US-20 interchange to experience LOS E with almost 30,000 vehicles per day using the roadway. Main Street west of town is already wide enough to accommodate 7 Lanes of traffic and restriping this configuration would allow the road to sustain travel demand long into the future. Access restrictions should be placed on Main Street to ensure that the road is able to function properly as an arterial street designed to carry traffic to and from the downtown area and the University. The 7 lane section will need to pass under the Highway and extend out to 12th West.

University Boulevard, 12th West to Yellowstone Highway

University Boulevard is the main highway exit for BYU-I and as enrollment increases there will become more and more congestion. It is also likely that development will happen along the University Boulevard corridor and this will also add to the congestion experienced by traffic using the US-20 interchange. Widening University Boulevard to 7 Lanes from 12th West to Yellowstone Highway will mitigate this condition and allow the roadway to function at an acceptable LOS.

US-20 Interchanges

As previously discussed, the two main interchanges of US-20 in Rexburg, Main Street and University Boulevard, will see great increases in traffic volume over the next 25 years. This increase in traffic will unlikely be handled by the traditional diamond interchange configurations that currently exist, even with signalized on and off ramps. ITD monitors the conditions of these interchanges and it is likely that a full interchange reconstruction will be needed in 2040 at both locations. The most likely scenario would be to reconstruct the interchanges in conjunction with the roadway widening of Main Street and University Boulevard and have the interchanges reconfigured as Single Point Urban Interchanges (SPUI). A SPUI is a type of interchange where the arterial and ramp entrances/exits are controlled by a single traffic signal. This type of interchange can be more efficient than a traditional diamond interchange and can take up less space.

Main Street, 12th West to 3000 West

With traffic volumes in excess of 13,000 vehicles per day, Main Street west of US-20 will also need to be addressed as development occurs on the west side of US-20. This will require a 5 lane arterial street similar in lane configuration as exists currently on Main Street east of US-20.

University Boulevard, 12th West to 4000 West

Similar to Main Street, University Boulevard west of US-20 to 4000 West will need to be widened to five lanes by the year 2040. This will allow greater access to US-20 from the west side and also improve operations around the high school.

Legend
Level of Service
- Acceptable (LOS A-B)
- Acceptable (LOS C)
- Unacceptable (LOS D)
- Unacceptable (LOS E)
- Unacceptable (LOS F)
- Local/County Road
- Rexburg City Limits

4000 Daily Volume

Existing Level of Service

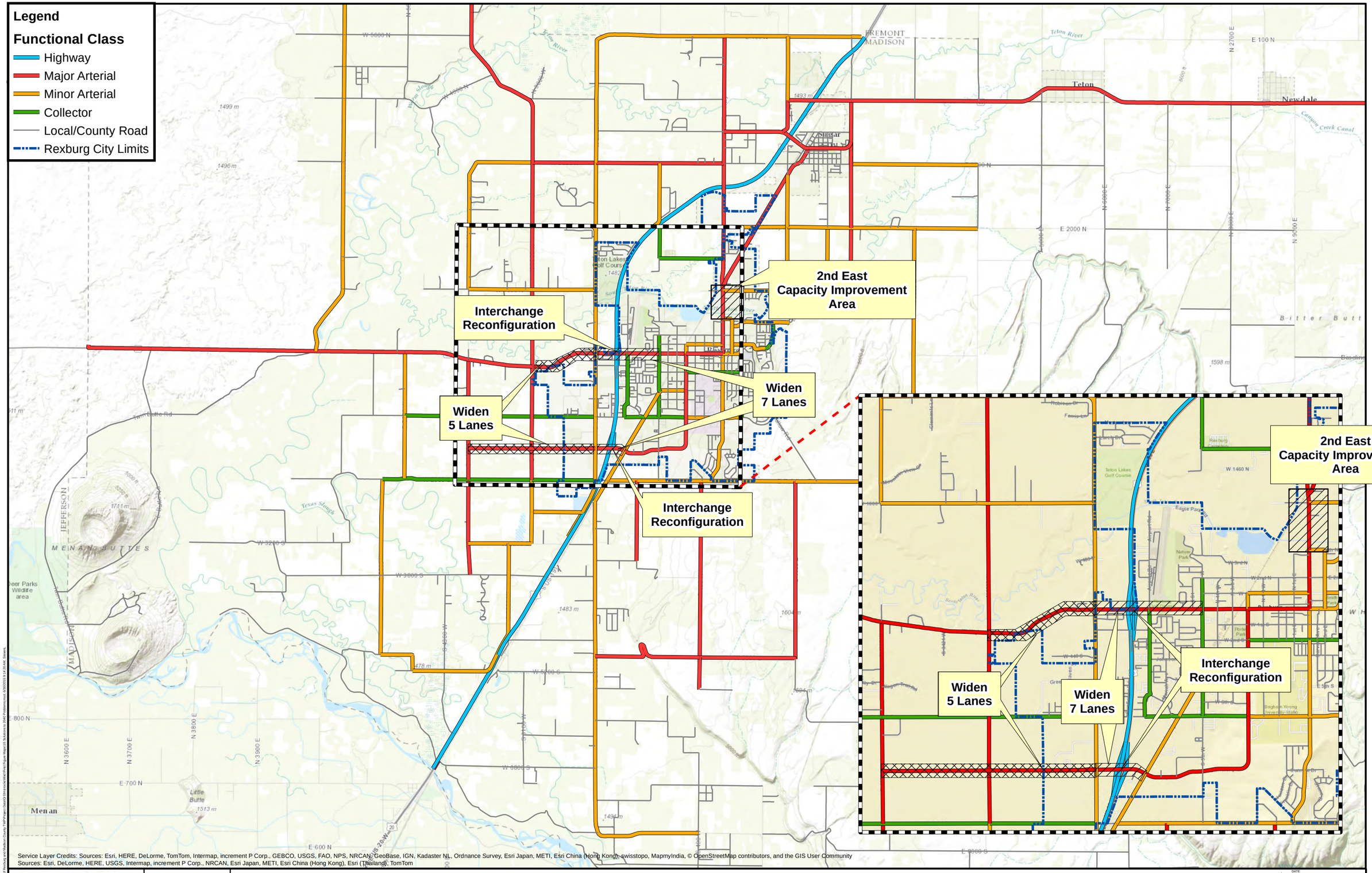
2040 No-Build Level of Service

HORROCKS ENGINEERS

Figure 14 2040 No-Build LOS

Madison County Master Transportation Plan

0.5 0 0.5 Miles



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Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

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

Figure 15 2040 Problem Solutions

Madison County Transportation Master Plan

1 0 1 Miles

N

DATE

1st East / 2nd East Couplet Option

Main St

1st North

Traffic South-bound one-way on 1st East

1st East

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.

2nd East

Traffic North-bound one-way on 2nd East

3rd East

2nd North

Teton River

Yellowstone Hwy

The Vision Beyond 2040

While the planning year horizon for this study is 2040, it is prudent to look beyond that year to the future to determine generally what transportation needs may arise. The purpose of this vision outlook is to allow the City/County policy makers to protect the corridors that may be needed for transportation in the future. This can be done by restricting access on roadways that will need to function as arterial streets as well as preserving the right-of-way for new roads and roadway widening projects. Several areas of the City and County were studied and specific projects identified that will likely be needed at some point in time beyond 2040 or when the population of Madison County exceeds 64,000. These projects are identified in **Figure 17** and are described in the following paragraphs.

5th West Extension

The 5th West extension project from Main Street to Moody Road has been on the planning radar for a number of years and was explored as an option to help alleviate traffic in 2nd East. Travel demand modeling results indicated that this project would not have a significant effect on 2nd East traffic to be a viable solution to that problem. It is however, very likely that a collector type roadway will be needed to connect Main Street to Moody Road on the west side of town as development occurs close to US-20. This project will provide that needed connection. The timing of the need for this project will depend entirely on development on the west side of town.

US-20 Overpasses

In urban areas it is common to have highway crossings between each of the major interchanges. There are not currently any US-20 overpasses in the Rexburg area. This means the interchanges bear the brunt of any traffic trying to cross the highway in the east-west direction. This is incredibly inefficient as typically highway interchanges should be used predominately for traffic entering and exiting the highway. Cross traffic generally means an interchange will need longer signal cycle lengths, more lanes and will therefore not function optimally. Removing the cross traffic from an interchange can extend its operational life to that of its functional or structural life and reduce the cost of expensive reconstruction and expansion. Highway crossings are costly and will likely be funded with State or Federal monies. Three highway crossing locations are proposed as part of the Vision plan and include:

2000 North

The 2000 North/Moody Road crossing would connect the east and west sides of US-20 on the north end of Rexburg with a two lane overpass. This will allow residents of existing communities northwest of Rexburg to access the commercial hubs in town without using US-20 and the interchanges. This new crossing will connect to the proposed 5th West extension and provide efficient north-south access as well.

7th South

7th South currently consists of dead ends on both sides of US-20. The road is therefore a good candidate for a crossing between University Boulevard and Main Street. There is a great deal of development expected west of US-20 in this area of town around the high school. A 7th South crossing will allow travelers access to local facilities without the need to go through the interchanges. There may need to be

some widening of 7th South to accommodate left turning traffic, similarly the railroad crossing near Yellowstone Highway will also need to be addressed.

2000 South

2000 South/Poleline Road is south of University Boulevard and is a popular road for cyclists. Providing a crossing in this location will encourage cyclists as well as passenger car vehicles on the south end of Rexburg to avoid the University Boulevard interchange.

East Parkway Corridor

The East Parkway Corridor has been studied extensively over the past few years as an essential regional transportation project. The timing of the East Parkway Corridor will depend solely on development along its proposed route. As an alternative to Main Street and 2nd East traffic, the East Parkway does not solve any problems as it is more a belt route connecting the south end of town with Sugar City. Travelers are currently using US-20 rather than 2nd East so the East Parkway Corridor does not change the local traffic on 2nd East. As development occurs to the east of Rexburg, an arterial facility will be needed to connect this development to US-20 and it is favorable that this facility be a belt route around Rexburg rather than a connection to the existing street network. The full East Parkway Corridor study is provided as an appendix to this report for reference.

Legend

Functional Class

- Highway
- Major Arterial
- Minor Arterial
- Collector
- Local/County Road
- Rexburg City Limits
- Madison County Border

Moody Road Overpass

5th West Extension

East Parkway Corridor

7th South Overpass

Poleline Road Overpass

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
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Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

Figure 17 Vision Network

Madison County Master Transportation Plan

0.5 0 0.5 Miles

N

DATE 6/29/2015
DRAWN TRB

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 and County must approve the recommended improvements on 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. As a part of this TMP, all types of intersection improvements, such as traffic signals, roundabouts, and stop-controlled intersections will be discussed.

The City of Rexburg suggested several intersections for study to determine if improvements would be needed in the future. These intersections were analyzed based on existing pm peak hour traffic counts and were modeled to determine the current operating level of service. The same intersections were then studied under a projected future scenario (2040) to determine any future likelihood for deficiencies. Again the pm peak hour was used for analysis and the measure of performance was level of service. **Table 14** shows the results of the intersection analysis and identifies several intersections that should be monitored in the future as candidates for improvements.

Table 14 Intersection Analysis

Intersection	2012 LOS	2040 LOS	Control Type	Proposed Mitigation
2nd East & Moody Road	C	F	Stop	Signalize
Yellowstone & Moody Road	B	F	Stop	Signalize/Roundabout
2nd East & Yellowstone	A	C	Signalized	
2nd East & Teton River Village	E	F	Signalized	Re-Time/Co-ordinate
2nd East & Valley River Drive	F	F	Stop	Signalize
2nd West & 1st North	B	E	Stop	Signalize/Roundabout
Main Street & Hwy 20 (West)	F	F	Stop	Signalize
Main Street & Hwy 20 (East)	C	F	Stop	Signalize
Main Street & 12th West	C	F	Signalized	Re-Time/Co-ordinate
1st West & 2nd South	B	B	Stop	
500 West & 4th South	B	C	Stop	
Yellowstone & Trejo Street	D	F	Stop	Signalize/Roundabout
5th West & 700 South	B	D	Stop	Signalize/Roundabout
12th West & University Blvd	A	F	Signalized	Re-Time/Co-ordinate
University Blvd & Hwy 20 (West)	F	F	Stop	Signalize
University Blvd & Hwy 20 (East)	B	F	Stop	Signalize
5th West & University Blvd	B	F	Stop	Signalize/Roundabout
2nd East & 7th North	B	F	Stop	Signalize*

*Signalize only if 2nd East is widened

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 Rexburg should only be considered at intersections along arterial roadways. 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 to 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

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 many of the signals in the area are ITD owned and operated, coordination with ITD 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 the 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 green times 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

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. Madison County will consider the application of mini-roundabouts in the future according to the guidelines given by the FHWA.

(Reference: "Roundabouts: An Informational Guide", U.S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-RD-00-067).

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. Four-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.

Rural Madison County Improvements

Many of the improvements in and around the City of Rexburg are driven by travel demand and the projected congestion that will occur with population growth. For the rest of the County, including Sugar City, the existing system will provide a projected level of service A through the year 2040. Although not driven by travel demand, the connectivity for the traveling public, safety for motorists as well as EMS response and commerce for farm to market and businesses of the rural part of the County has been studied. A capital improvement plan has been developed for the rural areas of the Counties and priorities have been developed based a consensus of the most pressing needs by the study and by the input of the public and stakeholders.

US – 20 and State Highway 33

ITD owns and maintains US-20 and State Highway 33 within rural Madison County. These two facilities are the most important links within the County for north/south and east/west travel. The travel demand model study indicates that with the exception of SH-33 and the interchange ramps within Rexburg as noted previously, both of these roadways will provide adequate capacity through 2040. The corridor plans for US-20 and SH-33 have outlined plans for these roadways that limit access and promote through traffic as efficiently as possible. Continued coordination with ITD to maintain these facilities and coordinate with the goals of these plans is in the best interest of Madison County. The primary goals from the objectives of the US 20 plan elements, as they are completed that most impact Madison County, include:

- Eliminate at-grade intersections on the four lane, divided portion of the corridor
  - Consolidate roadways into fewer points of access
  - Eliminate turning movements other than right turns at at-grade intersections as an interim measure
  - Replace the at-grade intersections that are to remain as access points with grade separated interchanges over time
  - Develop parallel roads or frontage roads to carry local traffic to the roads with interchanges
- Access management that would prevent any additional direct access to US 20

The construction of the Thornton Interchange and the subsequent closures of the at-grade intersections between the County line and the University Blvd Interchange are steps in incrementing the corridor plan. As the US 20 plan is implemented with the Thornton Interchange, adaptation by the rural network the results are imperative for a successful system. Success will be achieved when active coordination between ITD, the Cities and Madison County focus on two major, common goals. These goals include 1) coordinated effort to plan for responsible access permitting and 2) a continued effort to provide connectivity to the US-20 and SH-33.

1) Access Management for the US-20 and SH-33 should maintain the standard as accepted by ITD. US-20, as a divided highway has controlled access and as future improvements occur US-20 will only be accessed at interchanges. SH-33 is a primary business arterial where direct access is very common. The ITD standard should be reviewed for each approach as re-development applications are considered. Opportunities to reduce friction in traffic flow and improve safety should be a priority to all entities as re-development applications are considered.

2) Connectivity to these major corridors will provide a vital linkage for all types of traffic within Madison County. As interchanges are implemented and at-grade facilities are removed from US-20, connectivity to the interchange by local traffic should be evaluated and improved where necessary. As growth continues to the south and west of Rexburg the need to improve the connectivity in these areas will increase. Connectivity improvements to arterials for the foreseeable future should be focused between US-20 and the Madison County Line on the south and the University Blvd interchange. As ITD improves the Thornton interchange and development continues, a focus should be placed on the connectivity to the US-20.

US-20 West Side Frontage

The system described as the US-20 West Side Frontage consists of the arterials and collectors that connect the local roads to the highway between the High School and the County line to the south. These two areas can further be divided as the west side frontage south of the proposed Thornton interchange and west side frontage north of the Thornton interchange. Currently, the roads in this area serve primarily residential and agricultural access. This should remain the priority but anticipated development should be woven into all roadway construction and improvements.

West Side Frontage North

This area is largely farm fields with clusters of houses near the community of Burton. There are also businesses that have sought out the high visibility locations along US-20. There are also various ponds and lakes as well. The Madison County Comprehensive recognizes the potential and anticipates retail along the US-20 corridor with rural clusters surrounding the town site of Burton. Growth in this area is likely to occur as fields are developed into residential subdivisions with retail developed close to the US-20 corridor. As this occurs, the trips generated in this area will increase as well as modeled and included in the travel demand model. As the trips originate from this area, all the traffic will funnel to University Blvd on the north and to the Thornton interchange on the south. As this occurs these interchanges will become more congested and the improvements recommended for University Blvd will increase. Additionally the connectivity of this area will be greatly improved with the addition of an overpass at W 2000 S (Poleline Rd). For the development of this area, priority should be given to:

1) A planned collector frontage road between the soon to be constructed connections to the Thornton interchange and University Blvd. This frontage road should be planned to accommodate future improved intersections with 3800 S (Bob Frew Rd), 2000 S (Burton Oil Rd/Poleline Rd). As retail developments are proposed, the overall development of the frontage road should be a priority. A planning study that examines the most likely commercial development scenarios and residential growth will help steer the alignment of the frontage road. It is anticipated that this frontage road will be located between 500 feet and 1500 feet from the US-20 right-of-way but should have a focus on safely and efficiently connecting traffic to the interchanges on US-20.
2) Widening of University Blvd west of US-20 has been in the plans. The existing roadway anticipates this growth. Plans for this widening should precede the needs as they develop. Congestion will increase to failing levels of service on this roadway near the intersection without the proposed widening.
3) An overpass of US-20 at W 2000 S (Poleline Rd) will eventually become a need as the development occurs. Right-of-way should be preserved and future plans should be developed.

West Side Frontage South

The west side frontage between the planned Thornton interchange and the County line on the south is largely agricultural and undeveloped land. However, with the unique terrain, natural waterways, and the access to federal land make it a potential for retail, sportsman and tourist development. There have already been developments of this type in the area such as Bear World and there is a potential for future development as well. Though the timing for this type of development is uncertain plans for improvement should be anticipated. Long range plans should include a frontage road for connection to the Thornton interchange. These plans should include the potential impact to wetland and undeveloped land.

The present plans should focus on maintaining safe roadsides and intersections, and the planned economic development in the area. The primary roads in this area are 5200 S and 4300 W. These two roadways carry the majority of the traffic load in the area. Although the future projections indicate that these facilities, functioning as two lane roadways is adequate through the year 2040, priority should be given to the following:

1) **Proper way finding signs to the Thornton interchange.** With the current system of roads, the path to get to the proposed Thornton interchange is not perceived as direct to unfamiliar drivers. Wayfinding signs, especially around the intersection of 4300 W and 5200 S should be a priority. To address potential direction concerns, the added traffic will stress the existing roadway base and asphalt. The existing roadway should be assessed for the added trips consisting of large buses and the potential for roadway surface failures. Without improvements to the pavement structure, additional maintenance will likely be required. Speed, design vehicle, volume and pavement condition should be assessed as improvements are planned.
2) **Egress from the southbound leg of US-20 at 4300 West** This egress will improve safety and meet future anticipated economic needs for attractions in the area. Additionally, this egress is necessary for the efficient travel of emergency services coming from Rexburg in route to the established and growing businesses and residences around 4300 West.
3) **Improvements to the intersection of 4300 W and 5200 S.** The County comprehensive plan anticipates retail development between the Thornton interchange and the County line to the south along US-20. Once the Thornton interchange improvements as planned are completed, nearly all of the traffic generated in this area funneling to the US-20 corridor will pass through the intersection of 4300 W and 5200 S. This intersection should be a priority for maintenance and safety. The proposed Thornton interchange will increase the traffic to this location and safe, forgiving roadsides with adequate way finding signs is a priority which should accommodate the recreational vehicles anticipated in the area.
4) **Future Retail Zoning.** As retail development grows, the development should include the construction of a frontage road. The frontage road should be consistent with any proposed retail subdivision development. It is anticipated that potential retail development could be located between the frontage road and US-20. The primary purpose of a frontage road will be to provide a direct route and cohesive to retail and residential development to access to US-20.

US-20 East Side Frontage

The system described as the US-20 East Side Frontage consists of the arterials and collectors that connect the local roads to the highway between the City of Rexburg and the County line to the south. These two areas can further be divided as the east side frontage south of the proposed Thornton interchange and

east side frontage north of the Thornton interchange. Currently, the roads in this area serve primarily residential and agricultural access. This area also includes some industrial areas, both planned and currently in use. The east side is served by the Yellowstone Highway and 2000 W (Lyman Archer Highway) as the primary arterial routes. The 2000 W (Lyman Archer Highway) serves as a primary route between the City of Rexburg and the Counties to the south. Access has traditionally been unrestricted to each agricultural and residential property owner, however some of the new residential developments have consolidated access. For both the 2000 W (Lyman Archer Highway) and the Yellowstone Highway, access control and permitting should be a priority as future development occurs. The development of the Thornton interchange will change the use and traffic patterns of the area. Currently, the railroad tracks funnel all of the traffic accessing US-20 at Thornton and at the at-grade intersection with US-20 at 6800 S. The at-grade intersections at 6800 S and at Thornton will be closed (as well as all other field accesses) and replaced with a single grade separated interchange at Thornton. This will dramatically improve safety for the entire area. However, all traffic accessing US-20 for the area will be funneled to the interchange. An undesirable consequence will be increased traffic in the residential areas surrounding Thornton. The planned construction of the 5000 S roadway between the Thornton interchange and 2000 W will alleviate much of the concern. This new roadway will then become a primary roadway that divides frontage on the east side of US-20 to East Side Frontage north and East Side Frontage South.

East Side Frontage North

This area has experienced growth as it has turned from less agricultural to retail, industrial and residential subdivisions. The area south of BYUI and Rexburg near the University Blvd interchange has seen tremendous growth with more anticipated as development trends southward. Consolidating access and the access management should be priority. Once the 5000 S roadway is constructed the primary foreseeable improvements for this area should include:

1) Site vision triangles at intersections with the Yellowstone Highway. Most of the reported accidents occurring along this roadway were caused due to bad weather and icy conditions or impaired driving. However, many of the intersections along the Yellowstone Highway have acute site triangles. Because the Yellowstone Highway parallels the railroad that runs in a north east direction and most intersecting roads run east and west, this situation runs throughout the County. This potential concern is especially prevalent in this area. Where prudent, intersections should be evaluated and site triangles should be preserved. Crash data should be reviewed regularly to identify clusters of accidents. As new traffic patterns emerge with the construction of the Thornton interchange and 5000 S, increase in left-turns should be monitored for potential safety improvements at this intersection.
2) As retail continues to grow, the travel demand model should be updated and re-evaluated. A center-turn lane on Yellowstone Rd between 2000 S (Poleline Rd) and University Blvd should be anticipated as retail continues to grow.
3) Provisions for the future 2000 S (Poleline Rd) overpass should be planned well in advance of the future need.

East Side Frontage South

The west side frontage between the planned Thornton interchange and the County line on the south is largely agricultural and residential subdivisions. The town sites of Lyman and Archer have clusters of residential neighborhoods with various retail restaurants and shops. Once the Thornton interchange and

5000 S improvements are complete there will be a more direct route for larger agricultural loads coming north from Jefferson County to reach US-20. Whether the north/south traffic proceeds to the Thornton interchange or north to Rexburg on the Lyman Archer Highway route, comprising of the roadways 2000 W, 7800 S and 600 E. These routes are heavily used between granaries in Bonneville County and Madison County. Any connecting traffic to US-20 that used W 6800 S (River Bridge Rd) will need to proceed northward to the W 5000 S road to be constructed. As the area continues to grow it is important to adhere to the access management guidelines and carefully consider each approach. Access improvements will be required where closed access onto US-20 land locks any existing parcel.

As the Thornton interchange and the 5000 S roadway is constructed, the area around Thornton is expected to grow and develop. There has been interest expressed in the property for potential commercial growth. The extension of 3100 W (Muskrat Rd) north from Union Lyman Rd to the new 5000 S road should be of high priority to preserve connectivity to collector roads and minimize through traffic in residential neighborhoods.

Once the 5000 S roadway is constructed, the primary focus of the foreseeable improvements for this area should include:

1. Bridge preservation improvements at the Snake River Bridge on 600 E (Twin Bridge). This is a critical crossing. Failure at this structure would halt traffic on this important arterial. There are limited detours available at this location.
2. Construction of the new segment of 3100 W (Muskrat Rd) between the Union Lyman Rd and the new alignment of 5000 S.

Intersections Improvements in the County

General Intersection and Roadway Improvements

Outside of the urban areas the most prevalent concern driving improvement is focused at the intersections. Inclement weather, impaired drivers and inattention to driving are the cause of the majority of the crashes. Continued efforts to improve driver alertness to hazardous situations should be a continued focus for law enforcement and citizens throughout the County. However, there are four common geometric layout concerns found at intersections in the County at various locations. Because there does not appear to be chronic accidents directly related to the layout concerns, improvements to the geometry should be completed as funding becomes available and prioritized based on concerns of the citizens. These layout concerns include:

1. Free flowing 90° turn of the through traffic at four different intersections
2. Acute and oblique angles at intersections making site triangles and visibility difficult
3. Dugway geometry
4. Bridge railing and clear zone protection

Free Flowing 90° turns for through traffic.

Currently there are intersections in the County that create a “head-on” type conflict point as the vehicle paths meet. Where speeds are higher these types of intersections cause greater concern. Four of these types of intersections should be monitored and evaluated for possible improvement. These locations are on 2000 North at the intersection with 3000 W and again at 2000 W. This situation also occurs on the

Archer Hwy at 7800 S and 600 E, as well as at the intersection of Moody Road and 5000 E. There are several intersections that have similar geometry concerns throughout the state of Idaho including the neighboring Counties. Despite their prevalence there is a concerted effort to improve these types of intersections all over the state.

Acute intersection at Center St and 7th E

For each of these locations, a potential of modifying the intersection to be a stop controlled intersection or a roundabout was presented to the stakeholders and the public. Converting to a stop controlled intersection or a roundabout for these intersections reduces the number of conflict points at the intersection. Additionally, the most concerning conflict at these existing intersections is the potential "head-on" conflict point. Eliminating this potential crash type is a priority for these intersection improvements. Also by converting these intersections to a stop control intersection or a roundabout, the conflict points that do remain occur at lower speeds and tend to result in more "fender bender" type accidents. Each of the intersections were evaluated and presented as shown in the attached exhibits. The advantages and disadvantages include:

Stop Controlled Intersection:

Advantages: More conventional to drivers, require less land to implement and to install, require less impact on surrounding residences and irrigation ditches than roundabouts.

Disadvantages: Require drivers to come to a complete stop where before was free-flowing traffic.

Roundabout Intersection:

Advantages: conflict points are at slow moving speeds and the intersection geometry limits the conflict point to a fender bender type collision, traffic can proceed through the intersection without stopping if the driver is not required to yield to circulating traffic.

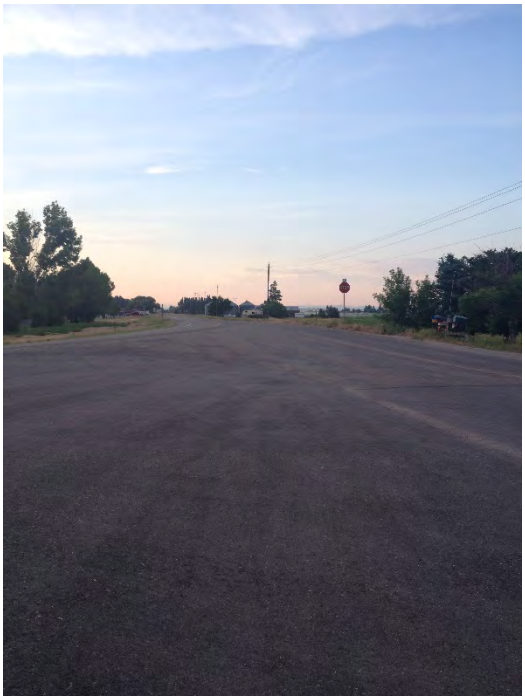
Disadvantages: Generally requires more land to install the roundabout, this type of intersection is less customary to local drivers.

Inefficient intersection 4000 N and 5000 W

Because the lack of familiarity was a concern for roundabouts, the stakeholders decided to present the alternatives of roundabouts to the public at the public meetings. Both alternatives were presented and the public generally had very little concern or opposition to either the stop controlled intersection or the roundabout. All agreed that the existing intersections were potentially hazardous and something should be done. Each individual intersection should be

evaluated for cost and impacts as future individual intersection projects are planned. Generally, the public felt that the intersections on 2000 North should be addressed as priority over the other two intersections.

The intersection of Center Street (SH-33) and Digger Drive (7th E) in Sugar City has a similar geometric layout. The acute intersection angles make it difficult to get a clear vision of all of the intersecting traffic. A roundabout could be considered at this location but with the proximity of parks and schools to this intersection, pedestrian safety should be a high priority at this location. In the future when the East Parkway is implemented it is likely that there would be an increase of traffic on 7th East making safety at this intersection a higher priority.



Acute intersection at Center St and 7th E

Intersection Layout

The AASHTO – Geometric Design of Highways and Streets is generally accepted as the standard of design throughout the United States. This guide recommends that, "Intersection legs that operate under stop control should intersect at right angles wherever practical, and should not intersect at an angle less than 60 degrees." This standard is especially difficult to adhere to where streets connect to the Yellowstone Highway. The visibility hazards that have previously been discussed should be evaluated continually for these intersections. While it is not practical at this time to modify the layout of all of these types of intersections, when development could potentially impact these intersections the opportunity to correct the deficiency should be considered. Furthermore, as growth around these intersections elevate the traffic to warrant a signal, a 90 degree intersection functions best to convert to a signalized intersection. To accommodate irrigation ditches many of these types of intersections also include an offset of the crossing street alignment. These two intersections should potentially be evaluated on a case by case basis.

Dugway Geometry

Currently there are three roadways known by the locals as the "Dugway". These roadways are 2000 S (Poleline Road), 5000 S (Bybee Dugway) and 7800 S, "the dugway to the gravel pit". Each of these lead to the butte on the hill where there are many fields. Each of these roadways pose concerns for different reasons.

The 2000 S (Poleline Road) horizontal alignment is very straight but the vertical alignment causes sight distance concerns. There are currently signs indicating blind driveways and for drivers to use caution. As more and more growth in the City of Rexburg grows southward, there will be more and more traffic in this location. There is also an interest by the community to designate this roadway as a route for bicycling. With limited sight distance, possible traffic increases and other users of the roadway, such as bicyclists and pedestrians, this roadway should be considered a candidate for wider shoulders and vertical curve improvements where possible.

The 5000 S (Bybee Dugway) is a paved roadway but is not currently an overly used roadway. However, as the construction of the proposed Thornton Interchange and the 5000 S roadway projects are completed, there is an improved link between the fields on the butte and US-20. Although these improvements will not be complete for four to five years, the potential for increased traffic and the need for safety improvements on this dugway should be considered.

5000 S (Bybee Dugway)

The 7800 S dugway is the shortest route for many harvest trucks carrying grain to the market in Ririe. There are also gravel trucks and other farm equipment that use this road often. The elevation difference between the butte and the roadways below makes the horizontal and vertical alignment geometry a challenge. Safety improvements should be evaluated on this roadway.

The long range connectivity of the growing population as Rexburg grows southward and as harvest equipment competes with more passenger vehicles for space on these dugway roads, the need for an improved roadway from the butte to the ITD system will continue to grow. Though it is not likely needed before the year 2040, planning for an arterial would accommodate the function of these dugways and should be reviewed with the farmers. It is likely that the preferred location for the arterial will be at the 5000 S alignment because of its direct connectivity to the Lyman Archer Highway and US-20.

Bridge Railing and Clear Zone Protection

The concept of developing a "forgiving" roadside environment was developed in the 1960s. The concept provided for the creation of a "clear zone" where a driver might recover control and return to the roadway or safely come to a stop before encountering a hazard. The width of this zone adjacent to the travel way by design is wider where traveling speeds are greater. In the rural parts of Madison County, providing a clear zone is not always practical. Efforts to improve the roadside including the terminals for bridge railing should be considered

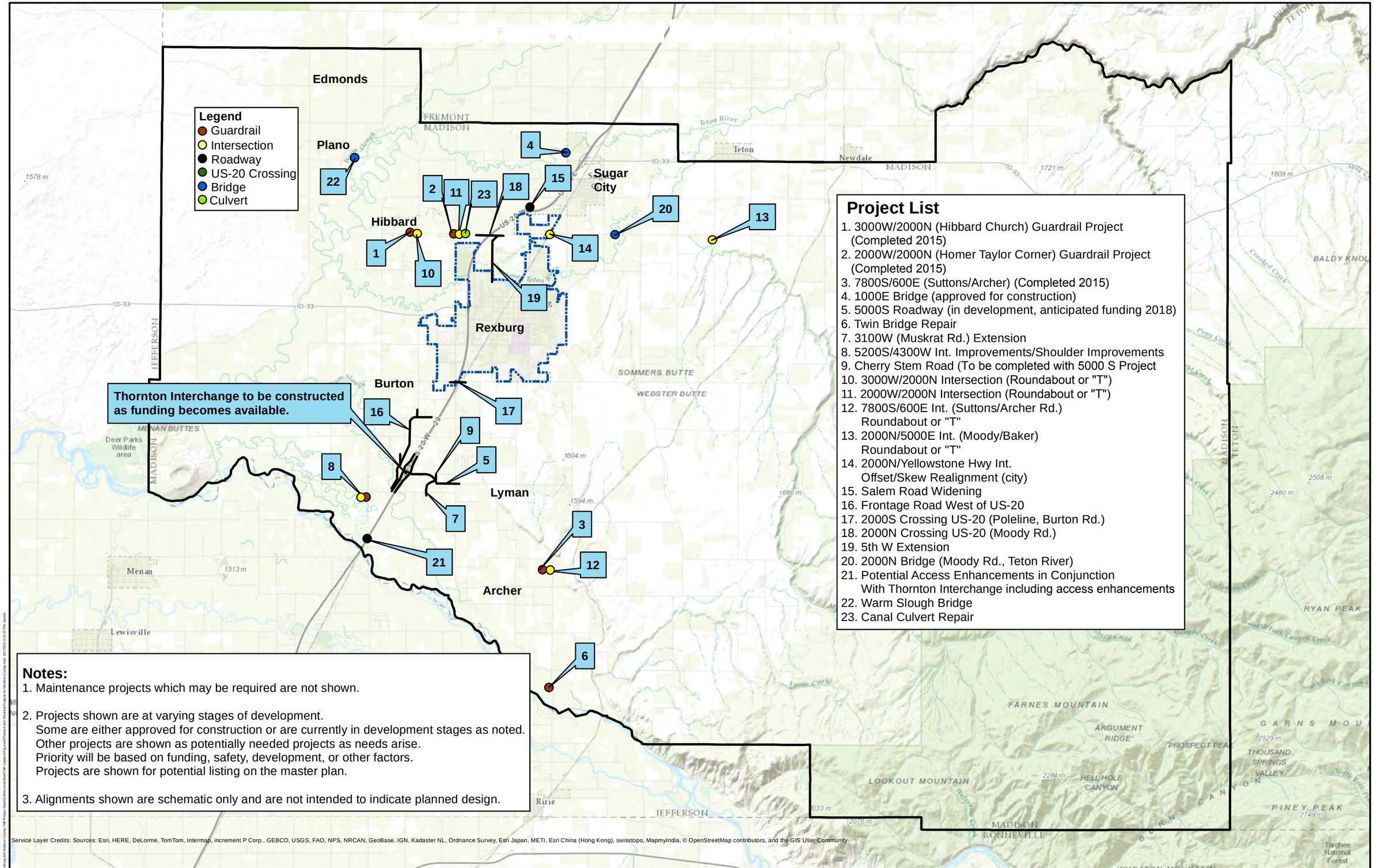
Deficiencies from the previous report

The 2004 Transportation Master Plan identified ten deficiencies. These deficiencies include:

1. Intersection of 5000 E and Moody Highway *(Update: discussed within this report as a potentially viable location as a stop controlled intersection or a roundabout).*
2. Burton Highway (various locations) – small shoulder with steep side slopes going into ditch, creates problems for large farm vehicles. (*Update: This concern still exists in this area as well as many other locations around the County. Where possible clear zones should be implemented, however there has been no significant increase in number or severity of accidents due to these roadside concerns in the Burton area).*

3. Intersection of SH-33 and 7th N (1000 N – Madison County) – Offset approaches. (*Update*: *The offset approaches still exist, however, the greater concern lies in the frequency of left turning truck trailer combinations. Due to the proximity of other signals it is not a good candidate location for installing a signal. Alternatives such as left-turn priority actuated signals may be an alternative during harvest time for this intersection, see the intersection improvement section of this report).*
4. Hwy 33 – West of Rexburg tight reverse curves, difficult for vehicles to negotiate curves. *(Update: No changes have been made. No increase in accidents or concerns due to this geometric concern have been noted for this update).*
5. Hwy 33 – north of Rexburg; acute intersections with 1000 E, 2000 N (*Update: These intersections have not been realigned. All acute intersections with the Yellowstone Highway should be realigned to as close to a 90° intersection as possible when opportunities arise).*
6. 2000 N – Offset approach at 2000 N and SH-33 *(Update: Project now being evaluated by the City of Rexburg staff).*
7. US-20 and SH-33 interchange – small turn radius from SH-33 EB to US-20 westbound on-ramp. *(Update: Interchange reconfiguration discussed within this update).*
8. Main Street – need for center turn lane in downtown area. *(Update: Turning movements are balanced with parking).*
9. 2000S – intersection with 3600 E "the Dugway" – sight distance issues, grade issues, acute intersection, and safety issues for farm trucks. (*Update: No changes. The Dugway was brought up by one County resident at the public meeting as a concern. This resident however felt that the other projects presented should be a priority over improving the Dugway).*
10. Intersection of Center Street and Digger Drive – Acute Intersection. *(Update: No changes have been made. No increase in incidents has been observed. Discussed previously as a possible intersection concern).*

During the study and in discussion with the stakeholders and public there has been no incidence or concern that would elevate any of these deficiencies on the priority list. Unless discussed in a separate section of this report, this should be monitored in the future. **Figure 18** shows the locations of the rural Madison County Projects.



Project List

1. 3000W/2000N (Hibbard Church) Guardrail Project (Completed 2015)
2. 2000W/2000N (Homer Taylor Corner) Guardrail Project (Completed 2015)
3. 7800S/600E (Suttons/Archer) (Completed 2015)
4. 1000E Bridge (approved for construction)
5. 5000S Roadway (in development, anticipated funding 2018)
6. Twin Bridge Repair
7. 3100W (Muskrat Rd.) Extension
8. 5200S/4300W Int. Improvements/Shoulder Improvements
9. Cherry Stem Road (To be completed with 5000 S Project
10. 3000W/2000N Intersection (Roundabout or "T")
11. 2000W/2000N Intersection (Roundabout or "T")
12. 7800S/600E Int. (Suttons/Archer Rd.) Roundabout or "T"
13. 2000N/5000E Int. (Moody/Baker) Roundabout or "T"
14. 2000N/Yellowstone Hwy Int. Offset/Skew Realignment (city)
15. Salem Road Widening
16. Frontage Road West of US-20
17. 2000S Crossing US-20 (Poleline, Burton Rd.)
18. 2000N Crossing US-20 (Moody Rd.)
19. 5th W Extension
20. 2000N Bridge (Moody Rd., Teton River)
21. Potential Access Enhancements in Conjunction With Thornton Interchange including access enhancements
22. Warm Slough Bridge
23. Canal Culvert Repair

Notes:

1. Maintenance projects which may be required are not shown.

2. Projects shown are at varying stages of development.
   Some are either approved for construction or are currently in development stages as noted.
   Other projects are shown as potentially needed projects as needs arise.
   Priority will be based on funding, safety, development, or other factors.
   Projects are shown for potential listing on the master plan.

3. Alignments shown are schematic only and are not intended to indicate planned design.

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

Figure 18 Rural Madison County Projects

Madison County Master Transportation Plan

1 0 1 Miles

DATE 3/17/2015
DRAWN TRB

Alternative Modes of Transportation

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 as they become appropriate for the community.

Transit

Existing Transit Service

The existing transit for the Madison County population has not yet reached the need for light rail or commuter rail. However, a bus system has long been a topic of discussion. This is especially true for the students and faculty of the local Brigham Young University. A vibrant bus system within the community could become a vital link to expanding access to the University by students. University studies have shown that much of the on-campus student population live within walking distance of the school. It has also shown that the majority of the faculty live within Rexburg or very near the urbanized area. Improving the bus alternatives would likely expand the student housing facilities further away from the school as the population grows.

Future Transit Service

Local Bus Routes

While a bus system would have an impact on the parking immediately adjacent to the school it is unlikely that there would be any appreciable decrease in traffic congestion. While expanding bus routes in Madison County may be in the future of the community it is not anticipated that improving the bus system will alleviate any of the traffic congestion concerns.

The Chamber of Commerce, Brigham Young University and other interested entities such as the Targhee Regional Public Transportation Authority (TRPTA) are studying the benefits of an improved bus system in and around the Rexburg area. The outcome of this study should be considered once it is completed. Further study of the local bus routes was not included in this transportation master plan.

Rexburg Transit Feasibility Study

According to the ***Teton View Regional Plan*** the Community Transportation Association of America has been awarded a USDA Rural Development grant to study the feasibility of a public transit star-up for the City of Rexburg in FY 2015. The Rexburg Chamber of Commerce is forming a steering committee to help guide the scope of the study, facilitate public outreach, and gain community and university cooperation in data collection. Also included in the study will be the establishment of a transit center and/or Park & Ride facility at the new Super Walmart location north of town and expanding WE Car/Zip Car services currently on campus. Conceived under the Multi-Modal Assessment and developed in partnership with Fremont County, the feasibility study should explore how to improve connectivity across the entire Rexburg Metropolitan Area.

Pedestrians and Bicycles

Pedestrians and bicycles are extremely important components to the overall transportation system. Students getting to and from school use the same corridors as the traveling cars and trucks. Where possible it is always best to separate these modes of travel from vehicles by either physical barriers such as barrier or curbing and/or distance.

Sidewalks should be considered a priority where there are significant numbers of pedestrians walking to or from school. Standards found in the AASHTO – A Policy on Geometric Design of Highways and Streets as well as related reference manuals including the Manual of Uniform Traffic Control Devices (MUTCD) should be used wherever practicable.

Much of the pedestrian and bicycle traffic in and around the Rexburg area is due to more leisure activity rather than commuting. Except at certain intersections, pedestrian and bicycle traffic have little to do with traffic congestion. However, a significant number of accidents have occurred within Rexburg between vehicles and pedestrians. Accident records have been reviewed for the entire County to see if there are any re-occurring accidents or High Accident Locations (HAL) where a potential improvement should be made. Only a few locations indicated a possibility where potential improvement should be considered. For each of the locations discovered there have already been improvement measures implemented by the City of Rexburg.

The streets around Brigham Young University have the highest concentrations of pedestrians. Where large numbers of pedestrians are found crossing streets heavily used by vehicles, HAWK (High-intensity Activated crossWalK) signals should be considered. The HAWK signal that has been successfully included in the system on 2nd West is well used by the pedestrians. It alerts the vehicles to the pedestrians and provides a safe location for crossing the Street.

Several locations/situations have been identified that should be monitored as pedestrian traffic and vehicle traffic increases. Neither location appears to warrant immediate change or correction.

2nd South is the first east-west street north of the University. It is also a heavily used local street for traffic connecting to larger arterial streets. With its proximity to the University there is a very high concentration of pedestrians. Most of the pedestrians safely use the cross walks at the intersections. Vehicles are required to yield to pedestrians using the cross walks. However, during certain times of the day there are so many pedestrians that there are few gaps for vehicles to travel through the intersection. It was noted in the field and from public comment that this may become a concern. Vehicle drivers may become impatient waiting for a gap in the pedestrian traffic. This could become a potentially risky behavior. Timed signals would reduce the behavior. However, implementing a signal would introduce undesirable delays during off-peak pedestrian/vehicle periods. Implementing signals for pedestrian purposes should be considered on a case by case basis. Areas that should be considered for monitoring include: 2nd S and Center St., 2nd S and College Ave., 2nd W and 6th S St., 2nd W and 7th S, 2nd E and 3rd S

Regional Plan

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. The City of Rexburg and Madison County have promoted the improvement of certain bike/ped paths. The Trails of Madison County is an active committee that advises the City and County in planning, promoting and facilitating the design and construction of walking, jogging, and biking trails in Madison County. This committee has developed a prioritized plan for improvement of the paths. Included within this transportation master plan is the recommendation of this pathway plan. Implementation of these paths will provide an area for recreational walking, jogging and biking away from vehicle traffic. As funding becomes available, the priority list as shown is based on the recommendations from the committee of paths that should be implemented.

Maps depicting pedestrian and bicycle trails and pathways for the City of Rexburg and Madison County are included in the appendix of the Madison County Transportation Plan. The maps depict both existing and proposed trails and pathways. It is recommended that both Madison County and the City of Rexburg adopt the bicycle and pedestrian pathway maps as an amendment to their Comprehensive Plans.

Adoption of the maps as a part of the Comprehensive Plan will allow the City and County to secure easements for future pathways when properties are developed. Adoption of the maps will also allow the City and County to require land developers to construct pathways as a Condition of Approval when a residential or commercial project is constructed in an area which has been identified for a trail or pathway segment. Idaho Parks and Recreation Department funding for the construction of trails and pathways currently requires that pedestrian and bicycle trails and pathway maps be adopted as a part of a community's Comprehensive Plan.

Other Elements of the Transportation Master Plan

Traffic Impact Studies

As growth occurs throughout the County, the need to evaluate the impacts of proposed developments on the surrounding transportation networks prior to giving approval to build will increase. This will be accomplished by requiring a Traffic Impact Study (TIS) to be performed for any development in the area based on City staff recommendations. A TIS will allow the City/County 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/County. A scoping meeting will be required by the developer/Traffic Engineer with

the City Engineer to determine the scope of each TIS. Traffic Impact Study Requirements are included in the appendix 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. Interconnectivity of the signal network is vital to the safe and efficient operation of the signal system. The signals in the City of Rexburg are not currently interconnected but ITD has plans to connect these signals in the next few years. All new and existing signals that are not currently connected should be via radio or preferably fiber optic where possible. Installing a mini Traffic Operations Center at some central location where signal operations can be monitored and adjusted where necessary is also recommended.

Traffic Signal Coordination

Traffic signal coordination is another ITS method that is used to improve traffic operations and efficiency. In modern coordinated signal systems, it is possible for drivers to travel long distances without encountering a red light. This coordination is done easily only on one-way streets with fairly constant levels of traffic. Two-way streets are often arranged to correspond with peak times of the day to speed the heavier volume direction along. The traffic signals along 2nd East and Main Street should be coordinated to allow favorable progression during the peak times of the day.

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 efficiently 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 levels of access but at low speeds and with little mobility. Access management standards must account for these different functions of various facilities. After extensive study, it is recommended that the City and County abide by the concepts and rules set forth in the *IDAPA 39 Title 03 Chapter 42 Rules Governing Highway Right-of-Way Encroachments on State Rights-of-Way,* a copy is found in the appendix of this report. These standards are the minimum standards set forth by the state and can be applied to City and County roads of similar function. It is imperative that, with continued growth, a common approach to development and access

management be adopted and maintained by Madison County, the Cities, and ITD. The established RPO could be a forum for access impact discussions between the entities

ITD Coordination

Madison County must be an integral player in developing regional planning involving state roads and highways. US-20 and HWY-33 run through the County and the City of Rexburg. The formation of the RPO goes a long way to ensure that Madison County has a voice that is heard when it comes to state roads. In the future, the City and County must continue this collaborative relationship with ITD and coordinate planning efforts through the use of the new travel demand model and sharing of important planning information.

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 County 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/County 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/County as development and annexation requests are approved that involve properties within or adjacent to the future corridors.

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/County 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/County 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 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].

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 the City/County ordinances, AASHTO "Policy on Geometric Design of Highways and Streets," and the Manual on Uniform Traffic

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

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 eastern Idaho, the history of using a grid system for planning and development purposes started with the first settlers and has proven efficient for moving people and goods throughout a network of surface streets. However, the nature of a grid system with wide and often long, straight roads can result in excessive speeds. For that reason, traffic calming measures (TCM) can be implemented to reduce 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. The City/County should consider the application of a Traffic Calming Program to remove the subjectivity of the decision making process when it comes to traffic calming.

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, the following measures should not be used for traffic calming:

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

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. Landscaping and other roadside treatments make street closures more effective and safer by highlighting the presence of the measure.

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/County with an adequate transportation system.

Transportation Needs as a Result of New Development

Table 15 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. **Table 15** includes all projects in the City/County 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 **$58,911,000** and the additional vision projects will be an additional **$49,203,000.**

Table 15 Transportation Improvement Plan

PROJECT LOCATION	PROJECT TYPE	COST	FUNDING SOURCE	TIMING
Main Street/2nd East (5th West to Yellowstone)	Signal timing/coordination	$20,000	City	2015
Main Street/US-20 Interchange	Signalize Ramps	$500,000	ITD	2015
University Boulevard/US-20 Interchange	Signalize Ramps	$500,000	ITD	2015
3000 West/2000 North	New Guardrail	Completed	County	2015
2000 West/2000 North	New Guardrail	Completed	County	2015
7800 South/600 East	New Guardrail	Completed	County	2015
1000 East Bridge	Bridge	Currently Under Construction	County	2015
Traffic Calming Program	TCP	$25,000	Rexburg/County	2015
Yellowstone Highway/Trejo Street	Intersection Improvement	$1,000,000	ITD	2015
5000 South	Roadway Construction	PROGRAMMED	County	2020
3000 West/2000 North	Intersection Improvement (Roundabout)	$250,000	County	2020
2000 West/2000 North	Intersection Improvement (Roundabout)	$250,000	County	2020
Twin Bridges	Abutment/Bridge Repair	HYDRAULIC STUDY RECOMMENDED	County	2020
7800 South/600 East	Intersection Improvement (Stop Controlled intersection)	$30,000	County	2020
2000 North/5000 East	Intersection Improvement (Stop Controlled intersection)	$30,000	County	2020
2000 North/Yellowstone Highway	Intersection Improvement (Realignment with RR Crossing)	$1,200,000	County	2020
3100 West	New Road	$843,000	County	2020

PROJECT LOCATION	PROJECT TYPE	COST	FUNDING SOURCE	TIMING
5200 South/4300 West	Intersection/Shoulder Improvement (Widening and slope flattening) Pavement and Base Upgrade for 5200 S & 4300 W from Off Ramp to Thornton IC	$40,000 $702,000	County	2020
Salem Road (3 Lane Section to Interchange)	Widening to 3-Lane no C&G (Additional 12' lane and shoulder)	$589,000	County	2020
US-20 West Frontage Roads	New Road North New Road South	$2,714,000 $5,065,000	County	2020
Thornton Interchange	New Interchange	PROGRAMMED	ITD	2020
Warm Slough Bridge	New Bridge	$650,000	County	2020
Canal Culvert	Culvert Repair (Three-sided Box)	$60,000	County	2020
2nd East (Main Street to 4th North)	One-Way Couplet/Widening (Minor widening and intersection improvements)	$500,000	ITD/Rexburg	2020
Traffic Signals (Rexburg)	Signal Interconnection	$25,000	ITD/Rexburg	2020
Traffic Operations Center	TOC	$100,000	Rexburg	2020
2nd East/Moody Road	Intersection Improvement Signal (See Salem Road Widening)	$150,000	ITD/Rexburg	2020
Main Street/12th West	Intersection Improvement	$250,000	ITD	2020
2nd East (Moody Road to 3000 North)	Widening to 5-lanes (Widening of the structure)	$2,500,000	Rexburg/Sugar/ITD/County	2030
2nd East (Main Street to 2nd South)	Widening	$750,000	Rexburg	2030
2nd East (2nd South to 7th South)	Traffic Calming	$50,000	Rexburg	2030
University Boulevard (High School to 4000 West)	New Road	$3,063,000	Rexburg/County	2030
2nd and 3rd East (4th North to 7th North)	Couplet Extension/Widening (Including structures and ROW)	$9,773,000 (3rd St Option) $11,701,000	Rexburg/ITD	2040

PROJECT LOCATION	PROJECT TYPE	COST	FUNDING SOURCE	TIMING
		(1st St Option)		
Main Street (12th West to 5th West)	Widening (not including structure)	$2,000,000	ITD	2040
University Boulevard (12th West to Yellowstone Highway)	Widening (not including structure)	$2,000,000	ITD/Rexburg	2040
Main Street/US-20	Interchange Reconfiguration	$6,500,000	ITD	2040
University Boulevard/US-20	Interchange Reconfiguration	$6,500,000	ITD	2040
Main Street (12th West to 3000 West)	Widening	$2,315,000	Rexburg/County	2040
University Boulevard (12th West to 3000 West)	Widening from 3 lane to 5 lane	$5,189,000	Rexburg/County	2040
Yellowstone Highway/Moody Road	Intersection Improvement	$350,000	ITD	2040
12th West/University Boulevard	Intersection Improvement	$250,000	Rexburg	2040
5th West/University Boulevard	Intersection Improvement	$250,000	Rexburg	2040
Poleline Road	Overpass	$5,679,000	ITD	2060
Moody Road	Overpass	$6,544,000	ITD	2060
5th West Extension	New Road	$5,580,000	County/Rexburg	2060
East Parkway Corridor	New Road	$31,400,000 *	Rexburg/County	2060

*See East Parkway Corridor Study 2013

Proposed Means to Meet Demands of New Development

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 often help pay for such regional benefits. Those jurisdictions could include the Federal Government, the State Government or ITD. The City/County 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/County 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 the Madison County recommended improvements are to be built. The following paragraphs further describe the various transportation funding sources available to the City/County.

Federal Funding

Federal monies are available to Cities and Counties through the federal-aid program. Because the programs for funding are continually changing, the Cities and County should regularly discuss upcoming projects with ITD and coordinate efforts to receive federal funding. Regardless of the status of the current funding mechanisms, a list of priority projects with up to date purpose and need statements should be maintained. In addition, those projects most likely suited for federal funding should be evaluated and where appropriate environmental protections under the federal NEPA regulations should be considered. Idaho law now allows for the solicitation and construction of transportation projects through new and innovative methods.

Projects that require unique construction techniques or unique construction delivery methods may be appropriate for Construction Manager/General Contractor (CM/GC) projects. This delivery method is effective where anticipated construction challenges may warrant input from a potential contractor during the design process.

Often, funding such as a TIGER grant is awarded to local agencies which require relatively quick construction schedules. Design/Build projects have been completed in Idaho and are a potential avenue for quick project delivery. Where federal funding is the most likely avenue for funding a project, Madison County, the City of Rexburg and ITD should consider the most effective delivery method and potential schedules. Environmental evaluations may be completed in advance of the design and may provide an avenue for alternative delivery of the project.

The City and County should stay in contact with ITD and coordinate for continued funding programs to investigate any needs as they arise. Federal funding may be available through the Federal Transit Administration as well as other agencies.

Specific to Madison County is a bridge structure crossing the Snake River on the south end of the County. This bridge is the Snake River Bridge often referred to as the Twin Bridges. Due to a channel change in the Snake River, the abutment of the bridge is vulnerable to erosion and potential failure. In this particular situation consultation with other agencies is imperative. FEMA and USACOE should be included in planning discussions. Because of the nature of this bridge and the importance to the citizens of the surrounding areas, the agencies may be willing to participate with federal funds.

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 Local Highway Technical Advisory Council (LHTAC) programs a portion of the STP funds for projects around the state in urban areas. The programs include the STP Urban, the STP Rural, and the bridge program.

STP urban funds are allocated for projects with urban areas of 5,000 people or greater. The local match is 7.34%. The STP Local Rural Funds are allocated for projects in rural areas, and in Cities with populations below 5,000. The STP funds can also be used for activities such as transportation planning and corridor studies. The local match requirement is 7.34% and are awarded through the Local Federal-Aid Incentive Program.

The federal-aid bridge program provides funds for the replacement of bridges. This program has a limit of one project application per year per jurisdiction. The local match is again 7.34%. Funds are awarded through the Local Federal-Aid Incentive Program. To qualify the bridge must:

1) Be in the National Bridge Inventory (NBI) Database, which requires that the bridge be longer than 20 feet and it must carry a public road. (Recent rulings for this program have allowed for funding for bridges as long as the proposed span of the bridge exceeds 20 feet even when the existing structure span is less than 20 feet).
2) Have a sufficiency ration of less than 50 for replacement. Bridges with a sufficiency rating of less than 75 are eligible for funding for rehabilitation.
3) Be classified as structurally deficient or functionally obsolete.

The Highway Safety Improvement Program (HSIP) is a federally funded program aimed at reducing fatal and serious type A injury crashes on the roadway system. Beginning in 2013 LHTAC began receiving state HSIP funds. The Local HSIP program called LHSIP is based on the number of Fatal and Type A serious injury crashes per jurisdiction. Jurisdictions with the highest amount of Fata and Type A Serious Injury crashes per ITD district are identified. Eligible jurisdictions are notified each Fall. This federally funded program may require a 7.34% local match.

At the time of this TMP update, the next available application for this funding is 2017. Madison County falls with the ITD District 6 which is scheduled to receive $540,000. There are typically 13 eligible jurisdictions within the district. 15 are listed because the Cities of Rigby, Salmon and Lewisville are tied for the 13th position. Madison County ranks 4th and the City of Rexburg ranks 6th. No other jurisdictions within Madison County were ranked.

The purpose of the program is to correct or repair deficiencies in the system that have contributed to a Fatal or Serious Type A injury accident. The accident reports for the entire County were studied to identify opportunities where corrections could be made. At the time of this study, the only injury locations were

a correction or protection could have changed the outcome of the accident were at locations where applications for this funding had already been made.

State/County Funding

The distribution of State funds is established by State Legislation and is administered by the Idaho Department of Transportation. Revenues for the program are derived from State fuel taxes, registration fees, driver license fees, inspection fees, and transportation permits. Some of these funds are kept by ITD for their construction and maintenance programs. The rest is made available to Counties and Cities. As many of the roads in Madison County fall under ITD jurisdiction, it is in the interests of the County and City that staff is aware of the procedures used by ITD to allocate those funds and to be active in requesting the funds be made available for ITD owned roadways in the City. Recent rulings by the Idaho Legislature have appropriated funding to jurisdictions within Madison County. Because of limited availability and the reoccurrence and the amount of funding is highly variable from year to year, each jurisdiction is encourage to stay in contact with ITD.

The Local Highway Rural Investment Program (LHRIP) is a program aimed at aiding small local jurisdictions (less than 5000 people) with their roadway construction, signing upgrades and transportation plan projects. Federal funds are exchanged for state funds to be spent on projects without following the federal guidelines.

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. 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.

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. To help fund roadway improvements, impact fees could be considered. These fees are collected from new developments in the City to help pay for improvements that are needed to the roadway system due to growth.

Other Funding Alternatives

Various other alternatives for funding exist which include Community Development Block Grants, Local Improvement Districts, EPA funding programs and USDA Rural Development programs. Other programs such as Impact Fees and Local Option Vehicle Registration Fees are alternatives that should be carefully considered on a case by case basis.

Public Involvement Summary

In addition to multiple updates to the Madison County commissioners and the members of the Rexburg City Council, the public was also invited to attend a series of two public meetings. The meetings allowed the public to express ideas and concerns related to the topics presented. The meetings were advertised via web site, television, radio, and via social media. Receipt of social media invitations confirmed that more than 12,000 residents of Madison County were able to open and view the invitation. In addition, Kelly Hoopes of Horrocks Engineers discussed the project and the intent of the master plan update on local television news channels on two different occasions.

The first public meeting was held on April 1, 2015 in the Madison County Commissioners chambers. The second meeting was held the following night on April 2, 2015 in the City of Rexburg City Council chambers. Each meeting presented the same information in an open house format. Exhibits of the various discoveries and alternatives of the study were presented. Many in attendance came simply to learn with no comments. Others expressed comments verbally and in writing.

The primary concern expressed by the majority of attendees was the congestion on 2nd East between Main Street and 7th North. The alternative presented as a couplet on 3rd East concerned some residents who live along that corridor.

Appendix Items

- *Speed Limit Guidelines*
- *Traffic Impact Study Guidelines*
- *Traffic Calming Program and Toolbox*
- *Intersection Analysis Report*
- *RS 2477 Right of Ways Map*
- *Access Management Program (IDAPA)*
- *Roadway/Intersection Concept Designs*
- *Madison County Bridges*
- *Mayor's Letter*
- *Madison Trails Maps*

Speed Limit Studies

Setting a speed limit in a community can be a polarizing issues. Often, residents in a single neighborhood will have differing opinions on how high or low a speed limit should be. The purpose of setting a speed limit is to balance mobility and safety with the primary emphasis placed on safety. Setting of speed limits is rarely effective when an arbitrary speed limit is set based on anecdotal evidence or like facilities in another area of town. This sometimes default approach results in either unsafe conditions and resident complaints when speed limits are set too high, or unsafe conditions and driver non-compliance to posted limits when speed limits are set too low. This document gives the City and County guidance to when and how to appropriately set the maximum speed limit for roadways within their respective jurisdictions.

Types of Speed Limits

Speed limits may be classified as default/statutory regulations, or speed zoning regulations established on the basis of engineering studies. In all cases, a speed limit must be legislated (i.e. established by legislative authority).

Statutory Speed Limits

Statutory limits are based on the concept that uniform categories of highways can operate safely at certain maximum speeds under ideal conditions. State motor vehicle laws specify speed limits on specific categories of streets and highways. For example, a vehicle code might limit speeds to 25 mph in residential areas, in business districts, and 55 mph on all other roads. Generally, statutory limits apply throughout a political jurisdiction. Statutory speed limits allow for speed limits to be in effect even when it is not practical to post them.

Speed Zones

Where statutory limits do not fit specific road, traffic, or land uses conditions, most road authorities have the power to establish speed zones to reflect the safe maximum reasonable speed. These alternative speed limits may be higher or lower than those prescribed by the statutory limits of the jurisdiction. Alternative maximum legal speed limits are established by legislating the speed zone, typically founded on the basis of an engineering study, and becoming effective when the limits are posted and properly recorded. Agencies process resolutions, traffic control orders, or other formal documents to properly record the legal speed limit. To encourage compliance and effectively manage risk, many agencies set speed limits to reflect the “reasonable and prudent” behavior of the majority of motorists acting in an appropriate manner. This encourages drivers to obey the posted speed limit and travel at a reasonable speed. It also targets limited enforcement resources at the occasional violator who disproportionately contributes to crash risk. The concept of a rational speed limit involves a formal engineering review, during which drivers’ free-flowing speeds are observed. The assumption is that by reflecting actual driver speeds, most people will consider the speed limit appropriate. Such speed limits are desirable because they encourage public compliance, reduce speed differences among drivers, and offer a defensible enforcement tool.

Setting Speed Limits

This section describes the main objectives and guiding principles of setting speed limits and provides a detailed description of the principal available methods.

Speed limits are set to inform motorists of appropriate driving speeds under favorable conditions. Drivers are expected to reduce speeds under certain conditions (e.g., poor visibility, adverse weather, congestion, warning signs, or presence of bicyclists and pedestrians). Legislation and statutes generally reflect this requirement. All speed control regulations provide the legal basis for adjudication and sanctions for violations of the law. Road authorities may also post advisory speed signs, which do not have the force of law but warn motorists of suggested safe speeds for specific conditions at a particular location (e.g., a turn or an intersection approach). Having stated the above, however, a motorist exceeding an advisory speed could still be cited under the basic speed rule (i.e., driving too fast for the prevailing conditions).

The primary purpose of the speed limit is to advise drivers of the maximum reasonable and safe operating speed under favorable conditions. It provides a basis for enforcement and ought to be fair in the context of traffic law.

Methodologies for setting speed limits typically are designed to result in recommended speed limits that:

- Are related to crash risk;
- Provide a reasonable basis for enforcement;
- Are fair in the context of traffic law; and
- Are accepted as reasonable by a majority of road users.

The selected methodology is generally applicable on all road types and capable of being implemented with existing resources.

Factors that affect safe speeds along roadways, and also influence the speed selected by motorists, include:

- A vehicle's mechanical condition and characteristics;
- Driving ability/capabilities;
- Traffic volume: vehicles, pedestrians, and bicycles;
- Weather and visibility;
- Roadway design elements, including:
    - Road function/purpose;
    - Lane and shoulder width;
    - Horizontal and vertical curves;
    - Available sight distances;
    - Driveways with restricted visibility and other roadside developments;

High driveway density;

Rural residential or developed areas; and

Paved or improved shoulders.

- Pavement conditions; and
- Crash frequency and severity.

All of these factors should be considered when designing appropriate speed limits at locations where the speed limits need to be varied from the statutory limits. Special situations also exist that necessitate nighttime, school zone, work zone, minimum and variable speed limits or advisory speeds.

The above-mentioned factors to be considered in selecting a speed limit are also heavily influenced by geometric design features of the road and roadside development/activity. This is largely because drivers tend to select operating speeds based on the visual scene presented to them. Therefore, the speed limit and design of the road must work in concert if desired operating speeds are to be achieved.

Due to the lack of specific guidance and procedures from the Manual on Uniform Traffic Control Devices (MUTCD) and other documents, engineers often rely on their experience and judgment when considering factors that affect decisions about setting appropriate speed limits. The use of subjective procedures by decision-makers with various levels of experience, and the use of different procedures across jurisdictions, may lead to inconsistencies in how speed limits are set in different jurisdictions.

Methods of Setting Speed Limits

There are four recommended methods of setting speed limits in the engineering community:

Engineering Approach: A two-step process where a base speed limit is set according to the 85th percentile speed, the design speed for the road, or other criterion. This base speed limit is adjusted according to traffic and infrastructure conditions such as pedestrian use, median presence, etc. Within the engineering approach there are two approaches; 1) Operating Speed Method and 2) Road Risk Method.

Expert system approach: Speed limits are set by a computer program that uses knowledge and inference procedures that simulate the judgment and behavior of speed limit experts. Typically, this system contains a knowledge base containing accumulated knowledge and experience (knowledge base), and a set of rules for applying the knowledge to each particular situation (the inference procedure).

Optimization: Setting speed limits to minimize the total societal costs of transport. Travel time, vehicle operating costs, road crashes, traffic noise, and air pollution are considered in the determination of optimal speed limits.

Injury Minimization or Safe System Approach: Speed limits are set according to the crash types that are set according to the crash types that are likely to occur, the impact forces that result, and the human body's tolerance to withstand these forces.

The Engineering Approach is the most widely used method in North America, and is the recommended approach for setting speed limits in Madison County.

The following section detail the steps to setting speed limits using the Engineering Approach.

Engineering Approach

The steps in the engineering approach to setting speed limits include planning, coordination, data collection and analysis, and finally, determination of the speed limits. A traffic engineering study is the observation and analysis of road and traffic characteristics to guide the application of traffic engineering principles. The study of speed limits includes the following:

- Review the road's environment, features, and condition and traffic characteristics.
- Observation and measurement of vehicle speeds at one or more representative spots along the road in ideal weather and under free-flowing traffic conditions.
- Analysis of vehicle speeds to determine the 85th percentile speed and other characteristics.
- Review the road's crash history.
- Review of any unusual conditions not readily apparent.

Setting speed limits is complex and often controversial. The engineering approach requires the use of engineering judgment based on the engineering and traffic investigation. Quality data and good documentation provides support for the judgments that are made.

Within the engineering approach to setting speed limits there are two basic methods: the operating speed method and the road risk method. Each of these is detailed below.

Operating Speed Method

Most engineering approaches to speed limit setting are based on the 85th percentile speed—the speed at which 85 percent of free-flowing traffic is traveling at or below. The typical procedure is to set the speed limit at or near the 85th percentile speed of free-flow traffic. Adjustments to either increase or decrease the speed limits may be made depending on infrastructure and traffic conditions.

Setting a speed limit based on the 85th percentile speed was originally based on safety. Specifically, research at the time had shown that traveling at or around one standard deviation above the mean operating speed (which is approximately the 85th percentile speed) yields the lowest crash risk for drivers. Furthermore, crash risk increases rapidly for drivers traveling two standard deviations or more above or below the mean operating speed. Therefore, the 85th percentile speed separates acceptable speed behavior from unsafe speed behavior that disproportionately contributes to crash risk.

The 85th percentile speed method is also attractive because it reflects the collective judgment of the vast majority of drivers as to a reasonable speed for given traffic and roadway conditions. This is aligned with the general policy sentiment that laws (i.e., speed limits) should not make people acting reasonably into law-breakers. Setting a speed limit even 5 mph below the 85th percentile speed can make almost half the drivers illegal; setting a speed limit 5 mph above the 85th percentile speed will likely make few additional drivers legal.

Under the operating speed method of setting speed limits, the first approximation of the speed limit is to set the speed limit at the 85th percentile speed. The MUTCD recommends that the speed limit be within 5 mph of the 85th percentile speed of free-flowing traffic. The posted speed limit shall be in multiples of 5 mph.

While the MUTCD recommends setting the posted speed limits near the 85th percentile speed, and traffic engineers say that agencies are using the 85th percentile speed to set speed limits, in reality the speed limit is often set much lower. At these locations, the 85th percentile operating speeds exceed the posted speed limits; and, in many cases, the 50th percentile operating speed is either near or exceeds that posted speed limit as well. Many agencies deviate from their agency's written guidelines and instead post lower speed limits. According to an ITE Engineering Council Technical Committee survey, these reduced speed limits are often the result of political pressures. The 85th percentile speed can be adjusted on the basis of engineering and traffic investigation.

The following are typical adjustments made by several States:

- Adjustments made for roadway factors and/or crash data may be lower than the 85th percentile speed, but normally no more than 7 mph lower.
- Adjustments for roadway factors may reduce the 85th percentile speed by as much as 10 mph below the 85th percentile speed based on sound and generally accepted engineering judgment that includes consideration of the following factors:
    - Narrow roadway pavement widths (20 feet or less, for example).
    - Horizontal and vertical curves (possible limited sight distance).
    - Driveways with restricted visibility and other developments (possible limited sight distance).
    - High driveway density (the higher the number of driveways, the higher the potential for encountering entering and turning vehicles).
    - Rural residential or developed areas (higher potential for pedestrian and bicycle traffic). Narrow shoulder widths (constricted lateral movement).
- If the crash rate for a two-year period is much higher than the average for other highways of similar classifications, adjustments are considered.
- Adjustments can be made based on crash data when enforcement agencies will assure a degree of enforcement that will make the speed zone effective.
- A 12 mph (20 km/h) reduction for locations where roadway factors and crash rates are higher than the statewide average.

After the 85th percentile speeds and zone lengths have been selected, some jurisdictions recommend that several test runs be made through the area in both directions driving at the selected speeds. This should show any irregularities in the zoning that need correction before the speed zone is implemented.

The last step in the analysis process for the operating speed method is to draw conclusions based on the observed data and to prepare a report. The report can be elaborate or very basic depending on why the study was performed and how the results will be used.

The use of the 85th percentile speed as the primary criterion for selecting a suitable speed limit is founded on the following fundamental concepts deeply rooted in government and law:

- Driving behavior is an extension of social attitude, and the majority of drivers respond in a safe and reasonable manner as demonstrated by their consistently favorable driving records.
- The normally careful and competent actions of a reasonable person should be considered legal.
- Laws are established for the protection of the public and the regulation of unreasonable behavior on the part of individuals.

- Laws cannot be effectively enforced without the consent and voluntary compliance of the public majority.

The operating speed method has the added advantage that a properly set speed limit will provide residents, businesses, and pedestrians with a realistic expectation of actual vehicular speeds on the street.

Criticisms of the operating speed method of setting speed limits are largely targeted at the use of the 85th percentile speed as the starting point for establishing the speed limit. They include:

- This criterion assumes that motorists are aware of and select the safest speed.
- Drivers are generally bad at accounting for the externalities of their driving.

A further criticism that has been leveled against the 85th percentile speed as a primary determinant of the speed limit is that this practice may lead to an upward drift or creep in average operating speeds over time.

The engineering approach to setting speed limits has manifested itself in North America as the setting of "rational" speed limits. The premise is that speed limits based on a formal, analytical review of traffic flow, roadway design, local development, and historical crash data will result in a high percentage of drivers complying with the speed limit and traveling at about the same speed.

Despite wide-spread use of the operating speed method for setting speed limits in North America, there are few jurisdictions that have quantitative criteria for the adjustments to the 85th percentile speed. For example, how much should a speed limit be reduced if there is a high volume of pedestrian traffic on the street? For the most part, the analyst is to use "engineering judgment" to make such valuations. Two notable exceptions to the qualitative procedures are the *Policy on Establishing and Posting Speed Limits on the State Highway System* by the Illinois Department of Transportation (DOT), and the Northwestern Speed Zoning Technique (which is a procedure used by several municipalities).

The Illinois procedure considers access, pedestrian traffic, curbside parking, and safety performance, in addition to existing speed profile to establish the recommended speed limit. Specific numerical adjustments are specified in the procedure for each of the above criterion. The Illinois procedure is described later in this report.

The Northwestern Speed Zoning Technique is similar to the Illinois DOT procedure mentioned above, but it considers a wider range of traffic and infrastructure factors including presence of a median, lane width, vertical alignment, etc. Again, numerical direction is provided concerning the adjustments that are required for different road features, making the process repeatable and reliable. The Northwestern Speed Zoning Technique is detailed later in this report.

Road Risk Method

Another method of setting speed limits using an engineering approach is the road risk method in which the speed limit is determined by the risks associated with the physical design of the road and the expected traffic conditions. This method has numerous guises, but the core methodology is to set the speed limit according to the function or classification of the road (which also tends to dictate the design of the road), and then to adjust the speed limit based on the relative risk introduced by various road and roadside design features. This method is currently employed by Canada and New Zealand.

The road risk method is the same as the operating speed method in that a selected base speed limit is adjusted by various factors to determine the recommended speed limit. The main difference between the two engineering methods is that the operating speed method uses the 85th percentile speed as the base speed limit, and the road risk method uses a base speed limit that is predicated on the functional classification of the road and its setting.

Under the road risk method to setting speed limits the level of roadside development and the function of a road are the primary determinants of the appropriate speed limit. Although road geometry is also a factor in determining a speed limit, it is secondary to roadside development. In situations where the road design encourages users to travel at a higher speed than the speed limit determined by roadside development, engineering techniques should be used to lower vehicle speeds. When a road in a built-up area primarily serves through traffic, engineering and access control techniques should be used to provide safety at the higher speeds that will prevail.

By using the land use and functional classification of the road as the primary determinants of the desirable speed limit, road authorities that use the road risk method are attempting to reconcile the legislated speed of the road with the function of the road.

The road risk method used in New Zealand sets out the method for calculating the speed limit for a section of road from the following information:

- The existing speed limit;
- The character of the surrounding land environment (e.g., rural, fringe of city, fully developed);
- The function of a road (i.e., arterial, collector, or local);
- Detailed roadside development data (e.g., number of houses, shops, schools, etc.);
- The number and nature of side roads;
- Roadway characteristics (e.g., median divided, lane width and number of lanes, road geometry, street lighting, sidewalks, cycle lanes, parking, setback of fence line from the road);
- Vehicle, cycle, and pedestrian activity;
- Crash data; and
- Speed survey data.

The road risk method employed in New Zealand is detailed in Appendix E and includes a working example.

Despite the fact that the road risk method downplays operating speed as a factor in developing the speed limit, it is noted that the road risk method should recommend speed limits that are consistent with operating speeds.

Conclusion

Setting speed limits or adjusting speed limits on roadways is a controversial topic and should be as subjective as possible. The use of the Engineering Method of setting speed limits is the most widely used and recommended method for determining a speed limit on a particular roadway. This method requires an engineering study be performed by a licensed professional engineer with traffic engineering expertise and all elements of the study including data collection and analysis should follow the best practices and recommendations of the Institute or Transportation Engineers (ITE). The City and County intend to respond to requests for speed limit adjustments by following these guidelines.

Traffic Impact Studies

A Traffic Impact Study (TIS) is a specialized study of the impacts that a certain type and size of development will have on the surrounding transportation system. A TIS is essential for many access management decisions, such as spacing of driveways, traffic control devices, and traffic safety issues. It is specifically concerned with the generation, distribution, and assignment of traffic to and from new development. The purpose of this section is to establish uniform guidelines for when a TIS is required and how the study is to be conducted.

When Required

The governmental agency will determine when a complete TIS is required. A TIS is generally required if any of the following situations are proposed:

1. All new developments in or changes to existing developments that are expected to generate more than 100 net new peak-hour vehicle trips (total in and out vehicular movements).
2. Development that generates less than 100 net new peak-hour trips may require a TIS under unique circumstances. Examples include high accident locations, currently congested areas, areas of critical local concern, or significant changes in direction distribution of site traffic.
3. All applications for rezoning or annexation.
4. When the original TIS is more than 2 years old, access decisions are still outstanding, and changes in development have occurred in the site environs.
5. When development agreements are necessary to determine “fair share” contributions to major roadway improvements.

Study Category and Horizon Years

The study category is determined based on the net new number of peak hour trips generated by the development. The governmental agency's representative will confirm the study category and horizon years after the initial work activity

- CATEGORY I TIS- Developments which generate less than 500 peak hour trips. The study horizon should include both the opening year of the development and five years after opening.
- CATEGORY II TIS- Developments which generate 500 or more peak hour trips. The study horizon should include both the opening year of the development, five years after opening, and ten years after opening.

Initial Work Activity

For a proposed development, a developer, or their agent, should first estimate the number of vehicular trips to be generated by the proposed development. This will determine if a TIS is required, and if so, the applicable category. The governmental agency’s representative must give concurrence on the number of trips to be generated by the proposed development. The developer may, if desired, request that the governmental agency’s representative assist in estimating the number of trips for the purpose of determining whether a TIS is required for the proposed development.

The initial work of the TIS should include a technical memorandum which should contain the following information:

- Site plan, land uses, and proposed access locations

- Table outlining calculations for net new trips generated by the site
- Proposed study horizon years
- Proposed peak hour periods to study
- Proposed trip distribution for site traffic
- Proposed study intersections, including major off-site intersections impacted by 30 or more new trips during the PM peak hour.

The study area should include the site access points and nearest most likely utilized arterial or collector intersection, at a minimum. Additional intersections may be included at the discretion of the governmental agency's representative. The limits of the study area should be based on the size and extent of the proposed development, and an understanding of existing and future land use, as well as traffic conditions in and around the site. The governmental agency's representative, after possible consultation with other affected jurisdictions, will make the final determination of the study area limits. After approval of the TIS scope by governmental agency's representative, the actual TIS work activities may begin.

Analysis Approach and Methods

The traffic study approach and methods should be guided by the following criteria.

Study Area

Based on the initial work activity, the study area should be determined. The governmental agency's representative may enlarge or decrease the extent of the study area.

Analysis Time Periods

Based on the initial evaluation of the development, both the morning and afternoon weekday peak hours should be analyzed. However, if the proposed project is expected to generate no trips, or a very low number of trips, during either of the peak periods, the requirement to analyze one or both of these periods may be waived by the governmental agency's representative.

Where the peak traffic hour in the study area occurs during a different time period than the normal morning or afternoon peak travel periods (for example mid-day), or occurs on a weekend, or if the proposed project has unusual peaking characteristics, these additional peak hours should also be analyzed.

Seasonal Adjustments

Under the direction of the governmental representative, the traffic volumes for the analysis may be adjusted for the peak season if seasonal traffic data is available.

Data Collection

All data should be collected according to the latest edition of the ITE *Manual of Traffic Engineering Studies,* or as directed by the governmental representative. This data includes:

- **Turning movement counts.** Manual turning movement counts should be obtained for all existing cross-street intersections to be analyzed during the morning and afternoon peak

periods. Counts at other times should be performed as required by the governmental representative. Available turning movement counts may be extrapolated a maximum of two years with the concurrence of the governmental representative.

- **Daily Traffic Volumes.** The current and future daily traffic volumes should be presented in the report. If available, daily count data from the local agencies should be extrapolated a maximum of two years with the concurrence of the governmental agency's representative. Where daily count data is not available, mechanical counts should be performed at locations agreed upon by the governmental agency's representative.
- **Accident Data-**Traffic accident data should be obtained for the most current three-year period.
- **Roadway and intersection geometrics-** Roadway geometric information should be obtained. This includes, but is not limited to, roadway width, number of lanes, turning lanes, vertical grade, location of nearby driveways, and lane configuration at intersections.
- **Traffic control devices-** The location and type of traffic controls should be identified.

Trip Generation

The latest edition of ITE's Trip Generation should be used for selecting trip generation rates. Other rates may be used with the approval of the governmental agency's representative in cases where Trip Generation does not include trip rates for a specific land use category, or includes only limited data, or where local trip rates have been shown to differ from the ITE rates.

Site traffic should be generated for daily, AM, and PM peak hour periods. Adjustments made for "pass-by" and "mixed-use" traffic volumes should follow the methodology outlined in the latest edition of ITE's Trip Generation Handbook. A proposed "pass-by" traffic volume discount should be compared to the volume of adjacent street traffic for reasonableness.

A trip generation table should be prepared showing proposed land use, trip rates, and vehicle trips for daily and peak hour periods and appropriate traffic volume adjustments, if applicable

Trip Distribution and Assignment

Projected trips should be distributed and added to the projected non-site traffic on the roadways and intersections under study. The specific assumptions and data sources used in deriving trip distribution and assignment should be documented in the report.

Future traffic volumes should be estimated using information from transportation models, or by applying an annual growth rate to the baseline traffic volumes. The future traffic volumes should be representative of the horizon year for project development. If the annual growth rate method is used, the governmental agency's representative must give prior approval to the percentage used. In addition, any nearby approved but unbuilt development projects should be taken into consideration when forecasting future traffic volumes.

The site-generated traffic should be assigned to the street network in the study area based on the approved trip distribution percentages. The site traffic should be combined with the forecasted traffic volumes to show the total traffic conditions estimated at development completion. A figure should show peak period turning movement volumes for each traffic study intersection. An additional figure

should show the baseline volumes from site-generated traffic added to the street network. This figure should represent site specific traffic impacts to existing conditions.

Capacity Analysis

Level of Service (LOS) should be computed for signalized and unsignalized intersections in accordance with the latest edition of the Highway Capacity Manual or as directed by the governmental representative. The intersection LOS should be computed for each of the following conditions:

- Existing peak hour traffic volumes
- Future horizon year traffic volumes not including site traffic
- Future horizon year traffic volumes including site traffic

A table should be provided which should show the LOS results for each of the study periods. It should show the intersection LOS conditions with corresponding vehicle delays for signalized intersections, and LOS conditions for the critical movements at unsignalized intersections. If individual approaches or movements at signalized intersections are above LOS standards or problematic, they should be noted in the report.

If the new development is scheduled to be completed in phases, the TIS should, if directed by governmental agency's representative, include an LOS analysis for each separate development phase in addition to the TIS for each horizon year. The incremental increases in site traffic from each phase should be included in the LOS analysis for each preceding year of development completion. A figure should be made for each horizon year of phased development.

Traffic Signal Needs

A traffic signal needs study should be conducted for all new proposed signals for the base year. If the warrants are not met for the base year, they should be evaluated for each future horizon year.

Accident Analysis

An analysis of three-year accident data should be conducted to determine if the level of safety will deteriorate due to the addition of site traffic. If the governmental agency's representative knows that accident records should not indicate a concern, this requirement may be waived.

Speed Considerations

Vehicle speed is used to estimate safe stopping and cross corner sight distances. In general, the posted speed limit is representative of the 85th percentile speed and may be used to calculate safe stopping and cross corner sight distances.

LOS Standards and Improvement Analysis

The roadways and intersections within the study area should be analyzed, with and without the proposed development, to identify any projected impacts in regard to LOS and safety. The following intersection LOS standards are set based on the travel mode context:

- Truck/Auto Priority Streets: LOS D
- Shared Priority Streets: LOS D
- Bicycle/Pedestrian Streets: LOS E
- Rural Context: LOS C

The traffic impact of the development on the roadways and intersections within the study area should be mitigated to LOS standards set forth above, or LOS conditions without site traffic, whichever is worse.

Pedestrian/Bicycle Considerations

The study should explain how pedestrians and bicyclists will access and travel within the traffic site. The types of non-motorized transportation facilities provided by the proposed development and nearby off-site facilities should be noted. The route pedestrians or bicyclists would likely use to reach major destinations such as parks, schools, and transit stops should be described. Major gaps or barriers should be described.

On-Site Traffic Circulation

The study should explain vehicular and non-motorized transportation routes within the site. Any potential on-site capacity concerns, especially those that may impact traffic on the surrounding transportation network, should be noted.

Consistency with Adopted Transportation Plans

The ways in which this project is consistent with adopted vehicular and non-motorized transportation plans should be explained.

Certification

The TIS should be sealed and signed by the Professional Engineer under whose direction it has been conducted and prepared.

MADISON COUNTY

GUIDELINES FOR TRAFFIC CALMING

ADOPTED 2015

PREPARED BY

HORROCKS ENGINEERS

CONTENTS

INTRODUCTION

The concept of traffic calming perhaps originated in the 1960s with the publication of ***Traffic in Towns*** by Sir Colin Buchanan. This volume described the potential damages to society and neighborhood livability caused by the motor car and ways to mitigate these impacts. These policies helped shape the development of urban landscape in many countries over the next few decades.

Since the mid 1990s the Institute of Transportation Engineers (ITE) has seen traffic calming as an institute priority and the industry at large has seen dozens of programs implemented to address the issue of traffic calming. In 1999 ITE along with the Federal Highway Administration (FHWA) published: ***Traffic Calming: State of the Practice***. This became the authority of traffic calming methods and practices. A second, more recent publication: ***U.S. Traffic Calming Manual***, was released in 2009 by the American Society of Civil Engineers (ASCE) and the American Planning Association (APA) as a companion volume to ***Traffic Calming: State of the Practice***.

Today traffic calming programs have been adopted by agencies throughout the United States as it has become increasingly important to the public, agencies and other interested parties in order to develop effective neighborhood environments that adequately accommodate motor vehicles, pedestrians and bicyclists. Madison County is interested in applying appropriate traffic calming with goals of improving neighborhood *safety* and *livability* while maintaining traffic circulation and overall user *mobility*.

ITE defines traffic calming as follows:

> *Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and / or cut-through volumes, in the interest of street safety, livability, and other public purposes.*

In other words, traffic calming is a methodology to influence motorist behavior and prevent undesirable driving practices. Traffic calming is generally achieved with physical measures that reduce speeds, reduce traffic volumes, discourage cut-through traffic on local streets, minimize conflicts between street users, and enhance the environment.

This document presents recommended traffic calming guidelines for use within Madison County. The guidelines are applicable for use on existing streets as well as in new developments. This document presents a comprehensive program for addressing the traffic calming needs of the City including responding to citizen requests, prioritizing traffic calming needs, selecting the most appropriate type of traffic calming, installing traffic calming measures, and evaluating the effectiveness of traffic calming already in use.

An extensive literary search was conducted of the state-of-the-practice by other agencies and organizations to gather information on the best practices for designing neighborhood traffic calming programs. This information was utilized to develop guidelines for Madison County.

1.0 PRINCIPLES OF TRAFFIC CALMING

There are several principles of traffic calming that should be considered when implementing traffic calming measures. The following principles are intended to provide guidance and direction for users of this document:

1.1 PROBLEM IDENTIFICATION

Identifying the real traffic problem for a neighborhood roadway is not always easy. Sometimes the perceived nature of a traffic problem is very different from the real problem. For example, residents often mention both "traffic volume" and "speeding" as problems on their streets, but in many cases the traffic problem is one or the other. It is important to identify the real traffic problem in order to select the appropriate mitigating measure.

1.2 PROBLEM CHARACTERIZATION

In order to ensure that the appropriate traffic calming measures are implemented, it is essential that the extent of problems be characterized and quantified. Roadway information such as width of roadway and intersection dimensions should be collected. Diagrams can also be made to show such items as traffic volumes, speeds, peak hours of travel, turning movement counts, historical crash information, transit routes, bicycle routes, and pedestrian volumes.

1.3 FIRST CONSIDER MAJOR ROAD NETWORK IMPROVEMENTS

Before implementing any traffic calming measures for unwanted through movements on neighborhood roadways, the reason for these movements need to be determined. Sometimes congestion on adjacent arterials encourages motorists to shortcut through the neighborhood. There are a wide range of low-cost options available to improve operations on the major street network, including fine-tuning signal timings, adding turn pockets, and implementing prohibitions and parking restrictions.

1.4 MINIMIZE ACCESS RESTRICTIONS

Residents, businesses, and others who live and work in the community will be more supportive of traffic calming measures that do not restrict their access into and out of a neighborhood. Problems should be addressed with other less restrictive traffic calming measures when possible.

1.5 TARGET PASSENGER VEHICLES

The purpose in implementing traffic calming measures is to affect passenger vehicles and not other modes of traffic. Designs for traffic calming measures should take into account transit buses, bicyclists, pedestrians, and emergency service vehicles.

1.6 TEMPORARY IMPLEMENTATION

When possible, inexpensive temporary measures should be installed to ensure traffic calming measures will achieve the intended results prior to constructing permanent measures. A temporary installation also provides an opportunity to alter the geometrics of a measure or make other changes prior to permanent installation. Temporary measures should resemble permanent measures as much as possible.

1.7 NEIGHBORHOOD INVOLVEMENT

Residents, businesses and others who live and work in the community should be involved in developing traffic calming. Their input is essential in identifying problems and in selecting traffic calming solutions. Involving the neighborhood builds support for traffic calming plans, and enhances the credibility of a plan.

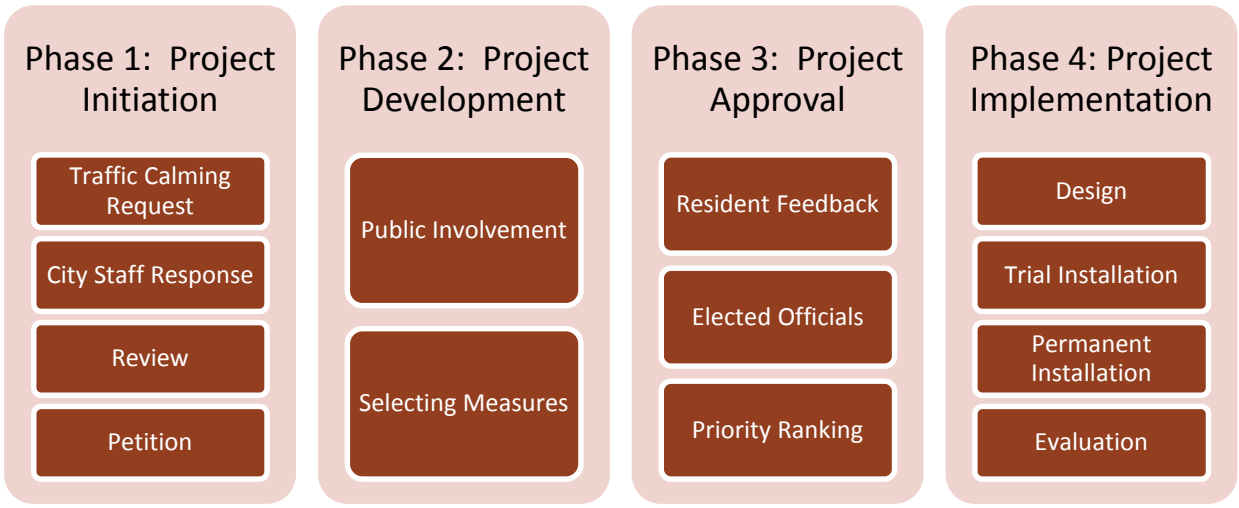
1.8 MONITOR CONDITIONS

Traffic patterns change and consequently it is important that traffic volumes, vehicle speeds, crashes, and other indicators of potential traffic problems are recorded and analyzed on an on-going basis. Much of this information is already collected and can be stored in a Geographic Information System (GIS) or other easy to manage database. City personnel should monitor conditions on a continual basis.

2.0 TRAFFIC CALMING PROCESS

A successful traffic calming program consists of four basic phases: project initiation, project development, project approval, and project implementation. Each phase has several tasks associated with it. This section describes the steps in the process of implementing traffic calming in new developments and existing neighborhoods. **FIGURE 1** presents the typical traffic calming process.

Figure 1: Traffic Calming Process



The four basic phases along with their associated tasks are described in the following paragraphs.

2.1 PROJECT INITIATION

The first phase in the traffic calming process is project initiation. This phase begins when a resident, business owner, neighborhood group, or proactive Madison County employee identifies a potential problem area.

TRAFFIC CALMING REQUESTS

Upon identifying a potential traffic problem, the concerned party then submits a formal request for traffic calming. This request can come from any concerned individual or group who sees a possible need for traffic calming.

For new developments, Madison County will review development plans to identify potential traffic problems such as speeding or cut-through traffic. Often traffic problems can be predicted and prevented by properly reviewing roadway and lot plans for new developments.

For existing neighborhoods, the concerned party should make their concern known to the Madison County Engineering Department. The concerned party should identify the location and exact nature of their primary concern such as vehicle safety, pedestrian safety, congestion, speeding, noise, or cut-through traffic. This information should be submitted in written form via the **REQUEST FOR TRAFFIC CALMING FORM** found in **APPENDIX I,** available from the City Engineering Department or accessible via download from the city website. Requests may also be made via the City's website.

CITY STAFF RESPONSE

Upon receipt of a traffic calming request, Madison County staff will have 30 days to respond to the applicant. During this time staff will identify the problem area and whether a request has already been previously submitted for the request location. If this is the case, the applicant will be notified that a study is already underway and will be put in contact with the previous applicant upon their authorization.

REVIEW

If no study is currently in process, staff will identify the limits of the study and the eligibility of the roadway for traffic calming. The **STUDY AREA** should include all streets that may be affected by traffic calming treatments and should generally be bounded by features such as roadways, topography or land use changes. The process of determining eligibility will include a review of the roadway functional type as well as meetings with key stakeholders within the City. Key stakeholders may include but not be limited to the following:

Mayor
City Council
Emergency Response Personnel

City Administrator
Streets Superintendent
Public Works Director
Police and Fire Chief
Bike & Pedestrian Coordinator
City Engineer

PETITION

Upon notification of the study area and determination that the roadway is eligible for traffic calming, the applicant must distribute a **PETITION** to the residents/property owners in the study area for support of the traffic calming request. At least **50%** of the residents/property owners in the study area must sign the petition in order for Madison County to proceed with the traffic calming process.

2.2 PROJECT DEVELOPMENT

Once a request passes through phase 1 and is deemed suitable for traffic calming based on the criteria outlined, staff begins the process of selecting an appropriate traffic calming measure and involving the community. It is at this stage in the process where budget and resource restraints are identified.

PUBLIC INVOLVEMENT

Early in the project development phase Madison County will hold a widely advertised public meeting. At this meeting, staff will present the process used to develop, approve, and implement neighborhood traffic calming plans. The public is encouraged to identify and discuss the traffic problems in the study area. Staff should provide a brief tutorial on traffic calming and encourage the residents to volunteer for the **COMMUNITY TRAFFIC COMMITTEE (CTC)** and select a **NEIGHBORHOOD REPRESENTATIVE.** The CTC should consist of residents and business owners residing in the immediate vicinity of the study area as well as any surrounding affected areas. The neighborhood representative may or may not be the original applicant. City staff act as technical advisors to the CTC throughout the process. The CTC is essential to the process as they provide a contact for feedback to the city and can aid in data collection and public involvement. Data should be collected regarding traffic volume, roadway geometry, speeds, crashes, neighborhood comments, etc.

SELECTING MEASURES

Based on the character of the traffic problem and the data that has been collected, the City will develop possible traffic calming solutions. The solutions shall be evaluated to determine if they meet the required goals and objectives.

Once the measures have been selected they should be discussed with the CTC to solicit feedback and address any concerns or comments from the community. At this point a preferred alternative should be selected by City staff and the CTC.

2.3 PROJECT APPROVAL

Once a preferred alternative has been selected by City staff and the CTC it must be presented to the affected residents and approved by elected officials.

RESIDENT FEEDBACK

A public meeting will be held by the CTC where the preferred alternative is presented to the neighborhood residents and all other interested parties. A standard drawing design of the proposed traffic calming measure as well as maps showing the approximate location of the preferred alternative may be presented. The CTC with the help of the technical advisors should respond to questions and concerns from the general public at this time. Any concerns should be taken into consideration before proceeding to the next step.

ELECTED OFFICIALS

Once a final solution has been developed, the traffic calming measures will be presented to the key City stakeholders for their final input before it is presented to the City Council. **THE APPROVAL OF TRAFFIC CALMING MEASURES IS ULTIMATELY UP TO THE CITY ENGINEER AND CITY COUNCIL.** As part of the solution, a plan should also be included for implementation of the traffic calming measure. The plan should detail the design and construction costs.

PRIORITY RANKING

Due to budget planning, a priority ranking of the particular project may be performed. Founded on a point system, the solution will receive points based on various data including speed, volume, crash data, pedestrian use, and proximity to schools, hospitals, and care facilities. Projects requiring funding will be prioritized in the next fiscal year budget and only those projects with sufficiently high rankings will be implemented.

Costs can also be shared with the neighborhood. For instance, if a community requests a speed hump, which is then approved by City staff, yet it is of low priority, the community can share the burden of the cost in order for the construction to go forward. Costs not only include construction but also maintenance of landscaping. Costs shall be discussed as part of a public meeting.

2.4 PROJECT IMPLEMENTATION

Project implementation if the final phase in the traffic calming process. After the city council has approved and funding has been allocated either by the City Council or cost sharing with the neighborhood, the plan to implement the traffic calming measure can be put in place.

DESIGN

Using the guidelines discussed in this documents companion volume **MADISON COUNTY – TRAFFIC CALMING TOOLBOX,** the selected traffic calming measure will be designed. The final design will be in accordance to the guidelines (e.g. geometric, landscaping, safety, etc.) presented in said document.

TRIAL INSTALLATION

At the discretion of Madison County, a temporary traffic calming measure that closely resembles the proposed solution may be installed to evaluate the effectiveness of the permanent measure. Trial installations should be evaluated after 6 months of operation.

PERMANENT INSTALLATION

Once the decision has been made by Madison County to proceed with permanent installation of the traffic calming measure, construction will be scheduled and will commence according to the schedule and funding restrictions decided by the City Council. Care must be taken that permanent installations will be effective and are supported by the community.

EVALUATION

If after evaluation of the temporary measure, the desired results are not achieved, the permanent traffic calming measure may not be installed and the process should return to the project development phase. Each project will be eligible for a return to the project development phase one time only.

3.0 TRAFFIC CALMING MEASURES

This section introduces the six main categories of traffic calming measures and presents their studied effectiveness at mitigating traffic problems. For a more detailed description of each of the measures listed, please see the companion document **MADISON COUNTY – TRAFFIC CALMING TOOLBOX.**

3.1 NON-PHYSICAL MEASURES

Non-Physical Measures are measures such as signage or speed enforcement that do not require any construction or physical modifications to the roadway. These items can be attempted first since they can be economical and easy to remove if they do not solve the problem.

3.1.1 Effectiveness of Non-Physical Measures

Some measures such as speed enforcement signs or trailers have temporary effectiveness. Other measures have inconclusive effectiveness and may not significantly reduce speeds.

3.1.2 Specific Non-Physical Measures

- Speed Enforcement

- Radar Speed Signs
- Lane Striping
- Signage
- Speed Legends
- Raised Pavement Markings
- Angled Parking

3.2 VOLUME CONTROL MEASURES

Volume Control Measures reduce the quantity of vehicles that use the roadway. They use barriers to restrict one or more movements at an intersection. Their primary purpose is to divert traffic away from the trouble area thus reducing cut-through traffic.

3.2.1 Effectiveness of Volume Control Measures

Volume control measures are effective in reducing traffic volume by 30-40%. They have also been found to reduce travel speeds by up to 19%.

3.2.2 Specific Volume Control Measures

- Full Closure
- Half Closure
- Diagonal Diverter
- Median Barrier
- Forced Turn Island

3.3 VERTICAL SPEED CONTROL MEASURES

Vertical Speed Control Measures are usually raised segments of the roadway that vary in height and width. These are designed to force a vehicle to slow down in order to comfortably navigate them.

3.3.1 Effectiveness of Vertical Speed Control Measures

Vertical speed control measures can reduce traffic volumes up to 22% and speeds up to 25%.

3.3.2 Specific Vertical Speed Control Measures

- Speed Hump
- Speed Lump
- Speed Table
- Raised Crosswalk
- Raised Intersection

3.4 HORIZONTAL SPEED CONTROL MEASURES

Horizontal Speed Control Measures are segments of roadway where the straight line of travel has been altered to cause a vehicle to change direction and slow down.

3.4.1 Effectiveness of Vertical Speed Control Measures

Horizontal speed control measures may reduce traffic volumes as much as 20% and vehicle speeds up to 14%.

3.4.2 Specific Horizontal Speed Control Measures

- Traffic Circle
- Roundabout
- Chicane
- Lateral Shift

3.5 NARROWING MEASURES

Narrowing Measures are usually short segments of the roadway that have been narrowed to restrict the pavement surface.

3.5.1 Effectiveness of Narrowing Measures

Narrowings have been found to result in an approximate 4% decrease in travel speed and a 10% decrease in traffic volume.

3.5.2 Specific Narrowing Measures

- Neckdown
- Choker
- Center Island

3.6 COMBINED MEASURES

Sometimes one traffic calming measure may not sufficiently address specific traffic problems like excess speeding. Combined Measures are a combination of two or more of the previously mentioned measures that are installed concurrently to accomplish the design goals.

APPENDIX I: PROCESS DOCUMENTATION

TRAFFIC CALMING PROGRAM INSTRUCTIONS

1 INTRODUCTION

Welcome to the Madison County traffic calming program! These instructions outline the steps in the traffic calming request process. Please read and understand these instructions before filling out the Traffic Calming Request for Review form or Petition.

2 IMPLEMENTATION PROCESS/TIME FRAME

The implementation process and time frame depend on the number of traffic calming requests running concurrently and the complexity of the traffic analyses. The time frames shown here represent the estimated maximum time taken from neighborhood request to installation. Madison County will accept traffic calming requests at any time throughout the year. Requests will be processed in the order they are received. However, in order for traffic calming measures to be properly budgeted the timeframe from petition to project implementation may vary.

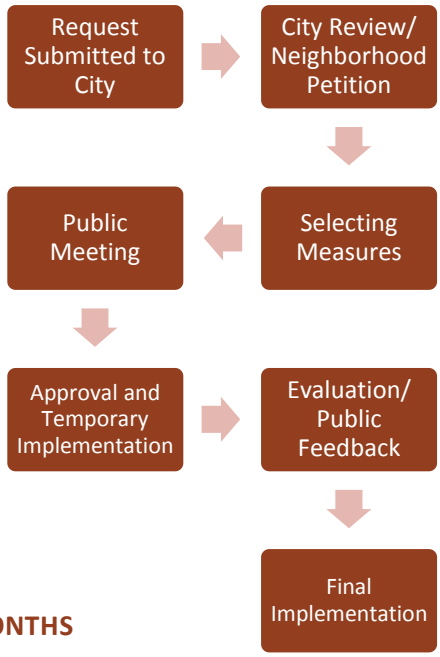
Request submitted in person or online.

City to accept and review request: 1 month
Petitioner completes petition: 2 months

City reviews petition and confirm signatures: 2 months
City accepts petition and performs traffic study: 4 months

City presents calming options to neighborhood and presents recommendations to City Council: 4 months

Temporary measures installed: *3-5 months
Permanent installation if temporary measures are deemed effective: *2-6 months



POSSIBLE TOTAL TIME FRAME: 18-24 MONTHS

**Some traffic calming measures may be beyond the budget of the traffic calming program and require the project to be added to the Capital Improvement Program (CIP). This could extend the project timeline by 12 months in order to be considered in the next fiscal year's CIP funding.*

3 TRAFFIC CALMING REQUEST

3.1 ESTABLISHING A NEIGHBORHOOD REPRESENTATIVE

Communication with the City will be through a "Neighborhood Representative" and neighborhood meetings.

The neighborhood representative **MUST BE A HOME OWNER, 18 YEARS OF AGE OR OLDER, LIVING ON THE STREET WHERE TRAFFIC CALMING IS BEING REQUESTED.** Endorsement from other neighborhood residents is NOT required for someone to initiate a traffic calming request and become the neighborhood representative. The neighborhood representative fills out the **REQUEST FOR TRAFFIC CALMING** form and will work with his/her neighbors to sign the **MADISON COUNTY TRAFFIC CALMING PETITION.**

3.2 REQUEST FOR TRAFFIC CALMING

The **REQUEST FOR TRAFFIC CALMING** form (request form) establishes communication between the City and the neighborhood representative. The request form is to be completed by the neighborhood representative and needs to be filled out completely in order for the City to review it. Please attach any other supporting pictures and/or drawings as needed to explain your traffic calming request. Written forms should be returned to the Madison County Public Works Department at:

Madison County Public Works
134 E. Main
Rexburg, ID 83340

3.3 MINIMUM QUALIFYING CRITERIA

Once the request form is completed and submitted to the City, the City will confirm that the request meets the following minimum criteria:

a. The study street is classified as a neighborhood street by Madison County.
b. The roadway must front residential, park, and/or schools over 66% of its length.
c. The posted speed limit does not exceed 25 mph.
d. The street is **NOT** a major emergency response route as determined by emergency response agencies and the City.
e. The longitudinal grade of the roadway or intersection approaches does not exceed 5%.

For assistance, please contact the Madison County Engineering Department at Madison County Public Works (801-763-3060).

Once the City determines that the above minimum criteria are met, the neighborhood representative will be informed to proceed with the petition process.

3.4 NEIGHBORHOOD PETITION

The purpose of the **TRAFFIC CALMING PETITION** is to establish minimum neighborhood support to proceed with the Madison County traffic calming program. One petitioner per household may sign the petition and petitioners must reside on the street where traffic calming is requested. A minimum of ten (10) signatures are required for the City to perform a traffic study and start reviewing traffic issues on the study street. A completed petition doesn't necessarily ensure that calming measures will be installed on

the study street, but it does allow the City to continue with a traffic study and scoring process. The City Engineering Department accepts traffic petitions at any time during the year and petitions are processed on a first-come first-served basis.

The neighborhood representative should be the first to sign the petition and is the liaison between the City and the neighborhood and is responsible for obtaining the required minimum number of signatures (ten) for the traffic calming request to be accepted by the City.

3.5 REVIEW AND RANKING

3.5.1 Traffic Study

Madison County will verify petition signatures and perform a traffic analysis to evaluate neighborhood concerns. Depending on the traffic issues in the neighborhood various traffic study components may include: traffic volumes, travel speeds, signing and striping, circulation, vehicle queuing, intersection operations, driver sight distance, accidents, proximity to sensitive facilities, pedestrian safety, etc.

3.5.2 Scoring

The purpose of the scoring process is to determine which neighborhood traffic calming project has the most need. If there are multiple traffic calming requests being processed by the City concurrently a scoring and ranking system will be used to prioritize projects. Scoring will be performed by City staff after the traffic analysis is complete.

3.5.3 Ranking

Once the traffic study is complete and the request has been scored, projects are ranked. The highest ranked projects will be accommodated first depending on the availability of funding resources.

3.6 SELECTING MEASURES

Based on the character of the traffic problem and the collected data, the City will develop possible calming measures. Public neighborhood meetings will be held to discuss the appropriate measure. The neighborhood representative, original petitioners, other impacted residents, homeowner association representatives, police, fire, etc., shall be in attendance. Certain measures may affect more residents than the original petitioners. If this is the case, the City will notify the affected residents and an additional public meeting may be required.

The affected neighborhood residents (as determined by the City) will then vote on whether the chosen measure and location is acceptable. **SEVENTY-FIVE PERCENT (75%)** or more of the residents need to approve the recommended measure in order to proceed with submittal to the City Council. In instances where there a temporary measure is to be installed, **FIFTY PERCENT (50%)** of affected residents must

approve a temporary measure and **SEVENTY-FIVE PERCENT (75%)** are needed to approve permanent installation.

3.7 APPROVAL AND IMPLEMENTATION

The selected traffic calming measure will then be presented to the City Council for approval. Large traffic calming projects may be required to be included in the next years Capital Improvement Plan (CIP).

3.8 CONSTRUCTION

Some measures may require temporary installation in order to evaluate the effectiveness and impact to an area prior to final design. Other measures may be able to be installed permanently without a trial period. This decision is left to the discretion of the City engineer and City Council.

3.9 EVALUATION

After the traffic calming measure has been constructed, Madison County may evaluate the effectiveness of the installed traffic calming device. This is to ensure the effectiveness of the measure. If ineffective, the City may decide to remove the traffic calming measure or in the case of temporary installation the City may decide not to install a permanent measure.

REQUEST FOR TRAFFIC CALMING

Please read "*Traffic Calming Program Instructions*" before starting the traffic calming request process!

Date:_____ Neighborhood Representative:_____

The neighborhood representative will serve as the liaison between the neighborhood and Madison County and is responsible for obtaining the appropriate petition signatures.

Daytime Phone Number:_____ Alternate Phone Number:_____

Address: _____

_____

Name and phone number of Home Owners Association Representative if applicable:

_____

Neighborhood Name: _____

Council Representative: _____

Please indicate traffic issues that concern the residents in your neighborhood.

	Speeding		Traffic Volumes
	Pedestrian/Bicycle Safety		Accidents
	Blocked Line of Sight		Access/Traffic Operations
	Other (explain):		
Description/Location of Problem			

Return to: Madison County Public Works, 134 E Main, Rexburg, ID 83440

PETITION

Please read "*Traffic Calming Program Instructions*" before starting the traffic calming request process!

Come Now, the residents on _____ (street) located between _____ (cross street) and _____ (cross street), hereinafter referred to as the "Petitioners", hereby petition Madison County to consider the installation of traffic calming measures to mitigate traffic issues on our above referenced street and detailed on the submitted "Request Form".

Petitioners must be at least 18 years of age and reside in separate households. By signing this petition you agree to allow traffic calming measures to be installed on your street that may permanently restrict access or parking along your street. There must be a minimum of ten petitioners to process this request.

Signature	Printed Name	House #	Phone #
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Return to: Madison County Public Works, 134 E Main, Rexburg, ID 83440

SCORING

85th Percentile Speed (20 points maximum) _____pts

The 85th percentile speed represents the speed, at or below which, 85 percent of the free flowing vehicles are traveling. Points will be assigned based on the difference between the posted speed limit and the 85th percentile speed as follows:

0 points, less than or equal to 5 mph difference	or	(30 mph)
5 points, greater than 5 mph and less than or equal to 7 mph	or	(32 mph)
10 points, greater than 7 mph and less than or equal to 9 mph	or	(34 mph)
15 points, greater than 9 mph and less than or equal to 11 mph	or	(36 mph)
20 points, greater than 11 mph	or	(37 mph+)

Traffic Volume (25 points maximum) _____pts

Average Daily Traffic (20 points maximum) _____pts

Points for Average Daily Traffic (ADT) will be assigned as follows:

0 points, less than 800 ADT
5 points, 801 ADT to 1,500 ADT
10 points, 1,501 ADT to 2,500 ADT
15 points, 2,501 ADT to 3,500 ADT
20 points, more than 3,500 ADT

Peak Hour Volume (5 points maximum) _____pts

The percent of the daily traffic occurring during the peak hour will be assigned points as follows:

0 points, peak hour traffic is less than 10% of Average Daily Traffic
5 points, peak hour traffic is equal to or greater than 10% of Average Daily Traffic

3-year Crash Data (20 points maximum) _____pts

0 points, less than 7 crashes over the last 3 years
10 points, 7 to 12 crashes over the last 3 years
20 points, more than 12 crashes over the last 3 years

Pedestrian Facilities (5 points maximum) _____pts

0 points, sidewalks are present and continuous on BOTH sides of the street throughout the project limits
2 points, sidewalks are discontinuous or do not exist on ONE side of the street throughout the project limits
5 points, sidewalks are discontinuous or do not exist on BOTH sides of the street throughout the project limits

Sensitive Facilities (30 points maximum) _____pts

Sensitive facilities include schools, senior centers, libraries, community centers, and sites with significant pedestrian activity.

0 points, no sensitive facilities or pedestrian crossings
10 points, roadway is within **High School** Safe Route to School boundary or other sensitive facility
20 points, roadway is within **Middle School** Safe Route to School boundary
30 points, roadway is within **Elementary School** Safe Route to School boundary

Total Points Maximum (100) **Total Score** _____pts

MADISON COUNTY

TRAFFIC CALMING TOOLBOX

ADOPTED 2015

PREPARED BY

HORROCKS ENGINEERS

CONTENTS

LIST OF FIGURES

INTRODUCTION

The process of selecting suitable traffic calming measures involves, first, identifying the nature and location of the traffic problem i.e. speeding, congestion, and then selecting the appropriate traffic calming measure capable of solving the identified problems. The traffic calming measures should be selected from a "toolbox" of possible alternatives that describes the possible measures with their application and effectiveness at solving specific traffic problems.

This document, designed as a companion to **MADISON COUNTY CITY – GUIDELINES FOR TRAFFIC CALMING** describes the traffic calming measures that may be considered by Madison County City as alternatives to solving traffic problems. In this document the following five groups of traffic calming measures will be described in detail:

- Non-Physical Measures
- Volume Control Measures
- Vertical Speed Control Measures
- Horizontal Speed Control Measures
- Narrowing Measures

Specific measures within each group will be identified and their application, cost and effectiveness described. In addition, a summary of the appropriateness of each type of traffic calming measure in dealing with different traffic problems will be presented. Finally an overview of the design principles that should be applied in designing each type of traffic control measure will be explained. In some cases it may be appropriate to combine two or more specific types of traffic calming method to either enhance the effectiveness of one or the other or to potentially address two separate problems. A scenario such as this one should be identified and analyzed on a case by case basis.

1.0 NON-PHYSICAL MEASURES

Non-Physical Measures are measures such as signage or speed enforcement that do not require any construction or physical modifications to the roadway. These items can be attempted first since they can be economical and easy to remove if they do not solve the problem. Non-physical measures have been shown to have negligible success when used as traffic calming measures.

1.1 SPEED ENFORCEMENT

For areas where speed has been determined as being excessive (generally an 85th percentile speed 7 mph above the posted speed limit), speed enforcement can be a temporary traffic calming measure.

TARGETED SPEED ENFORCEMENT can be attempted on areas where speeding is observed be neighborhood residents and/or agency representatives. Limited personnel can be cost-effectively deployed on major roadways. For low volumes streets, periodic daytime speed enforcement is the best option. Because of the expense to maintain increased levels of police enforcement, targeted speed enforcement should only be used temporarily and/or in conjunction with other new traffic calming measures to help drivers become aware of new restrictions.

Another available enforcement option is a **RADAR TRAILER DEVICE**, which measures and displays a vehicles speed as it approaches. The posted speed limit is shown in clear view next to the digital readout showing the actual speed of the oncoming vehicle. This reminds drivers to slow to the appropriate speed and often it comes as a surprise to the driver to see how fast they are travelling. These devices can be easily transported and deployed at different locations.

Effectiveness: Negligible

Figure 1: Radar Trailer Device

Advantages	Disadvantages
Inexpensive if used temporarily	Expensive to maintain for a long period
Does not require time for design	Trailer subject to vandalism
Does not slow trucks and emergency vehicles	

1.2 RADAR SPEED SIGN

Figure 2: Radar Speed Sign

The **RADAR SPEED SIGN** is very similar in nature to the radar trailer device. The notable difference between this device and the radar speed trailer is that the radar speed sign in not portable. The device can also have the ability to store data over time to provide speed data to the City. This device measures and records a vehicles speed and displays it next to the posted speed limit sign reminding vehicles to slow to the appropriate speed

Effectiveness: Negligible

Advantages	Disadvantages
Can mount to existing poles	Has not been shown to significantly reduce speeds
Does not require much time for design	High cost of long-term maintenance
Does not slow trucks and emergency vehicles	

1.3 LANE STRIPING

LANE STRIPING can be used to create formal bicycle lanes, parking lanes and/or edge lines. The striping "narrows" the travel lane for vehicles and may encourage drivers to lower their speeds.

Effectiveness: Negligible

Figure 3: Bike Lane Narrowing

ADVANTAGES	DISADVANTAGES
Inexpensive	Increases regular maintenance
Can be used to create bicycle lanes or delineate on-street parking	Has not been shown to significantly reduce travel speeds
Does not require much time for design	
Does not slow trucks and emergency vehicles	

1.4 SIGNAGE

SIGNAGE such as speed limit and various restriction type signs can be used as a traffic calming measure. Speed limit signs should only be placed after an engineering study is performed. Restriction type signs include: NO TRUCKS, CROSS TRAFFIC DOES NOT STOP, NO RIGHT TURN, NO LEFT TURN, NO THRU TRAFFIC.

Effectiveness: Negligible

Figure 4: Typical Signage

ADVANTAGES	DISADVANTAGES
Inexpensive	Ineffective if not accompanied by enforcement
Turn restrictions can reduce cut-through traffic	Speed must be set at a reasonable value for drivers to follow
Does not slow trucks and emergency vehicles	Has not been shown to significantly reduce travel volume or speeds

1.5 SPEED LEGEND

SPEED LEGENDS are numbers painted on the roadway indicating the current speed limit. These are usually painted near the speed limit signposts. Speed legends may be useful for reinforcing speed reduction between different roadway segments (e.g., from one functional class to another or at major residential entry points).

Effectiveness: Negligible

Figure 5: Speed Legend

ADVANTAGES	DISADVANTAGES
Inexpensive	Has not been shown to significantly reduce travel speeds
May help reinforce a change in speed limit	
Does not require much time for design	
Does not slow trucks and emergency vehicles	

1.6 ANGLED PARKING

Figure 6: Angled Parking

ANGLED PARKING can be used to reduce the width of a travel lane, which will likely reduce vehicle speeds. Angled parking may also increase the number of parking spaces available on a roadway. Angled parking changes the parking position from parallel to a 30°-60° angle.

Another option available is called Reverse Angled Parking. Like parallel parking, the driver enters the stall by stopping and backing up. In contrast to standard angled parking, the visibility with exiting reverse angle stalls is much improved. When exiting, the driver does not blindly back the rear half of the vehicle into the travel, rather they are able to pull forwards out of the parking stall.

Effectiveness: Negligible

ADVANTAGES	DISADVANTAGES
Reduces speeds by narrowing travel lanes	Does not allow for bike lanes
Increases the number of parking spaces	Ineffective on roadways with frequent driveways
Makes parking maneuvers easier than parallel parking	Potential safety concerns when backing out
Favored by businesses and multi-family residences	

2.0 VOLUME CONTROL MEASURES

VOLUME CONTROL MEASURES reduce the quantity of vehicles that use the roadway. They use barriers to restrict one or more movements at an intersection. Their primary purpose is to divert traffic away from the trouble area thus reducing cut-through traffic. Typical volume control measures are full street closures, half street closures, diagonal diverters, median barriers, and forced turn islands. Volume Control Measures are typically applied only after other measures have failed or been determined inappropriate. Pedestrian and bicycle traffic can usually be accommodated. Volume Control Measures are often used in sets to make travel through neighborhoods more circuitous, and are typically staggered internally in a neighborhood, which leaves through movement possible but less attractive than alternative (external) routes. Volume Control Measures have also been used as a crime prevention tool.

2.1 FULL CLOSURE

FULL STREET CLOSURES are barriers are placed across a street to completely close the street to through-

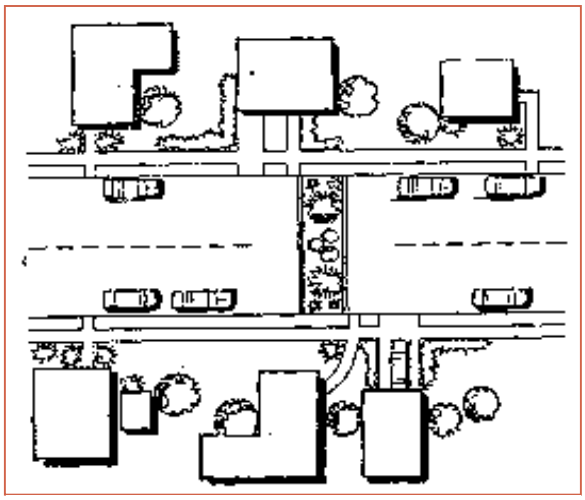


Figure 7: Full-Street Closure Diagram

Figure 8: Full-Street Closure

traffic, usually leaving only sidewalks open. Pedestrian and bicycle traffic are usually unrestricted. Typical barriers include: landscaped islands, walls, gates, side-by-side bollards, posts, etc. The barrier should be designed to eliminate vehicles (e.g. passenger cars) from entering.

Effectiveness: Average 44% decrease in traffic volume

ADVANTAGES	DISADVANTAGES
Able to maintain pedestrian and bicycle access	Cause indirect routes for local residents and emergency vehicles
Does not adversely affect access by children	May limit access to businesses
Very effective in reducing traffic volumes	May be expensive

2.2 HALF CLOSURE

HALF CLOSURES are barriers that block travel in one direction for a short distance on otherwise two-way

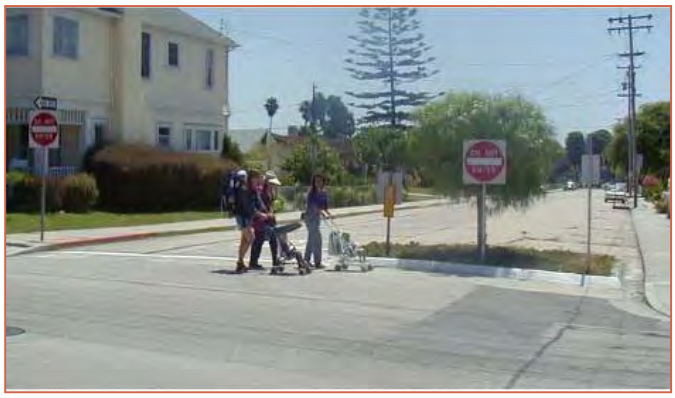


Figure 9: Half Closure

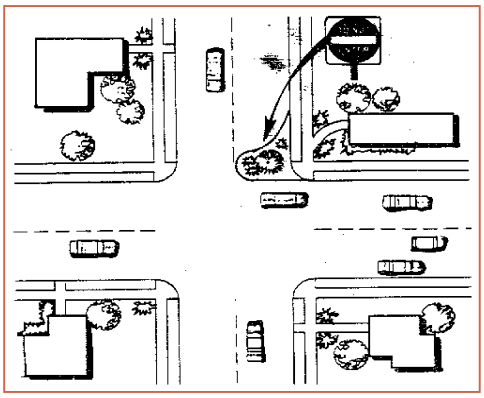


Figure 10: Half Closure Diagram

streets; they are sometimes called partial closures, entrance barriers, or one-way closure. Typical barriers include: landscaped islands, walls, gates, side-by-side bollards, posts, etc.

Effectiveness: Average 42% decrease in traffic volume

ADVANTAGES	DISADVANTAGES
Able to maintain pedestrian and bicycle access	Cause indirect routes for local residents
Does not affect emergency vehicles	May limit access to businesses
Effective in reducing traffic volumes	May be expensive
	Drivers can circumnavigate barrier

2.3 DIAGONAL DIVERTER

DIAGONAL DIVERTERS are barriers placed diagonally across an intersection, blocking through and/or turning movements; they are sometimes called full diverters or diagonal road closures. Typical barriers include: landscaped islands, walls, gates, side-by-side bollards, posts, etc.

Figure 12: Diagonal Diverter

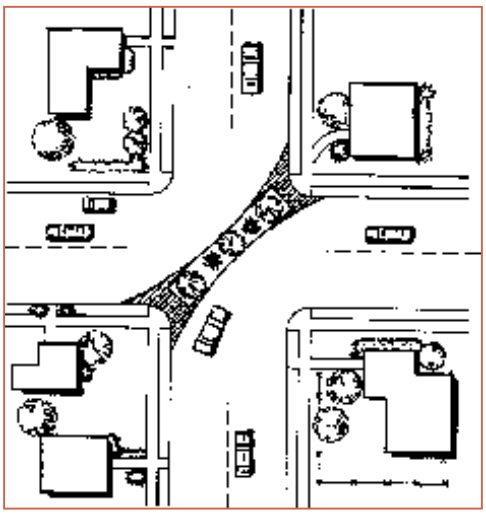


Figure 11: Diagonal Diverter Diagram

Effectiveness: Average 35% decrease in traffic volume

ADVANTAGES	DISADVANTAGES
Able to maintain pedestrian and bicycle access	Cause indirect routes for local residents and emergency vehicles
Effective in reducing traffic volumes	May be expensive
	May require construction of corner curbs

2.4 MEDIAN BARRIER

MEDIAN BARRIERS are raised islands in the centerline of a street and continuing through an intersection that block the left turn movement from all intersection approaches and the through movement at the cross street.

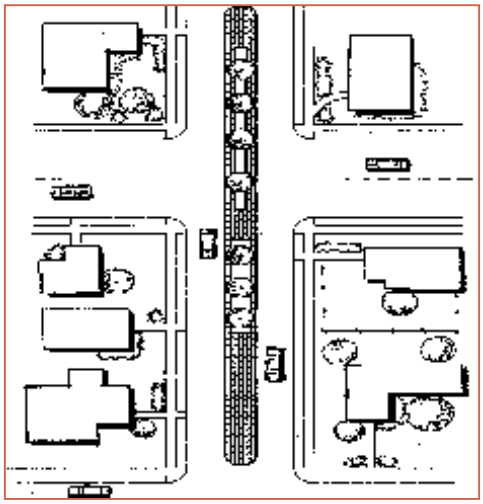


Figure 14: Median Barrier Diagram

Figure 13: Median Barrier

Effectiveness: Average 31% decrease in traffic volume

ADVANTAGES	DISADVANTAGES
Can improve safety at intersection by prohibiting dangerous turning movements	May require right-of-way acquisition
Can reduce traffic volumes on a cut-through route that crosses the major street	Limits turns to and from side street for local residents
	May limit access for emergency vehicles

2.5 FORCED TURN ISLAND

FORCED TURN ISLANDS are barrier islands that block certain movements on approaches to an intersection. Designs can vary significantly depending on the installation location. Forced turn islands are best when used on residential streets at intersections with larger streets. The larger street can accommodate the diverted and will cut down on the number of vehicles that might attempt to circumnavigate the measure. Occasionally additional center line barriers or channelization required to keep drivers from circumnavigating islands.

Figure 15: Forced Turn Island

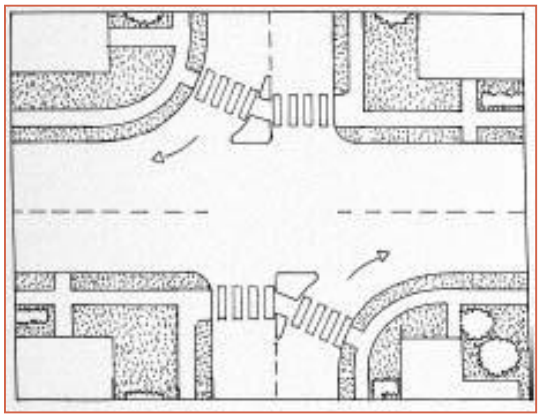


Figure 16: Forced Turn Island Diagram

Effectiveness: No Data

ADVANTAGES	DISADVANTAGES
Can improve safety at intersection by prohibiting dangerous turning movements	May simply divert traffic problem to a different street
	May limit access for local residents

3.0 VERTICAL SPEED CONTROL MEASURES

VERTICAL SPEED CONTROL MEASURES are usually raised segments of the roadway that vary in height and width. These are designed to force a vehicle to slow down in order to comfortably navigate them. Typical vertical speed control measures include speed humps, speed tables, raised crosswalks and raised intersections.

3.1 SPEED HUMP

SPEED HUMPS are raised rounded devices usually constructed from asphalt that is placed across the roadway. Speed humps are usually 3 to 4 inches in height and are parabolic or sinusoidal in shape. They extend fully across the roadway but are tapered on each side to allow unimpeded water flow in a curb and gutter system. The design speed for a speed hump is approximately 15-25 mph.

One modification to the speed hump is the speed lump. Speed lumps are essentially the same as speed humps except they do not extend the full width of the road. Speed lumps are split into three lumps with approximately one foot spacing between each one. They are specifically designed to accommodate the axle width of emergency vehicles.

Figure 18: Temporary Speed Lumps

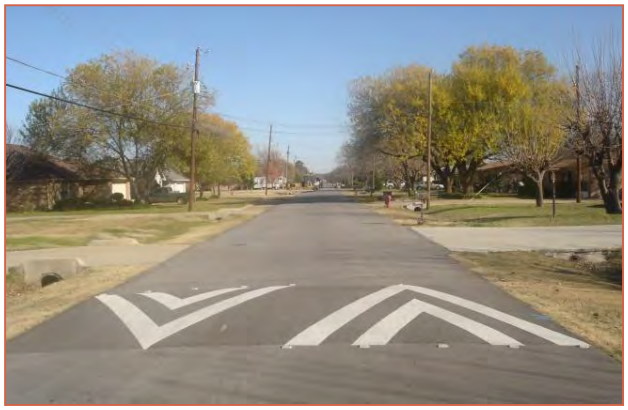


Figure 17: Speed Hump

Effectiveness: 22% reduction in 85th percentile travel speed. 11% reduction in accidents.

ADVANTAGES	DISADVANTAGES
Relatively Inexpensive	Causes a rough ride for drivers
Relatively easy for bicyclists to cross at taper if designed correctly	Slows and may damage emergency vehicles
Very effective at slowing travel speed	Increase noise and air pollution
	Poor aesthetics

3.2 SPEED TABLE

Figure 19: Temporary Speed Table

A **SPEED TABLE** is a raised flat-topped device, which is placed across the roadway. Speed tables are usually 3 to 4 inches in height. The flat-top is approximately 22 feet in the direction of travel and each ramp is 6 feet long. The flat-top is usually constructed of asphalt, concrete, brick, or other textured materials. The ramps are parabolic in shape and are usually made of asphalt. Speed tables extend fully across the roadway but are tapered on each side to allow unimpeded water flow in curb and gutter systems. The design speed for a speed table is approximately 30 mph, which is a safe and comfortable speed for passenger vehicles.

Effectiveness: 18% reduction in 85th percentile travel speed. 45% reduction in accidents.

ADVANTAGES	DISADVANTAGES
Relatively Inexpensive	Poor aesthetics if no textured material is used
Smoother on large vehicles than speed humps	Some textured material can be expensive
Effective at lowering travel speeds	Increased noise
	Slows and may damage emergency vehicles

3.3 RAISED CROSSWALK

RAISED CROSSWALKS are speed tables with crosswalk markings and signage. The only geometric difference between them is the raised crosswalk extends from curb to curb and the raised crosswalk may be longer and higher than a typical speed table.

Effectiveness: 18% reduction in 85th percentile travel speed. 45% reduction in accidents.

Figure 20: Raised Crosswalk

ADVANTAGES	DISADVANTAGES
Relatively Inexpensive	Poor aesthetics if no textured material is used
Smoother on large vehicles than speed humps	Some textured material can be expensive
Improves safety for pedestrians	Increased noise
Effective at lowering travel speed	Slows and may damage emergency vehicles
	May change or restrict drainage

3.4 RAISED INTERSECTION

RAISED INTERSECTIONS are like speed tables that cover an entire intersection. Ramps are present on all approaches. The flat-top area is usually a textured material. Raised intersections usually rise to sidewalk level or slightly below to provide an edge for the visually impaired. If there is a concern about loss of on-street parking, raised intersections are a more acceptable traffic calming measure.

Effectiveness:1% reduction in 85th percentile travel speed.

Figure 21: Raised Intersection

ADVANTAGES	DISADVANTAGES
Improve safety for pedestrians and vehicles	Some textured materials can be expensive
Can calm two streets at same time	Increased noise
	Less effective at reducing travel speeds
	May change or restrict drainage

4.0 HORIZONTAL SPEED CONTROL MEASURES

HORIZONTAL SPEED CONTROL MEASURES are segments of roadway where the straight line of travel has been altered to cause a vehicle to change direction and slow down. Typical horizontal speed control measures include chicanes, traffic circles, roundabouts, and lateral shifts.

4.1 TRAFFIC CIRCLE

A **TRAFFIC CIRCLE** is a raised island placed in an intersection which traffic circulates. Generally, traffic circles are circular in shape and have some type of landscaping in its center. Also, traffic circles have outer rings (truck aprons or lips) that are mountable so large vehicles can circumnavigate the small radius traffic circle.

Effectiveness: 11% reduction in 85th percentile travel speed. 29%-73% reduction in accidents.

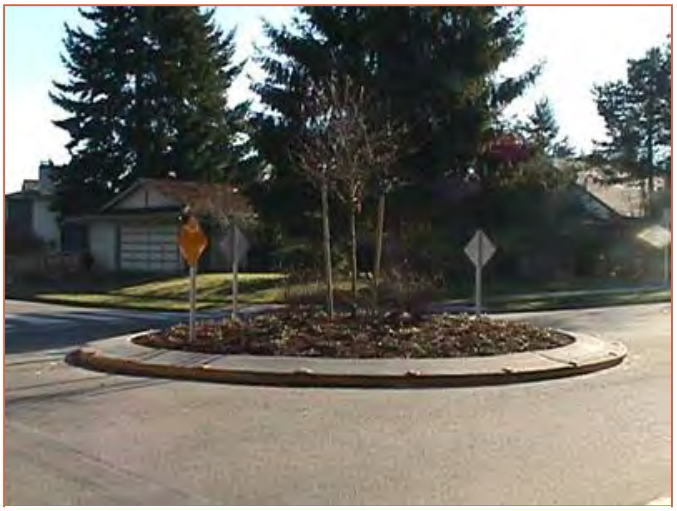


Figure 22: Traffic Circle

ADVANTAGES	DISADVANTAGES
Provides increased access to street from side street	Landscaping must be maintained
Breaks up sight-lines on straight street	Difficult for large vehicles (e.g. fire truck) to circumnavigate
Effective at lowering travel speeds	Potential loss of on-street parking
	May require modifications to curb, gutter and sidewalks

4.2 ROUNDABOUT

Figure 23: Roundabout

A **ROUNDABOUT** is similar to a traffic circle. It also has a raised island placed at an intersection with circulating traffic. However, there are differences. Roundabouts generally are much larger than traffic circles and thus need more land for construction. Roundabouts are used at intersections with higher traffic volumes and are designed for higher speeds. Roundabouts generally have raised splitter islands that direct traffic to the right, this helps form gaps in traffic. Roundabouts may also have flared entry lanes, which increase the capacity of the intersection. Roundabouts may also have bypass lanes to allow driver to travel through the area without entering the intersection at all.

Effectiveness: 29% reduction in accidents.

ADVANTAGES	DISADVANTAGES
Enhanced safety compared to traffic signal	Landscaping must be maintained
Minimizes queuing at approaches	May require major reconstruction and extensive right-of-way
May be effective at slowing travel speed	Potential loss of on-street parking
	Increase pedestrian distance and travel time on crosswalks

4.3 CHICANE

CHICANES are curb extensions or edge islands that alternate from one side of roadway to the other. These curb extensions or edge islands give the roadway more 'winding' attribute. Curb extensions or edge islands can be semi-circular, triangular or squared off. Trapezoidal islands have been found to be more effective at reducing speeds than semi-circular shapes. Curb extensions or edge islands should have a vertical element to draw attention to them. Trees and other landscape materials are an option. For low speed roadways or roadways that lack right-of-way, mountable curbs are also an option to allow larger vehicles to maneuver through the chicanes.

Figure 24: Chicane

Chicanes can also be formed by alternative on-street parking from one side of the roadway to the other. Parking bays can be created using striping or by installing landscaped islands at each end.

Effectiveness: No Data

ADVANTAGES	DISADVANTAGES
Discourages high speeds by forcing horizontal deflection	Landscaping must be maintained
Negotiable by large vehicles (e.g. fire truck)	Require major reconstruction and extensive right-of-way
	Potential loss of on-street parking

4.4 LATERAL SHIFT

Figure 25: Lateral Shift

A **LATERAL SHIFT** is like a chicane, however the roadway alignment only shifts once. It is only one curb extension or edge island rather than a series of alternating curb extensions or edge islands. Because the road alignment shifts only once, the crossing speed is approximately 5 mph higher than a series of chicanes. A higher speed means that lateral shifts can be placed on higher functional classification roadways (collectors and arterials) .

Typical lateral shifts incorporate a landscaped center island to separate opposing traffic. This prohibits drivers from veering into the opposite lane.

Effectiveness: No Data

ADVANTAGES	DISADVANTAGES
Can accommodate higher traffic volumes	Potential loss of on-street parking
Negotiable by large vehicles (e.g. fire truck)	May require additional design effort

5.0 NARROWING MEASURES

NARROWING MEASURES are short roadway segments that are narrower than the typical roadway section. Typical narrowing measures are neckdowns, chokers, and island narrowing.

5.1 NECKDOWN

NECKDOWNS are curb extensions at an intersection. These neckdowns reduce the roadway width from curb to curb and provide shorter pedestrian crossing distances and times. The short curb return radius also reduces the speeds of turning vehicles.

Effectiveness: 7% reduction in 85th percentile speed.

Figure 26: Neckdown

ADVANTAGES	DISADVANTAGES
Improves pedestrian comfort and safety	Effectiveness may be limited because there is no vertical or horizontal deflection
Through and left turn movements are negotiable by large vehicles (e.g. fire trucks)	Right turn not easily negotiable by large vehicles (e.g. fire trucks)
Can create protected on-street parking	Potential loss of on-street parking
May reduce speeds and traffic volumes	May bring bicycle lanes in closer proximity with travel lanes
	May change or restrict drainage

5.2 CHOKER

CHOKERS are curb extensions at mid-block that narrow the roadway by widening the sidewalk, planting strip, or centerline. A typical two-lane choker is 20 feet from curb to curb. One-lane chokers narrow the roadway to just one travel lane. This is similar to a one-lane bridge condition. The constricted length in the direction of travel varies but should be kept short enough not to block the driveways or accesses.

Effectiveness: 7% reduction in 85th percentile speed.

Figure 27: Choker

ADVANTAGES	DISADVANTAGES
Negotiable by large vehicles (e.g. fire trucks)	Effectiveness may be limited because there is no vertical or horizontal deflection
May reduce travel speeds and volumes	May bring bicycle lanes in closer proximity with travel lanes
Can have positive aesthetic value	Potential loss of on-street parking
	One-lane choker can only be used on extremely low volume roadways without causing safety concerns or traffic congestion
	May limit driveway access

5.3 CENTER ISLAND

CENTER ISLANDS are raised barriers in the center of the roadway that narrow the travel lanes. The center island should be large enough to draw attention (e.g. 6 feet wide by 20 feet long). The center island can also be offset to the left from the perspective of approaching traffic. They are often landscaped and can be used as refuge for pedestrians crossing the roadway. Center islands create intermittent left turn areas rather than a continuous median. Center islands placed at intersections or entrances to neighborhoods are often called gateways.

Effectiveness: 7% reduction in 85th percentile speed.

Figure 28: Center Island

ADVANTAGES	DISADVANTAGES
Increases pedestrian safety	Effectiveness may be limited because there is no vertical or horizontal deflection
May reduce travel speeds and volumes	Potential loss of on-street parking
Can have positive aesthetic value	If center island is too long, channelized traffic may increase travel speed
	Plants and irrigation must be kept to a minimum due to pavement deterioration from water runoff

6.0 APPROPRIATENESS OF TRAFFIC CALMING MEASURES

After identifying and characterizing the traffic problem, one can select the appropriate traffic calming measure to be implemented. The major types of traffic problems are:

- Speed – vehicle speeds are too high.
- Traffic Volume – vehicle usage levels are too high and are affecting level of service.
- Safety – vehicles have excessive level of risk (e.g. accident history). Pedestrians and bicyclists are at unnecessary risk due to vehicles.
- Pollution – vehicles cause excessive levels of noise, vibration, and air pollution.

Besides the traffic problem types, there are other issues such as location and traffic constraints that can be investigated. The following **TABLE 1** and **TABLE 2** present each traffic calming measure and its appropriateness versus problem type, location type and traffic constraints. The appropriateness is an assessment derived from the literature search of the state of the industry and results from other agencies.

Table 1: Traffic Calming Measures versus Traffic Problem Type

Traffic Calming Measure	Traffic Problem Type			
	Speed	Traffic Volume	Safety	Pollution
1.0 Non-Physical				
1.1 Speed Enforcement	🟢	🟠	🔵	🔵
1.2 Lane Striping	🟢	🟠	🟠	🟠
1.3 Signage	🟢	🟠	🟠	🟠
1.4 Speed Legend	🟢	🟠	🟠	🟠
1.5 Raised Pavement Marker	🟠	🟠	🟢	🟠
1.6 Angled Parking	🟢	🔵	🟠	🟠
2.0 Volume Control				
2.1 Full Closure	🟢	🟢	🟠	🟠
2.2 Half Closure	🟢	🟢	🟠	🟠
2.3 Diagonal Diverter	🟢	🟢	🟠	🟠
2.4 Median Barrier	🟠	🟢	🔵	🟠
2.5 Forced Turn Island	🟠	🟢	🔵	🟠
3.0 Vertical Speed Control				
3.1 Speed Hump	🟢	🟢	🔵	🔴
3.2 Speed Table	🟢	🔵	🔵	🔴
3.3 Raised Crosswalk	🟢	🔵	🔵	🔴
3.4 Raised Intersection	🟢	🔵	🔵	🔴
4.0 Horizontal Speed Control				
4.1 Traffic Circle	🟢	🔵	🟢	🟠
4.2 Roundabout	🔵	🔵	🟢	🟢
4.3 Chicane	🟢	🔵	🟠	🟠
4.4 Lateral Shift	🔵	🔵	🟠	🟠
5.0 Narrowing				
5.1 Neckdown	🟢	🔵	🟢	🟠
5.2 Choker	🟢	🔵	🔵	🟠
5.3 Center Island	🟢	🔵	🟢	🟠

Legend:

🟢 Strongly Appropriate; 🔵 Moderately Appropriate; 🟠 Moderately Inappropriate; 🔴 Inappropriate

Table 2: Traffic Calming Measure versus Location Type

Traffic Calming Measure	Traffic Problem Type			
	Residential		Non-Residential	
	Mid-Block	Intersection	Mid-Block	Intersection
1.0 Non-Physical				
1.1 Speed Enforcement	●	●	●	●
1.2 Lane Striping	●	●	●	●
1.3 Signage	●	●	●	●
1.4 Speed Legend	●	●	●	●
1.5 Raised Pavement Marker	●	●	●	●
1.6 Angled Parking	●	●	●	●
2.0 Volume Control				
2.1 Full Closure	●	●	●	●
2.2 Half Closure	●	●	●	●
2.3 Diagonal Diverter	●	●	●	●
2.4 Median Barrier	●	●	●	●
2.5 Forced Turn Island	●	●	●	●
3.0 Vertical Speed Control				
3.1 Speed Hump	●	●	●	●
3.2 Speed Table	●	●	●	●
3.3 Raised Crosswalk	●	●	●	●
3.4 Raised Intersection	●	●	●	●
4.0 Horizontal Speed Control				
4.1 Traffic Circle	●	●	●	●
4.2 Roundabout	●	●	●	●
4.3 Chicane	●	●	●	●
4.4 Lateral Shift	●	●	●	●
5.0 Narrowing				
5.1 Neckdown	●	●	●	●
5.2 Choker	●	●	●	●
5.3 Center Island	●	●	●	●

Legend:

● Applicable; ● Applicable in Some Cases; ● Not Applicable

7.0 GENERAL DESIGN PRINCIPLES

The following are general design principles that should be considered before and after traffic calming measure implementation.

7.1 DATA COLLECTION

One of the initial steps that should be considered prior to traffic calming measure implementation is data collection. The following data items can be collected:

1. Twenty-four (24) hour directional approach volumes for each leg of an intersection should be obtained to identify the heaviest eight hours.
2. Twenty-four (24) hour directional volumes for the roadway should be obtained to identify the heaviest eight hours.
3. Percentage of large trucks that would be using the roadway or intersection.
4. Posted speeds for all roadways.
5. 85th percentile speed for all intersection approaches and roadways.
6. Miscellaneous data, such as existing roadway geometry, drainage information, area population, land uses, distances to intersections, and intersection control treatments.
7. Bicycle and pedestrian counts for intersections and midblock locations.
8. Detailed accident data to analyze the frequency and types of collisions occurring at intersections or along roadways.
9. Community considerations should be investigated, including the need for parking, the landscaping character of the area and existence of other existing traffic calming measures.
10. Transit routes and frequencies in the study area.

7.2 APPLICATION GUIDELINES

Criteria that should be considered are listed below for the different physical traffic calming measures.

7.2.1 VOLUME CONTROL

The following criteria should be considered when installing volume control measures:

1. Roadway segments with daily traffic volumes less than 5,000 vehicles per day.
2. Intersections with only one lane per approach.
3. 25% of traffic is non-local traffic.

7.2.2 VERTICAL SPEED CONTROL

The following criteria should be considered when installing vertical speed control measures:

1. Daily traffic volume less than 7,500 vehicles per day.

2. Speed humps should be considered if the daily traffic volume is less than 4,000 vehicles per day.
3. Posted speed limit is 25 mph or less.
4. Approach or street grades of less than 5%.

7.2.3 HORIZONTAL SPEED CONTROL

The following criteria should be considered when installing horizontal speed control measures:

1. All roadway functional classes.
2. Traffic circles and chicanes should only be considered if the daily entering traffic volume is less than 5,000 vehicles per day.
3. Traffic circles should be considered on intersections where there is one lane per approach.
4. Low volumes of buses and trucks (less than 2%).
5. Posted speed limit of 25 mph or less.
6. Roundabouts should only be considered where the grade on the approach streets is less than 5%.

7.2.4 NARROWING CONTROL

The following criteria should be considered when installing narrowing control measures:

1. All roadway functional classes.
2. One lane chokers should only be considered if the daily entering traffic volume is less than 3,000 vehicles per day.
3. Posted speed limit of 25 mph or less.
4. Bicycle and pedestrian traffic should be accommodated in design.

7.2.5 OTHER CONSIDERATIONS

The following are other considerations that are applicable to all traffic calming measures:

1. Community sentiment.
2. Number and types of accidents.
3. Presence of pedestrian crosswalks.
4. Presence of curb and gutter.
5. Drainage.
6. Presence of parking.
7. Location within roadway network (e.g., minimum distance from other intersections).
8. Emergency vehicles, bus routes, snow plowing routes.
9. Previously attempted traffic calming measures (e.g., targeted speed enforcement, painted speed legends etc.).

7.3 GEOMETRY

The following are general criteria that should be considered when installing traffic calming measures.

1. Examine as-is geometry of roadway or intersection.
2. Check physical feasibility of installing traffic calming measure.
3. Determine desired crossing speed (i.e., design speed) at slow points of traffic calming measure.
    a. For vertical speed control measures (e.g., speed humps), the typical design speed is 25 to 30 mph. Speed versus vertical curvature relationships can be found in ITE's *Traffic Calming State of Practice.*
    b. For horizontal speed control measures, (e.g., traffic circles and roundabouts), the center islands and circular perimeters need to be determined. Speed versus horizontal curvature relationships can be found in AASHTO's *A Policy on Geometric Design of Highways and Streets.*

Specific geometric details are provided in **APPENDIX I: STANDARD DRAWINGS**

7.4 SAFETY

As part of installing any traffic calming measure, signing and pavement markings should be incorporated as well. Agencies use the *Manual on Uniform Traffic Control Devices* (MUTCD) as general guidance; however, the MUTCD is not specific on any traffic calming measure.

1. Signage and pavement markings shall be designed using the latest *Manual on Uniform Traffic Control Devices* (MUTCD) as guidance. The following items should be considered:
    - Warning signs need not be used where hazards are self-evident.
    - Signs must be legible, which requires high visibility, lettering or symbols of adequate size and short legends for quick comprehension.
    - Sign lettering must be in upper-case letters of the type approved by the City and FHWA.
    - Signs must be reflectorized or illuminated to show the same shape and color by day and night.
    - Signs are ordinarily placed on the right-hand side of the road, where the driver is looking for them.
    - Signs are ordinarily mounted separately, except where one sign supplements another, as advisory speed plates supplement warning signs.
    - Before any street is opened to traffic, all hazardous conditions must be signed and marked.
    - Signs should be used conservatively.
    - Symbol signs are preferred to word signs when an appropriate symbol exists.
    - New symbols not readily recognizable should be accompanied by educational plaques.
    - Analogous signs shall be used for new situations similar to those for which standard signs already exist.
2. Signs should be limited to minimize confusion.

3. Signs should be placed in advance to warn drivers. Placement of advance warning signs should conform to guidance provided in the latest MUTCD.
4. Check sight distances by visiting sight before and after traffic calming measure installation.
5. Depending on the characteristics of the intersection, pedestrian crosswalk signs and pavement markings may be needed and should follow guidance provided in the latest MUTCD (*Section 3B.17* & *Section 2C.37).*
6. Depending on the characteristics of the intersection, bicycle lane signs and pavement markings may be needed and should follow guidance provided in the latest MUTCD.
7. If sidewalk ramps are needed, they should be constructed according the latest City standards and be ADA compliant.
8. Depending on the characteristics of the intersection, “no parking” signs may be needed as well as red painted curbs to properly mark the intersection.
9. Lighting should be installed to provide safe illumination. The following items should be considered:
    - Good illumination should be provided on the approach nose of the splitters islands, the conflict area where traffic enters the circulating stream and places where traffic streams separate at points of exits.
    - If applicable, pedestrian crossing areas should be illuminated.

APPENDIX I: STANDARD DRAWINGS

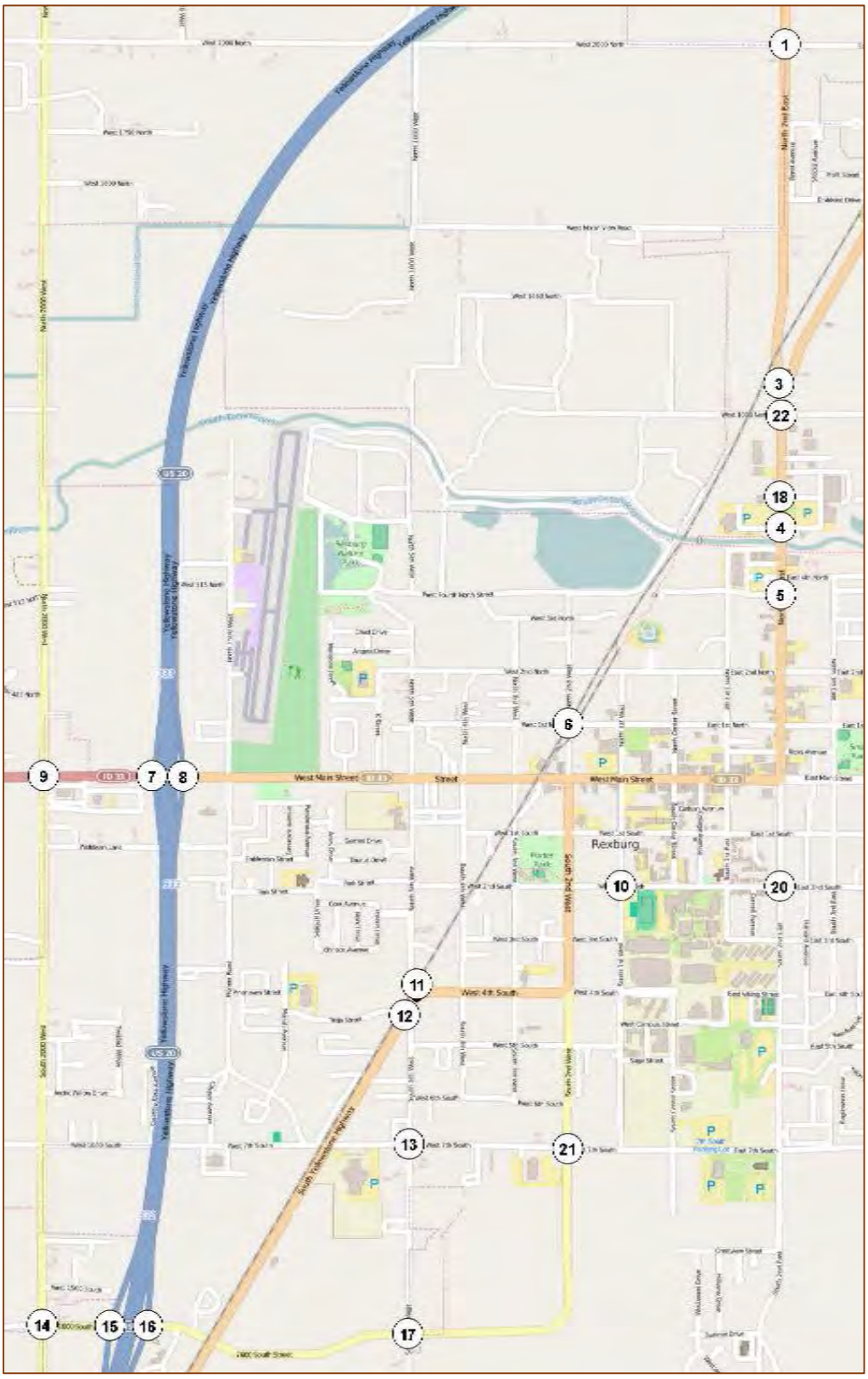
Introduction

As part of the Madison County Transportation Master Plan Update, the City of Rexburg requested that several intersections be analyzed to determine what if any improvements could be made to improve traffic operations and safety. The intersections studied are listed below in **Table 1**. The intersections are also shown in **Figure 1**.

Table 1 Study Intersections

Number	Major Street	Minor Street	Control Type
1	2nd East	Moody Road	STOP
2	Yellowstone Highway	Moody Road	STOP
3	2nd East	Yellowstone Highway	SIGNAL
4	2nd East	Teton River Village	SIGNAL
5	2nd East	Valley River Drive	STOP
6	2nd West	1st North	STOP
7	Main Street	US-20 West Ramp	STOP
8	Main Street	US-20 East Ramp	STOP
9	Main Street	12th West	SIGNAL
10	2nd South	1st West	STOP
11	4th South	5th West	STOP
12	Yellowstone Highway	Trejo Street	STOP
13	7th South	5th West	STOP
14	University Boulevard	12th West	STOP
15	University Boulevard	US-20 West Ramp	STOP
16	University Boulevard	US-20 East Ramp	STOP
17	University Boulevard	5th West	STOP
18	2nd East	Walmart Main Entrance	SIGNAL
19	Main Street	5th West	STOP
20	2nd East	2nd South	STOP
21	7th South	2nd West	STOP
22	2nd East	7th North	STOP

Figure 1 Study Intersections



Analysis

Existing Conditions

Data were collected at each intersection regarding roadway geometry, PM peak hour traffic volumes, and overall traffic patterns. These data were used to determine any deficiencies which currently exist at the intersections. Geometric deficiencies were analyzed using best practices for intersection design, capacity deficiencies were identified using the HCM Level of Service methodology. Level of Service (LOS) is a term defined by the Federal Highway Administration (FHWA) to categorize 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. In this report, LOS C is the accepted minimum standard for the intersections. LOS is related to the length of time the average vehicle will have to wait at an intersection before being able to proceed. The LOS criteria for each intersection type is shown in **Table 2**.

Table 2 LOS Criteria

LOS	Signalized Delay (seconds/vehicle)	Stop Sign Delay (seconds/vehicle)
A	≤ 10	≤ 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

Capacity

The existing LOS for each failing intersection is shown below in **Table 3**. The intersections which are not experiencing capacity failure today are left out of this portion of the report. The existing problems in the City are confined to HWY-33 (Main Street, 2nd East, Yellowstone Highway) and the US-20 ramps. The 4 stop controlled intersections are experiencing excessive delays due to a lack of available gaps in the uncontrolled directions. This prohibits vehicles from safely making left turns from the minor street to the major street. For the 2 signalized intersections on 2nd East at Teton River Village and the Walmart main entrance, the problem is simply a signal timing issue where not enough time is allocated to the through movement and too much time is allowed for the side street and the signals are not coordinated.

Table 3 Existing LOS

Number	Major Street	Minor Street	Control Type	Existing LOS	Failing Approaches
4	2nd East	Teton River Village	SIGNAL	**E**	**NB/WB/SB**
5	2nd East	Valley River Drive	STOP	**F**	**EB/WB**
7	Main Street	US-20 West Ramp	STOP	**F**	**SB**
12	Yellowstone Highway	Trejo Street	STOP	**D**	**EB**
15	University Boulevard	US-20 West Ramp	STOP	**F**	**SB**
18	2nd East	Walmart Main	SIGNAL	**D**	**NB/EB**
19	Main Street	5th West	STOP	**F**	**ALL**

Proposed Capacity Solutions

The proposed solutions to mitigate the existing capacity deficiencies at the intersections are listed below:

4 – 2nd East and Teton River Village

- Time the signal to allow more green time for northbound and southbound traffic.
- Coordinate the signal with the Main Walmart entrance signal to the north.

5 – 2nd East and Valley River Drive

- Monitor operations after the signals north and south have been coordinated to determine if more gaps are created and conditions improve **OR**
- Install a traffic signal which is coordinated with the adjacent signals provided MUTCD warrants are met.

7 – Main Street and US-20 West Ramp

- Install a traffic signal.
- Install a traffic signal at the US-20 East Ramp for AM peak hour movements and coordination.

12 – Yellowstone Highway and Trejo Street

- Restrict left turn from the minor street (traffic volumes are not high enough to warrant a signal).

15 – University Boulevard and US-20 West Ramp

- Install a traffic signal.
- Install a traffic signal at the US-20 East Ramp for AM peak hour movements and coordination.

18 – 2nd East and Walmart Main Entrance

- Time the signal to allow more green time for northbound and southbound traffic.
- Coordinate the signal with the adjacent signals.

19 – Main Street and 5th West

- Signalize intersection provided MUTCD signal warrant is met.

Table 4 shows the expected level of service if the recommendations listed above are implemented.

Table 4 Mitigated Level of Service

Number	Major Street	Minor Street	Control Type	Existing LOS
4	2nd East	Teton River Village	SIGNAL	C
5	2nd East	Valley River Drive	**SIGNAL**	A
7	Main Street	US-20 West Ramp	**SIGNAL**	B
12	Yellowstone Highway	Trejo Street	STOP	B
15	University Boulevard	US-20 West Ramp	**SIGNAL**	B
18	2nd East	Walmart Main	SIGNAL	B
19	Main Street	5th West	**SIGNAL**	C

Geometry

Geometric deficiencies were identified at the following locations listed in **Table 5**. 2nd East and Moody road is an offset intersection, the minor streets do not line up. Yellowstone Highway and Moody Road is skewed below the maximum recommended skew of 60 degrees. The minor approach of 2nd West and 1st North, and 4th South and 5th West intersects the major approach on a curve. In addition, 4th South and 5th West is too closely spaced to the Yellowstone Highway and Trejo Street Intersection.

Table 5 Geometric Deficiencies

Number	Major Street	Minor Street	Geometric Deficiency
1	2nd East	Moody Road	Offset Roadways
2	Yellowstone Highway	Moody Road	Excessive Skew
6	2nd West	1st North	On Curve
11	4th South	5th West	On Curve/Spacing
12	Yellowstone Highway	Trejo Street	Spacing
20	2nd East	2nd South	Pedestrian Conflict
22	2nd East	7th North	Misaligned Lanes

Proposed Geometric Solutions

The proposed solutions to mitigate the existing geometric deficiencies at the intersections are listed below:

1 – 2nd East and Moody Road

- Realign the minor street approaches to remove offset.

2 – Yellowstone Highway and Moody Road

- Realign Moody Road to intersect Yellowstone Highway at 90 degrees.

6 – 2nd West and 1st North

- Close access from 2nd West to 1st North (minor impact to approximately 100 vehicles).

11 – 4th South and 5th West

- Restrict left turns from northbound 4th South to 5th West (96 vehicles displaced to 4th West).

12 – Yellowstone Highway and Trejo Street

- Close Trejo Street access and create new access at 5th South.

20 – 2nd East and 2nd South

- Install a HAWK signal to improve pedestrian safety provided warrants are met.

22 – 2nd East and 7th South

- Full reconstruction of the intersection to align the east and west approaches is recommended but is very impactful to the corner properties, especially on the northwest corner. In lieu of a full reconstruction the following minor changes could be incorporated.
- Restripe the westbound leg of the intersection approximately 8 feet to the south. This will help with the misalignment.
- Move the curb line on the north side of 1000 North (eastbound leg of the intersection) 5 feet to the North. This will allow the through movement from west to east to line up. The east to west movements will still be aligned.

Future Conditions (2040)

Traffic conditions were projected out to 2040 using the travel demand modelling performed in conjunction with the Transportation Master Plan. This analysis focuses on operational concerns as all geometry concerns that exist currently would remain in the future and no additional geometric deficiencies should be created. It was assumed that the capacity and geometric improvements outlined in the previous section were implemented prior to the future condition analysis. The most notable change is the 2nd East Couplet proposed in the TMP. This will ensure that all intersections on 2nd East operate at acceptable levels. These intersections are therefore not discussed further in this report.

Capacity

The expected future LOS for each failing intersection is shown below in **Table 6**. The intersections which are not expected to experience capacity failure are again left out of this portion of the report.

Table 6 Projected LOS

Number	Major Street	Minor Street	Control Type	Projected LOS	Failing Approaches
1	2nd East	Moody Road	STOP	**F**	**WB**

Number	Major Street	Minor Street	Control Type	Projected LOS	Failing Approaches
2	Yellowstone Highway	Moody Road	STOP	**F**	**EB/WB**
7	Main Street	US-20 West Ramp	**SIGNAL**	**F**	**SB/WB**
8	Main Street	US-20 East Ramp	**SIGNAL**	**D**	**NB**
9	Main Street	12th West	SIGNAL	**F**	**ALL**
13	7th South	5th West	STOP	**D**	**SB**
14	University Boulevard	12th West	STOP	**F**	**ALL**
15	University Boulevard	US-20 West Ramp	STOP	**F**	**SB/WB**
16	University Boulevard	US-20 East Ramp	STOP	**D**	**NB**
21	7th South	2nd West	STOP	**F**	**NB/SB**
22	2nd East	7th North	STOP	**F**	**EB**

Proposed Capacity Solutions

The proposed solutions to mitigate the existing capacity deficiencies at the intersections are listed below:

1 – 2nd East and Moody Road

- Signalized the intersection provided MUTCD warrants are met.

2 – Yellowstone Highway and Moody Road

- Install a roundabout large enough to accommodate heavy vehicles.

7&8 – Main Street and US-20 Interchange

- Upgrade to new interchange, e.g. Single Point Urban Interchange

9 – Main Street & 12th West

- Install protected dual left turns.

13 – 7th South and 5th West

- Install a roundabout.

14 – University Boulevard and 12th West

- Install a signal provided MUTCD warrants are met.

15&16 – University Boulevard and US-20 Interchange

- Upgrade to new interchange, e.g. Single Point Urban Interchange

17 – University Boulevard and 5th West

- Install a signal provided MUTCD warrants are met.

21 – 7th South and 2nd West

- Install a signal provided MUTCD warrants are met.

22 – 2nd East and 7th North

- As the 2nd East capacity alternative is constructed, this intersection is expected to become more manageable from a capacity standpoint. If a couplet is selected for 2nd East, this intersection will not need to be signalized. If 2nd East is widened as part of the alternative, 7th North will require a signal.

Table 7 shows the expected level of service if the recommendations listed above are implemented.

Table 7 Mitigated Level of Service

Number	Major Street	Minor Street	Control Type	Projected LOS
1	2nd East	Moody Road	**SIGNAL**	B
2	Yellowstone Highway	Moody Road	**ROUNDABOUT**	B
7&8	Main Street	US-20	**NEW INTERCHANGE (SPUI)**	C
9	Main Street	12th West	**SIGNAL w/ DUAL LEFTS**	C
13	7th South	5th West	**ROUNDABOUT**	A
14	University Boulevard	12th West	**SIGNAL**	C
15&16	University Boulevard	US-20	**NEW INTERCHANGE (SPUI)**	C
17	University Boulevard	5th West	**SIGNAL**	B
21	7th South	2nd West	**SIGNAL**	B
22	2nd East	7th South	**SIGNAL***	B

Summary

- The study intersections were analyzed during the PM peak hour, typically the busiest hour of the day.
- Each intersection was studied under existing conditions using count data collected as part of the TMP.
- Operational as well as geometric deficiencies were identified.
- Mitigations for failure conditions were provided under each scenario see **Table 8**.

Table 8 Intersection Summary

Number	Major Street	Minor Street	2015 Mitigation	2040 Mitigation
1	2nd East	Moody Road	Remove Offset	Signalize
2	Yellowstone Highway	Moody Road	Remove Skew	Roundabout
4	2nd East	Teton River Village	Signal Timing	
5	2nd East	Valley River Drive	Monitor/Signalize	
6	2nd West	1st North	Close Access	
7	Main Street	US-20 West Ramp	Signalize	New Interchange
8	Main Street	US-20 East Ramp	Signalize	New Interchange
9	Main Street	12th West		Dual Left Turns
11	4th South	5th West	Restrict Left Turns	
12	Yellowstone Highway	Trejo Street	Restrict Left Turns/Move Intersection	
13	7th South	5th West		Roundabout
14	University Boulevard	12th West		Signalize
15	University Boulevard	US-20 West Ramp	Signalize	New Interchange
16	University Boulevard	US-20 East Ramp	Signalize	New Interchange
17	University Boulevard	5th West		Roundabout
18	2nd East	Walmart Main Entrance	Signal Timing	
20	2nd East	2nd South	HAWK Signal	
21	7th South	2nd West		Signalize
22	2nd East	7th South		Signalize

Designated RS2477 Right of Ways
Madison County, Idaho

- Forest Service Road
- Forest Service Trail
- RS2477 Road found on the FS Inventory
- RS2477 Road Not found on the FS Inventory
- RS2477 Trail found on the FS Inventory
- RS2477 Trail Not found on the FS Inventory
- Perennial Stream
- Intermittent Stream

Madison County

Number	Name
1	Kelly Canyon Road
2	Kelly-Lymn Kiln
3	Morning Glory Mine Road
4	Wolverine Pass Trail
5	Sawmill Road
6	Trail
7	Mud Creek Trail
8	Wood's Canyon Trail
9	Hells Hole Trail
10	Coal Mine Trail
11	Coal Mine Road
12	Big Burns Trail
13	Little Burns Trail
14	Lymn Kiln Road
15	Windy Ridge Road
16	Jensen Creek Road
17	Jensen Creek Trail
18	Red Butte Road
19	Hilton Creek Road
20	Carlton Cutoff Horse Trail
21	Sheep Way Drive Trail
22	Sheep Creek Road
23	South Canyon Creek Road
24	Canyon Creek Trail
25	Hilton Creek Trail
26	Moody Swamp Road
27	Cow Camp Trail
28	Browning Creek Road
29	Pole Canyon Road
30	Mud Springs Road
31	Sawmill II Road
32	Clark Creek Road
33	Garner Creek Road
34	South Moody Road
35	Fish Creek/Moody Forks Rd.
36	Graham Hollow Road
37	Old Kirkham Hollow Road
38	Calamity Creek Trail
39	Lost Springs Road
40	Graham Springs Road

Teton County

Number	Name
2	South Pony Creek Road
3	Cold Springs Road
4	Pony Creek Old Road
5	Davis Springs Road
6	Crooked Creek Road
7	Milk Creek Trail
1	Wright Creek Road

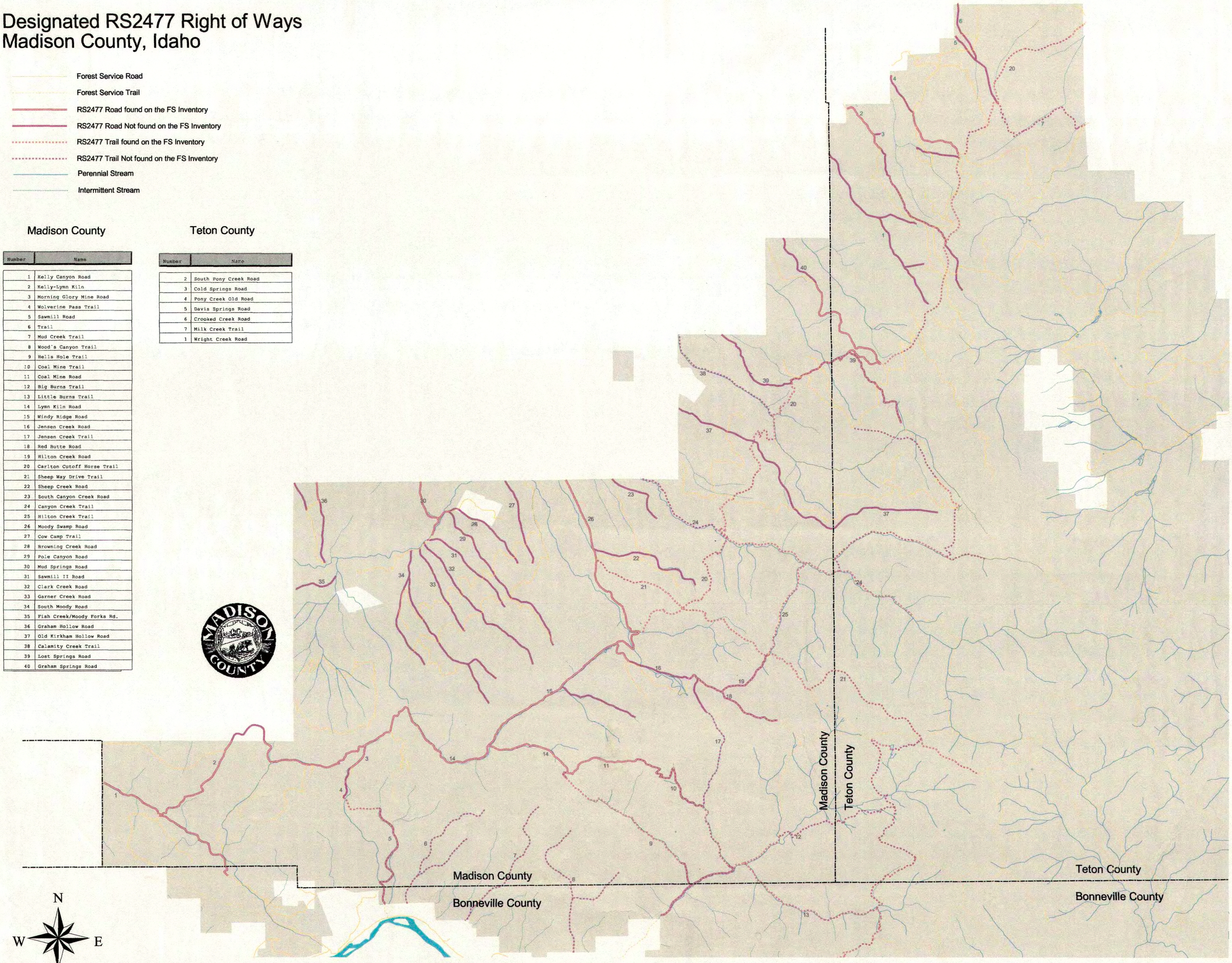


Table of Contents

39.03.42 - Rules Governing Highway Right-of-Way Encroachments on State Rights-of-Way

IDAPA 39
TITLE 03
CHAPTER 42

39.03.42 - RULES GOVERNING HIGHWAY RIGHT-OF-WAY ENCROACHMENTS ON STATE RIGHTS-OF-WAY

000. LEGAL AUTHORITY.
The Idaho Transportation Board adopts this rule under the authority of Sections 40-310, and 40-312, and per the requirements of Sections 40-311, 40-313, 49-202(19), (23) and (28), and 49-221, Idaho Code. (3-27-13)

001. TITLE AND SCOPE.

01. **Title**. This rule shall be known as IDAPA 39.03.42, "Rules Governing Highway Right-of-Way Encroachments on State Rights-of-Way," IDAPA 39, Title 03, Chapter 42. (3-30-01)

02. **Scope**. It is the purpose of this rule to establish standards and guidelines for encroachments on state highway rights-of-way. (3-30-01)

002. WRITTEN INTERPRETATIONS.
In accordance with Section 67-5201(19)(b)(iv), Idaho Code, the Idaho Transportation Department has written statements which pertain to the interpretation of the rules of this chapter, or to the documentation of compliance with the rules of this chapter. The document is available for public inspection and copying at cost at the Office of the Traffic Engineer, 3311 West State Street, P. O. Box 7129, Boise, ID 83707-1129. (3-30-01)

003. ADMINISTRATIVE APPEAL.

01. **Commencement**. Applicants may appeal denied permits, or permits granted with conditions that the applicant believes to be unreasonable, in writing to the Department's District Engineer within thirty (30) days of receipt of written notification of the denial or grant of the permit. The appeal process commences on the date the Department's District office receives written notification of appeal from the applicant. (3-27-13)

a. Idaho Transportation Department, District One
600 West Prairie
Coeur d'Alene, ID 83814-8764 (3-30-01)

b. Idaho Transportation Department, District Two
2600 North and South Highway
Lewiston, ID 83501-0837 (3-30-01)

c. Idaho Transportation Department, District Three
8150 Chinden Blvd
Boise, ID 83714-2028 (3-30-01)

d. Idaho Transportation Department, District Four
216 Date Street
Shoshone, ID 83352-0820 (3-30-01)

e. Idaho Transportation Department, District Five
5151 South 5th
Pocatello, ID 83205-4700 (3-30-01)

f. Idaho Transportation Department, District Six
206 North Yellowstone
Rigby, ID 83442-0097 (3-30-01)

02. **Process Hold**. If at any time during the appeal process it is determined that insufficient documentation was submitted with the appeal, all parties shall be notified that the appeal process is placed on hold

until the necessary documentation is supplied. (3-30-01)

03. Appeal Process. The District will have thirty (30) working days to review the appeal. If the District Engineer does not rule on the appeal within the thirty (30) day period, the denial of the permit shall be deemed overturned and the permit shall be issued, or the contested permit conditions stricken. Notice of the decision of the District Engineer shall be issued by certified mail within seven (7) days of the ruling. Otherwise, if the District Engineer does not overturn the original denial or strike the contested provisions from the permit, upon receipt of a written request from the applicant within twenty-one (21) days of the date of the denial of the appeal, it shall be forwarded to the Department's legal section to initiate an appeal to the Idaho Transportation Board. The appeal will be processed in accordance with the Idaho Administrative Procedure Act and IDAPA 04.11.01, "Idaho Rules of Administrative Procedure of the Attorney General." (3-27-13)

004. INCORPORATION BY REFERENCE.
There are no documents incorporated by reference in this chapter. (3-27-13)

005. OFFICE – OFFICE HOURS – MAILING ADDRESS AND STREET ADDRESS – PHONE NUMBERS.

01. Street and Mailing Address. The Idaho Transportation Department maintains a central office in Boise at 3311 W. State Street with a mailing address of P O Box 7129, Boise ID 83707-1129. (3-27-13)

02. Office Hours. Daily office hours are 8 a.m. to 5 p.m., Mountain Time, except Saturday, Sunday and state holidays. (3-27-13)

03. Telephone and FAX Numbers. The central office may be contacted during office hours by phone at 208-334-8000 or by fax at 208-334-3858. (3-27-13)

006. PUBLIC RECORDS ACT Compliance.
All records associated with this chapter are subject to and in compliance with the Idaho Public Records Act, as set forth in Sections 9-337 through 9-350, Idaho Code. (3-27-13)

007. – 009. (RESERVED)

010. DEFINITIONS.

01. Shall/Will, Should, May. The use of "shall" or "will," "should," and "may" denote the following conditions: (3-30-01)

a. Shall/Will. A mandatory condition or requirement. (3-27-13)

b. Should. An advisory or recommended condition, or usage, but not mandatory. (3-27-13)

c. May. A permissive condition. No requirement is mandated. (3-27-13)

02. Access. The ability to enter or leave a public highway or highway right-of-way from an abutting private property or another public highway or public highway right-of-way. (3-27-13)

03. ADT. Average Daily Traffic. The total volume of traffic during a given time period in whole days greater than one (1) day and less than one (1) year divided by the number of days within that time period. (3-30-01)

04. Applicant. Agency, owner, or an authorized representative of the property owner, or utility facility applying for a permit to encroach within state highway rights-of-way. (3-27-13)

05. Appraisal. A written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of monetary value for a specific property based on a specific use, as of a specific date, supported by the presentation and analysis of relevant market information. (3-27-13)

06. **Approach**. A connection between the outside edge of the shoulder or curb line and the abutting property at the highway right-of-way line, intended to provide access to and from said highway and the abutting property. An approach may include a driveway, alley, street, road or highway. (3-30-01)

07. **Approach Flare**. The approved radius connecting the edge of the approach to the edge of the highway. The term "approach radius" is interchangeable with "approach flare." (3-30-01)

08. **Approach Transition**. The area from the edge of an urban approach sloped to match the curb and border area elevations. The term "approach apron" is interchangeable with "approach transition." (3-30-01)

09. **Approach Skew Angle**. For all approaches, the angle of deflection between a line perpendicular to the highway centerline and the approach centerline. (3-30-01)

10. **Approach Width**. The distance between the outside edges of the approach measured perpendicular to the approach centerline along the curb line or the edge of pavement, excluding flares, transitions and radii. (3-30-01)

11. **Authorized Representative**. Any applicant, other than the property owner, having notarized written verification signed by the owner giving authorization to act on the owner's behalf. (3-27-13)

12. **Auxiliary Lane**. The portion of the roadway adjoining the traveled way used for speed change, turning, storage for turning, weaving, truck climbing, and other purposes supplementary to through-traffic movement. (3-30-01)

13. **Board**. The Idaho Transportation Board, as established by Title 40, Chapter 3, Idaho Code. (3-30-01)

14. **Border Area**. The area between the outside edge of the shoulder or back of curb and the highway right-of way line. (3-30-01)

15. **Boulevard Approach**. A two-way approach intended for high ADT volumes of large commercial vehicles, having a maximum width of eighty-four (84) feet in which opposing traffic is separated by a raised four (4) foot wide non-traversible median. (3-27-13)

16. **Capacity**. The maximum number of vehicles that can reasonably be expected to travel along a lane of a highway during a given time period under prevailing roadway and traffic conditions. (3-30-01)

17. **Clear Zone**. An area outside the traveled way, auxiliary lanes and shoulders that is constructed and maintained as free from physical obstructions as practical, for use as a recovery area by errant vehicles. (3-30-01)

18. **Commercial Approach**. An approach serving a business or businesses. (3-30-01)

19. **Conduit**. A tube or trough for receiving and protecting utility-related structures including, but not limited to, electrical wires, fiber optic cable, and fluids. (3-27-13)

20. **Construction**. The building of new facilities or the modifification of existing facilities. Does not include maintenance. (3-27-13)

21. **Corner Clearance**. The distance along the curb line or outside edge of the shoulder measured from the beginning or end of the intersecting roadway flare to the nearest edge of the adjacent approach, excluding flares or transitions. (3-30-01)

22. **Department**. The Idaho Transportation Department (ITD). (3-30-01)

23. **Distance Between Approaches**. The distance measured along the curb line or outside edge of the shoulder between the nearest edges of adjacent approaches, excluding the flares, transitions or radii. (3-30-01)

24. District. An administrative and maintenance subdivision of the Idaho Transportation Department encompassing a particular geographical region of the state of Idaho, per Section 40-303, Idaho Code. (3-27-13)

25. District Engineer. The administrator of an Idaho Transportation Department administrative district, or a delegated representative. (3-30-01)

26. District Route. A state highway that accommodates trips of limited mobility and provides high levels of access to communities, to include distributing trips to geographical areas and serving major commercial and industrial districts. District routes may provide intra-community continuity and connection, to include local bus routes, but should not be used to provide direct access to residential lots. (3-27-13)

27. Economic Opportunity. Facilitate the increase in Idaho Gross Domestic Product, job creation, increased business, revenue; improve the efficiency in which goods are transported; and reduction in travel times for commuting, commerce, recreation, and tourism. (3-27-13)

28. Emergency. Any unscheduled work required to correct or prevent a hazardous situation that poses an imminent threat to life or property. (3-30-01)

29. Encroachment. Any authorized or unauthorized use of highway right-of-way or the air space immediately above the highway right-of-way. (3-27-13)

30. Encroachment Permit. Written authorization from the Department to use state highway right-of-way or the airspace above it under the conditions set forth in the permit. (3-27-13)

31. Expressway. A segment of a highway designated by the Idaho Transportation Board for use as a through highway, with partially controlled access, accessible only at locations specified by the Idaho Transportation Department, and characterized by medians, limited at-grade intersections, and high speeds. An existing segment of state highway may only be designated as an expressway if payment is made to adjacent property owners for the restriction of existing access rights. (3-27-13)

32. Farming. Any activity associated with crops, including seed. (3-30-01)

33. FHWA. The Federal Highway Administration, a division of the U. S. Department of Transportation. (3-30-01)

34. Fiber Optic Cable. A cable containing one (1) or more glass or plastic fibers that has the ability to transmit light along its axis. (3-30-01)

35. Field Approach. An approach that serves only non-residential agricultural property, including farmyards. (3-30-01)

36. Flare Tangent Distance. The distance of the approach radius measured along the edge of pavement. (3-30-01)

37. Freeway. A segment of a highway designated by the Idaho Transportation Board for use as a through highway, with fully controlled access, accessible only by interchanges (ramps), and characterized by medians, grade separations at cross roads, and ramp connections for entrance to and exit from the traveled way. An existing non-Interstate segment of state highway may only be designated as a freeway if payment is made to adjacent property owners for the restriction of existing access rights. (3-27-13)

38. Frontage Road. A road auxiliary to and located to the side of the highway for service to abutting properties and adjacent areas for the purpose of controlling access to the highway. (3-30-01)

39. Frontage Boundary Line. A line perpendicular to the highway centerline that begins at the point of intersection of the abutting property line and the highway right-of-way line. (3-30-01)

40. Full Control of Access. Any section of a highway system where access is prohibited except for interchange connections. (3-30-01)

41. Government Agency. As used in these rules, the term includes federal, state, county, city, or local highway jurisdictions. (3-27-13)

42. Highway Right-of-Way. Property used for highway purposes, open to the public, and under the jurisdiction of a government agency. Such property may be owned by the government agency in fee simple or be subject to an easement for highway purposes. (3-27-13)

43. Imminent Threat. Includes major traffic control deficiencies or safety situations that are likely to result in serious injury or loss of life. (3-30-01)

44. Interstate Highway. As identified by federal code, a segment of the Dwight D. Eisenhower National System of Interstate and Defense Highways consisting of an FHWA-approved freeway. (3-27-13)

45. Joint-Use Approach. An approach constructed at a common boundary between adjacent properties that abut the highway. A joint-use approach is equally owned and shared as common access by both property owners. (3-30-01)

46. Landscaping. Any action taken to change the features or appearance of the highway right-of-way or abutting property with plants, soil, rock and related material. (3-30-01)

47. Loaded Payroll Rate. A rate of compensation that includes hourly wages plus the associated employer overhead and benefit costs. (3-27-13)

48. Local Highway Agency. Any city, county, highway district or other local board or body having authority to enact regulations, resolutions, or ordinances relating to traffic on the highways, highway rights-of-way and streets within their respective jurisdiction. (3-30-01)

49. Local Road. A city, county or highway district highway whose primary function is to provide access to adjacent properties. (3-30-01)

50. Median. The portion of a divided highway or approach that separates opposing traveled ways. Medians may be raised, flush, or depressed relative to the roadway surface, and may be landscaped or paved. (3-30-01)

51. Median Opening. A paved area bisecting opposite directions of a divided roadway that is designed to permit traffic to cross at least one (1) direction of travel. (3-30-01)

52. MUTCD. The Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, as adopted by the Idaho Transportation Board in accordance with Section 49-201(3), Idaho Code. A manual written by the Federal Highway Administration that sets national minimum standards for signing, striping, and traffic control devices. (3-30-01)

53. Non-Standard Approach. Any approach that does not meet Department standards. (3-30-01)

54. Performance Bond. A statutory bond, issued by a surety company authorized to do business in the state of Idaho, that guarantees performance of work in accordance with permit requirements. (3-30-01)

55. Permittee. Person or persons, utility facilities, and other agencies granted permission to encroach within the highway right-of-way for authorized purposes other than normal travel. (3-30-01)

56. Private Approach. Every privately owned traveled way that is used for ingress to and egress from the highway right-of-way and an abutting property. (3-30-01)

57. Property Line Clearance. The distance measured along the curb line or outside shoulder edge

from the frontage boundary line to the nearest edge of the approach width, excluding flares, transitions and radii. (3-30-01)

58. Public Approach. Any approach that serves the public without restriction and is maintained by a government agency. (3-27-13)

59. Public Highway. Any highway open to public use and maintained by a government agency. (3-27-13)

60. Public Highway Agency. The state transportation department, any city, county, highway district, or any other state agency, or any federal or Indian reservation, which has jurisdiction over public highway systems and highway rights-of-way. (3-30-01)

61. Regional Route. A state highway that accommodates trips of moderate length with a lower level of mobility than a Statewide Route and that provides moderate access to communities, to include providing mobility for people and freight through and between communities and major activity centers of the region. (3-27-13)

62. Roadside. Any area beyond the main traveled way that may or may not be within the highway right-of-way. (3-30-01)

63. Roadway. That portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of sidewalks, shoulders, berms and other portions of the rights-of-way. (3-30-01)

64. Rural. State highway rights-of-way and right-of-way corridors outside the limits of Urban and Transitional areas. (3-27-13)

65. Setback. The horizontal distance between the highway right-of-way line and permanent fixtures, including but not limited to gas pump islands, signs, display stands and buildings, measured at right angles to the highway centerline. (3-30-01)

66. Shoulder. The portion of the right-of-way contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of the sub-base, base, and surface courses. (3-27-13)

67. Signal Spacing. The distance between signalized intersections measured from the center of intersection to the center of intersection. (3-30-01)

68. Slope. Slope is expressed as a non-dimensional ratio between vertical and horizontal distance. For side slopes, the vertical component is shown first, then the horizontal. (3-30-01)

69. Speed. The rate of vehicular travel as measured in miles per hour. All speeds used in this document shall be the eighty-fifth percentile speed as determined by an engineering study. (3-27-13)

70. State Highway System. The principal highway corridors in the state, including connections and extensions through cities and roads to every county seat in the state, as approved by the Idaho Transportation Board and officially designated as a state highway. (3-30-01)

71. Statewide Route. A state highway that provides the highest level of mobility and speeds over long distances. Access from a statewide route to communities and major activity centers should be by way of public roads with spacing that supports mobility and speed. (3-27-13)

72. Stopping Sight Distance. The sum of: (3-27-13)

a. The brake reaction distance, which is the distance traveled by the vehicle from the instant the driver perceives an object necessitating a stop, to the moment the brakes are applied; and (3-27-13)

b. The braking distance, which is the distance the vehicle travels from the moment the brakes are applied until the vehicle comes to a complete stop. (3-27-13)

73. **Structure**. Includes, but is not limited to, bridges, culverts, siphons, headwalls, retaining walls, buildings and any incidental construction not otherwise defined herein. (3-27-13)

74. **Subdivision**. A division of real property into three (3) or more separately platted parcels. (3-30-01)

75. **Temporary Encroachment**. Any encroachment that is not approved as a permanent placement within the highway right-of-way. (3-30-01)

76. **Traffic**. Pedestrians, bicycles, animals, vehicles, streetcars, buses and other conveyances, either singly or together, that use the highway right-of-way for the purpose of travel. (3-30-01)

77. **Traffic Control Device**. Any marking or device whether manually, electronically, or mechanically operated, placed or erected by an authority of a government agency or official having jurisdiction, for the purpose of regulating, warning or guiding traffic. (3-27-13)

78. **Traffic Impact Study**. A comprehensive analysis of the anticipated transportation network conditions with and without an applicant's proposed new or modified access, including an analysis of mitigation measures. (3-27-13)

79. **Transitional**. State highway rights-of-way and right-of-way corridors within the area of city impact of any incorporated city, or areas designated as an area of city impact by city or county comprehensive plans. (3-27-13)

80. **Traveled Way**. The portion of the roadway for the movement of vehicles, exclusive of shoulders. (3-30-01)

81. **Travel Lane**. That portion of the traveled way designated for use by a single line of vehicles. (3-30-01)

82. **Trenching**. A method in which access is gained by excavation from ground level to the required underground depth for the installation, maintenance, removal, or inspection of a cable, casing, conduit or pipe. The excavation is then back filled with approved material and the surface is then returned to a condition specified by the Department. (3-27-13)

83. **Turnouts**. Roadside areas immediately adjacent to highways which may be utilized by vehicles for purposes of short-term parking or turning. They are extensions of the traveled way. (3-27-13)

84. **Unauthorized Encroachment**. Any encroachment that has been placed, modified, or maintained, or removed within the highway right-of-way without authorization by the Department. (3-27-13)

85. **Urban**. State highway rights-of-way and right-of-way corridors within the limits of any incorporated city. (3-27-13)

86. **Utility Facility**. All privately, publicly or cooperatively owned systems used for the production, transmission, or distribution of communications, cable television, power, electricity, light, heat, petroleum products, ore, water, steam, waste, irrigation, storm water not connected with highway drainage, and other similar items, including communication towers, guy wires, fire and police signal systems, and street lighting systems, that directly or indirectly serve the public or comprise part of the distribution systems which directly or indirectly serve the public. (3-30-01)

87. **Utility Locating Service**. Any locally or regionally recognized service that locates and maintains records of existing utility facilities. (3-30-01)

88. **Vehicle**. Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, excepting devices used exclusively upon rails or tracks. (3-30-01)

89. Vision Triangle. An area delineated by extending perpendicular lines along the face of curb or edge of pavement from their point of intersection forty (40) feet in either direction and by a height between three (3) feet and ten (10) feet above the existing centerline highway elevation. (3-27-13)

90. Volume. The number of vehicles estimated to use a certain type of travel lane during a twelve-month period. A highway with "high" volumes is at or near capacity; a highway with "medium" volumes is at or near fifty percent (50%) of capacity. (3-27-13)

91. Warrant. An evaluation of need based on an engineering study. (3-30-01)

92. Working Day. Any day except for Saturday, Sunday and any holiday as defined in Section 67-5302(15), Idaho Code. (3-27-13)

011. -- 099. (RESERVED)

100. GENERAL.

01. Access Control. (3-30-01)

a. The Department shall retain the authority to issue all encroachment permits on the State Highway System. (3-27-13)

b. No change may be made to the control of access on any Interstate Highway without the approval of the Idaho Transportation Board and FHWA. (3-27-13)

02. Safety Requirements. (3-30-01)

a. It is the permittee's responsibility to provide for safe, efficient passage and protection of vehicles, pedestrians, and workers during any permitted work within the highway right-of-way. (3-30-01)

b. The permittee shall submit, for Department approval, a traffic control plan for the installation, maintenance, or removal of any state highway right-of-way encroachment. The permittee shall provide advance notification to the Department prior to implementing any traffic control. (3-30-01)

c. During the progress of the work, barricades, signs and other traffic control devices shall be erected and maintained by the permittee in conformance with the current "Manual on Uniform Traffic Control Devices." The permittee shall be required to meet the minimum requirements of the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD), as adopted by the Department. (3-30-01)

d. All flaggers working on the State Highway System shall be certified in or recognized by the state of Idaho. They shall carry on their person a current flagger identification card that is recognized by the state of Idaho. All traffic control devices used on the State Highway System shall comply with current FHWA crash criteria. (3-30-01)

e. When required, a striping plan for the placement of temporary and permanent pavement markings shall accompany the approved permit to use the right-of-way. Materials, placement, and removal of all pavement markings shall conform to current Department specifications and standards. (3-30-01)

03. Maintenance of Encroachments. Once an encroachment has been constructed by the permittee to Department standards, maintenance of the encroachment, unless otherwise provided, shall be as follows: (3-30-01)

a. Paved public approach - State maintains to the right-of-way line. (12-26-90)

b. Paved private approach - State maintains to end of radii, permittee maintains beyond the radii. (12-26-90)

c. Gravel public approach. State installs an asphalt wedge sufficient to protect the roadway pavement

edge (three (3) to six (6) feet back from the edge of road for the width of the approach). It is desirable to pave the approach to the right-of-way line when the road is reconstructed. State maintains to the right-of-way line. (3-30-01)

d. Gravel private approach. The permittee maintains beyond the wedge. (3-30-01)

e. Gravel turnouts. State maintains turnouts, other than mailbox turnouts, to the right-of-way line. The permittee maintains mailbox turnouts. (3-30-01)

f. Maintenance of all other encroachments shall be the responsibility of the permittee. (3-30-01)

101. -- 199. (RESERVED)

200. APPLICATIONS AND PERMITS.

01. Required. To help preserve the highways as constructed and provide responsible growth where allowed, any individual, business, or other entity planning to add, modify, change use, relocate, maintain, or remove an encroachment on the state highway or use highway right-of-way for any purpose other than normal travel, shall obtain a permit to use state highway right-of-way. Encroachment permits approved by the Department are required for private and public approaches (driveways and streets), utilities and other miscellaneous encroachments. (3-27-13)

02. Work Prior to Approval. No activities shall be allowed on State highway rights-of-way until an approved permit has been issued by the Department or a delegated local highway agency. In an emergency, that effects highway operations and motorist safety, approval may be given by the Department or a delegated highway agency in advance of processing the permit. (3-30-01)

03. Local Highway Agency Authority. The department may delegate authority to a local highway agency to issue permits to use state highway rights-of-way if adequate local ordinances are in place and are enforceable. The Department shall retain final approval for all permits issued by a local highway agency on the State Highway System. (3-15-02)

04. Administration. Permitting process shall be administered by the Department or their delegated representative, within the representative's respective jurisdiction. Department District offices are located in Coeur d'Alene, Lewiston, Boise, Shoshone, Pocatello and Rigby.

(3-27-13)

05. Application Forms. All applications to use State highway right-of-way shall be made on approved Department forms. (3-30-01)

06. Applicant to Be Informed. Applicants shall be informed of Department policies and regulations concerning encroachments. (3-27-13)

07. Payment for Impacted Highway Features. Applicants shall pay for any changes or adjustments of highway features or fixtures brought about by actions, operations or requirements caused by the applicant.

(3-27-13)

08. Encroachment Conflicts. Conflicts between proposed encroachments and highway maintenance or construction projects, utilities or other encroachments shall be resolved before an application is approved.

(3-27-13)

09. Review Process. The review process shall commence on the day the applicant submits the signed application and makes payment of the initial application fee(s). If the Department determines there is insufficient documentation to process the application, the process will be placed on hold until such documentation has been received. All applications for encroachment permits shall be reviewed and evaluated for current access control requirements, deed restrictions, safety and capacity requirements, design and location standards, or an approved variance of these standards, environmental impacts, location conflicts, long-range planning goals, and the need for an appraisal. A time table for the review process is available at the Idaho Transportation Department Headquarters Office or any District Office. (3-27-13)

10. Department Held Harmless. In accepting an approved permit, the permittee, their successors and assigns, shall agree to hold harmless and defend, regardless of outcome, the state from the expenses of and against all suits or claims, including costs, expenses and attorney fees that may be incurred by reason of any act or omission, neglect or misconduct of the permittee or its contractor in the design, construction, maintenance or operation of the encroachment. (3-30-01)

11. Permit Requirements. All permits shall specify approach location and use, and be accompanied by approved traffic control plans, design details and specifications that address dust control, site reclamation, environmental protection and work site safety. The applicant shall be required to submit construction plans stamped by an engineer licensed in the state of Idaho to the Department for approval. (3-27-13)

12. Void Application. Once an application is submitted, if the permitting process is not completed within one (1) year as a result of inactivity on the applicant's part, the application shall be considered void. (3-30-01)

13. Denial of Application. Applications for encroachments not allowed shall be verbally denied. If the applicant insists on proceeding with the application, the non-refundable fee shall be accepted and a permit denial issued by certified letter. Upon receipt of the denial letter, the applicant can appeal the Department's action.(3-30-01)

201. PERMIT COMPLIANCE AND EXPIRATION.

01. Permitted Work. If work does not begin immediately, the permittee shall notify the Department or local highway agency five (5) working days prior to commencing such work. Local highway agency shall promptly notify the Department, when applicable. (3-30-01)

02. Work Site Documents. The permittee or contractor for the permittee, shall maintain a copy of the approved permit, all special provisions and any related documents, at the work site while work is in progress. (3-30-01)

03. Completion of Work. All permitted work shall be completed and available for final inspection within thirty (30) days after construction begins, unless otherwise stated in the special provisions of the permit. If the permitted work is not completed within one (1) year of permit issuance, the permit shall be considered void. At the discretion of the Department, a one-time extension not to exceed six (6) months may be granted if requested in writing by the permittee prior to permit expiration. New applications shall be required for additional work following permit expiration. (3-30-01)

04. Temporary Encroachments. Temporary encroachment permits shall have an effective time period not to exceed one (1) calendar year and shall be removed within ten (10) days following permit expiration. (3-30-01)

202. -- 299. (RESERVED)

300. GENERAL REGULATIONS FOR APPROACHES.

01. Required. All new or additional approaches, or the modification in design or use, relocation or removal of existing approaches require an approved State highway right-of-way use permit and shall meet all access control requirements that correspond to the state highway being affected. (3-27-13)

02. General. Requests for approaches shall be reviewed and considered for approval based on the needs of the total development, regardless of the number of individual parcels it contains. (3-30-01)

03. Joint-Use Approach. Only an owner of property abutting the state highway right-of-way, or their designated representative, can apply for access. Applications for a joint-use approach that serves two (2) or more abutting properties sharing common boundary lines shall be accompanied by a legal recorded joint-use access agreement and shall be signed by all deeded owners or authorized representatives. (3-30-01)

04. Applicable Standards. The location, design, and construction of all approaches shall comply with

Department standards. Information regarding applicable standards is available at Department headquarters and all District offices listed in Subsection 003.01. (3-30-01)

05. Approach Locations. Approaches shall be located where the highway alignment and profile meet approved geometric standards, where they do not create undue interference with or hazard to the free movement of normal highway or pedestrian traffic, and where they do not restrict or interfere with the placement or proper function of traffic control signs, signals, lighting or other devices. (3-30-01)

06. Denial of Approach Application. Failure to comply with these requirements may be sufficient cause for the Department to deny an approach application, prohibit specific approach usage, or remove an existing approach. (3-30-01)

07. New Approaches in Highway Construction. Applications for an encroachment located within a state highway construction project shall be processed by the Department. (3-27-13)

08. Modification of Approaches by Department. The Department reserves the right to make any modifications, additions, repairs, relocations, or removals to any approach or its appurtenances within the highway right-of-way, when necessary for maintenance, rehabilitation, reconstruction or relocation of the highway and/or to provide proper protection of life and property on, or adjacent to, the highway. (3-30-01)

09. Modification of Approaches by Permittee. Modifications of approach use, construction, or design shall include but not be limited to width, grade, surface type, landscaping, and drainage. Such modifications by the permittee require Department approval. (3-27-13)

301. -- 399. (RESERVED)

400. LOCATION AND DESIGN STANDARDS FOR APPROACHES.

01. Required. Location, design, construction and operations of all approaches shall comply with current Department geometric standards and design principles. (3-30-01)

02. Guidelines. The following access management guidelines shall be considered on all approach applications: (3-30-01)

a. Design approaches for current and future property access requirements; and (3-30-01)

b. Reduce conflicts associated access points through the application of channelization, auxiliary lanes, joint-use approaches, frontage and other local roads, restricted on-street parking and off-street traffic circulation. (3-30-01)

03. Signal and Approach Spacing. In order to maintain system capacity, safety and efficiency, maximize signal progression and minimize delays to the traveling public, all approaches and signals shall be spaced in accordance with the following standards: (3-27-13)

a. All traffic signal locations shall meet Department signal warrant requirements and a signal operational analysis; (3-30-01)

b. Location preference shall be given to State highways that meet or may be reasonably expected to meet signal warrants within five (5) years; and (3-30-01)

c. Minimum recommended distances between approaches and signals are as follows:

TABLE 1 – ACCESS SPACING*

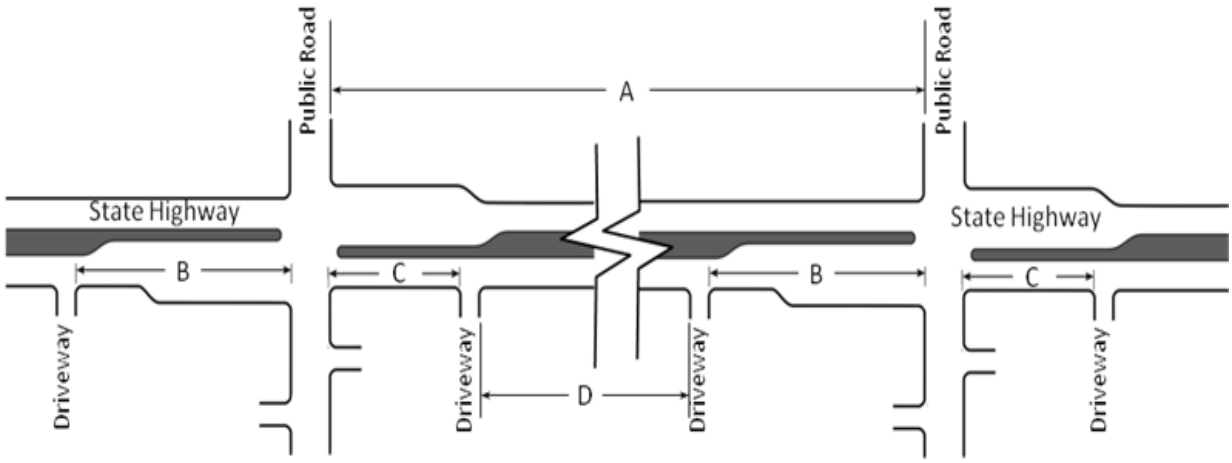
HIGHWAY TYPE	AREA TYPE	Signalized Road Spacing	Public Road Spacing (A)	Driveway Distance Upstream From Public Road Intersection (B)	Driveway Distance Downstream From Unsignalized Public Road Intersection (C)	Distance Between Unsignalized Accesses Other Than Public Roads (D)
Interstate	All	Accessible only by interchanges (ramps) and requires approval by the Board and Federal Highway Administration.				
Freeway	All	Accessible only by interchanges (ramps).				
Expressway	All	Accessible only at locations specified by the Department.				
Statewide Route	Rural	5,280 ft	5,280 ft	1,000 ft	650 ft	650 ft
	Transitional	5,280 ft	2,640 ft	760 ft	500 ft	500 ft
	Urban >35 mph	2,640 ft	1,320 ft	790 ft	500 ft	500 ft
	Urban ≤35 mph	2,640 ft	1,320 ft	790 ft	250 ft**	250 ft**
Regional Route	Rural	5,280 ft	2,640 ft	1,000 ft	650 ft	650 ft
	Transitional	2,640 ft	1,320 ft	690 ft	360 ft**	360 ft**
	Urban >35 mph	2,640 ft	660 ft	660 ft	360 ft**	360 ft**
	Urban ≤35 mph	2,640 ft	660 ft	660 ft	250 ft**	250 ft**
District Route	Rural	2,640 ft	1,320 ft	760 ft	500 ft	500 ft
	Transitional	2,640 ft	660 ft	660 ft	360 ft**	360 ft**
	Urban >35 mph	1,320 ft	660 ft	660 ft	360 ft**	360 ft**
	Urban ≤35 mph	1,320 ft	660 ft	660 ft	250 ft**	250 ft**

*Distances in table are minimums based on optimal operational and safety conditions such as adequate sight distance and level grade. Definitions of spacing designated by (A), (B), (C), and (D) are represented on Figure 1.

** Where the public road intersection or private access intersection is signalized, the distances in the table are for driveways restricted to right-in/right-out movements only. For unrestricted driveways the minimum distance shall be 500 feet from a signalized intersection.

(3-27-13)

Figure 1:



(3-27-13)

d. The District Engineer shall have the authority to deny an encroachment permit or require the applicant to provide a Traffic Impact Study when an on-site review indicates that the optimal conditions (such as sight distance and queue length) assumed in Table 1 do not exist, and that operational or safety problems may result from the encroachment spacing. (3-27-13)

e. The District Engineer shall have the authority to approve a decrease in the minimum access spacing distances set forth in Table 1, provided that the basis for any exception is justified and documented. The basis for the exception may include overriding economic opportunity considerations. For any exception that would result in a decrease in access spacing of more than ten percent (10%) of the distances set forth in Table 1, a Traffic Impact Study will be required in order to determine whether auxiliary lanes or other appropriate mitigation must be included in the permit's conditions. (3-27-13)

f. Unless the requirement is waived by the District Engineer, a Traffic Impact Study shall also be required when a new or expanded development seeks direct access to a state highway, and at full build out will generate one hundred (100) or more new trips during the peak hour, the new volume of trips will equal or exceed one thousand (1000) vehicles per day, or the new vehicle volume will result from development that equals or exceeds the threshold values in Table 2. If the District Engineer waives the requirement for a Traffic Impact Study, the basis for such waiver shall be justified and documented. (3-27-13)

g. When required, the Traffic Impact Study shall document access needs and impacts and whether any highway modifications are necessary to accommodate the new traffic volumes generated by the development. Such modifications could include, for example, turn lanes, additional through lanes, acceleration or deceleration lanes, medians, traffic signals, removal and/or consolidation of existing approaches, approaches limited to right-in/right-out access only, etc. (3-27-13)

h. If a District Engineer denies an encroachment permit application and the denial is appealed to the board, the board or its delegate shall have the authority to approve exceptions to the access and signal spacing distances in Table 1 if, in the judgment of the board, overriding economic considerations cause the exceptions to be in the best interests of the public. (3-27-13)

Table 2	
LAND USE TYPE	**THRESHOLD VALUE**
Residential	100 Dwelling Units
Retail	35,000 square feet
Office	50,000 square feet
Industrial	70,000 square feet
Lodging	100 rooms
School (K-12)	All (Sections 67-6508 & 67-6519, Idaho Code)

(3-27-13)

04. Corner Clearance. (3-30-01)

a. Approaches should be located as far as practical from intersections: to preserve visibility at the intersection, to permit safe vehicle movement, and to accommodate the installation of traffic signs, signals and lighting where required. (3-30-01)

b. Approach transitions or flares shall not encroach upon curbs or pavement edges forming the corner radii of the intersection. (3-30-01)

c. Minimum corner clearances between signalized and unsignalized urban and rural intersections shall comply with current Department standards. (3-30-01)

05. Approach Alignment. Whenever possible, all new or relocated approaches shall intersect the state highway at right angles and shall be aligned on centerline with existing approaches to facilitate highway safety and the development and use of turn lanes and/or signals. Approach skew angles shall be in conformance with current Department standards. (3-30-01)

06. Width and Radius. (3-30-01)

a. An approach shall be wide enough to properly serve the anticipated type and volume of traffic. Minimum widths should be used only when space limitations apply. (3-30-01)

b. An approach that is adjacent to a public alley may include the alley as part of the approach if approved by the local jurisdiction, however, the width of the combined approach shall not exceed forty (40) feet. (3-27-13)

c. Commercial approaches with volumes exceeding fifty (50) vehicles per hour during a total of any four (4) hours per day should be designed to public road standards. (3-30-01)

d. A Boulevard Approach may be required to improve operation and/or aesthetics of commercial approaches and some public highways, when warranted, by a combination of vehicle length and higher traffic volumes. The approach shall be designed to serve the traffic with a right-turn lane, a left-turn lane, a median, and one (1) or more entrance lanes. (3-30-01)

e. Minimum and maximum recommended approach widths and radii are as follows:

APPROACH USE	< 35 MPH		≥ 35 MPH		RADII	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Single Residential, Farmyard, Field	12ft	40ft	20ft	40ft	20ft	30ft
Multiple Residential	28ft	40ft	28ft	40ft	20ft	30ft
Commercial (One-Way)	15ft	30ft	20ft	30ft	30ft	40ft
Commercial (Two-Way)	25ft	40ft	25ft	40ft	30ft	40ft
Boulevard Approach	84ft	84ft	84ft	84ft	Contact Department	
Joint-Use Residential/Farm	25ft	40ft	25ft	40ft	20ft	30ft
Joint-Use Commercial	12ft	40ft	20ft	40ft	30ft	40ft
Public Highways	28ft	N/A	28ft	N/A	30ft	50ft

(3-27-13)

07. Property Line Clearance. (3-30-01)

a. In curbed sections, there shall be a minimum property line clearance of six (6) feet to accommodate approach transitions. Approaches shall be constructed so that all approach flares and any extensions of the approach remain within applicant's property. (3-27-13)

b. In rural or uncurbed sections, property line clearances shall be equal to approach radius. Approaches shall be constructed so that all approach radii remain within applicant's property. (3-30-01)

c. Approach transitions or radii may be allowed to abut the adjacent property line when required for proper utilization of property. Joint-use approaches shall be required whenever property frontage is insufficient to include full width of the approach, including both radii. (3-30-01)

08. Setback. (3-30-01)

a. Improvements intended to serve patrons on private property adjacent to state highway right-of-way shall be setback from the highway right-of-way line so that stopping, standing, parking or maneuvering of vehicles on the right-of-way is not necessary. A minimum setback of fourteen (14) feet from state highway right-of-way line is recommended, unless a greater minimum is established by an engineering study. When an ordinance requires a certain number of parking spaces per square footage of building, the parking spaces shall not be included within state highway right-of-way. (3-27-13)

b. Traffic movements into and out of a business shall be designed, whenever possible, to utilize existing local roads. Existing approaches along traveled way should serve as exits only from the business onto the state highway. Entrance to the property should be made from a local road. (3-30-01)

09. Sight Distance. Any encroachment, including but not limited to hedges, shrubbery, fences, walls, or other sight obstructions of any nature, that constitutes a traffic hazard within the "vision triangle" of vehicle operators at the intersection of roads with other roads, private approaches, alleys, bike or pedestrian paths, or railroad

crossings shall be removed. (3-30-01)

10. Transitions and Flares. (3-30-01)

a. In curb and gutter sections, the transition connecting the edge of the approach to the curb shall meet minimum Department standards. (3-30-01)

b. In sections not having a curb and gutter, approach flares should connect the outside edge of the approach to the outside edge of the roadway shoulders and shall meet minimum Department standards. The approach flare tangent distance should not exceed twenty (20) feet unless a larger radius is warranted by an engineering study. (3-27-13)

c. The distance between approaches shall be such that the curb approach transition or radii of the one (1) approach does not encroach upon the transition or radii of the adjacent approach. (3-30-01)

11. Grade. (3-30-01)

a. If the maximum allowable slope is not great enough to bring the approach to the level of the sidewalk or back of curb, a depressed sidewalk should be installed, when required. If sidewalks exist, the connection between the original sidewalk and the depressed sidewalk shall be made through a transition area with a slope no steeper than twelve horizontal to one vertical (12:1) from the longitudinal grade of the original sidewalk. All new curbs or sidewalks should be constructed to the line and grade of the existing curb or sidewalk with every effort to construct a sidewalk that is uniformly graded and free of dips. (3-27-13)

b. To accommodate emergency service vehicles, the Department recommends a maximum approach grade of plus or minus ten percent (±10%). (3-30-01)

12. Border Area. (3-30-01)

a. Border area work (including grading, seeding and landscaping) shall insure that adequate sight distance, proper drainage, desirable slopes for maintenance operations, and a pleasing appearance are provided. The border area shall be free of encroachments and designed as needed to prevent vehicular use through the incorporation of appropriate methods such as ditching, special grading, use of concrete or bituminous curbs, fencing, guard rail, and guide posts. The design or devices should not impair adequate sight distance or constitute a hazard to pedestrians, bicycles, or vehicles. (3-30-01)

b. The maximum slope beyond the outside edge of shoulder, back of curb, or back of sidewalk to the right-of-way line shall meet minimum Department standards. The creation of ponds, pools, or drainage/evaporation swales within the highway right-of-way shall be prohibited. (3-30-01)

13. Drainage. (3-30-01)

a. All approaches shall be graded so that private properties abutting the highway right-of-way do not drain onto the traveled way, do not impair the drainage within the right-of-way, alter the stability of the roadway subgrade or materially alter the drainage of areas adjacent to the right-of-way. Post-development drainage flows shall not exceed predevelopment drainage flows. (3-30-01)

b. Culverts and drop inlets shall be installed where required and shall be the type and size specified by the Department. Where the border area is regraded, landscaped or reclaimed (seeded), it shall have sufficient slope, ditches, culverts, and drop inlets for adequate drainage. Slopes, where practical, should be a six-horizontal-to-one vertical (6:1) maximum. (3-27-13)

14. Base and Surfacing. (3-30-01)

a. It shall be the responsibility of the permittee to supply, place and properly compact the approach fill and base material. All base and surfacing materials and compaction requirements shall meet minimum Department design and construction standards. (3-30-01)

b. All rural private, commercial and public approaches shall be paved to the right-of-way line or to the back of the approach radius. Farmyard and field gravel approaches that are occasionally used shall be paved a minimum of five (5) feet from the edge of pavement. (3-27-13)

c. In curb and gutter areas, approaches shall be paved to the right-of-way line. (3-30-01)

401. MEDIANS.

01. Median Placement. The placement of medians shall meet the following considerations: (3-30-01)

a. Where a traffic engineering study indicates that medians would be beneficial to control access, maintain street capacity, and improve traffic safety. (3-30-01)

b. When medians are selected, non-traversable medians are the preferred median type; however, traversable medians in urban areas may be considered to accommodate emergency vehicles. (3-30-01)

c. Pedestrian/bicycle safety shall be given consideration in the choice and design of medians in areas that are frequently used by pedestrians/bicycles. (3-30-01)

d. construction requirements for all new or modified public approaches to the state highway right-of-way, including private approaches to subdivisions and businesses, shall be reviewed for the need to place medians on the state highway. (3-30-01)

e. Channelization formed by raised curbs, solid painted islands, left turn lanes, or other traffic control installations may be required to create a mandatory right-in/right-out and/or left-in/left-out approach condition. (3-30-01)

02. Median Openings. Median openings shall be as follows: (3-30-01)

a. Placed on multi-lane state highways at all signalized intersections, at locations which currently meet the criteria for a signal warrant and fulfill traffic signal coordination requirements, at locations that are anticipated to meet future traffic signal considerations, and at locations where there will be no significant reduction in safety or operational efficiency. (3-30-01)

b. Designed with a left turn lane and sufficient storage for left turning traffic. (3-30-01)

c. Median openings allowing U-turns shall be provided only at locations having sufficient roadway width. (3-30-01)

402. AUXILIARY LANES.

Review Required. Reviews shall be conducted to determine the need to provide turn lanes, deceleration lanes and acceleration lanes on the state highway prior to issuing an approach permit. Consideration of auxiliary lanes shall meet the following conditions: (3-30-01)

01. **Traffic Engineering Study**. A traffic engineering study shall be made that considers highway operating speed, traffic volumes, projected turning movement volumes, availability of passing opportunities, sight distance, and collision history. (3-27-13)

02. **Auxiliary Lanes to Enhance Roadside Business**. Auxiliary lanes shall not be constructed to enhance a new roadside business, unless the applicant is willing to pay the full cost. (3-30-01)

03. **Auxiliary Lanes Required by Planned Development**. Auxiliary lanes required as a result of a planned development, shall be paid for by the developer. When the need for an auxiliary lane exists prior to an application for a planned development, the developer may not be required to pay for the lane unless such construction precedes the Department's construction schedule. (3-30-01)

403. -- 499. (RESERVED)

500. LOCATION AND DESIGN STANDARDS FOR UTILITIES.

01. Approved Permit Required. An approved right-of-way encroachment permit shall be required for all utility encroachments, including new utility installation and the relocation, maintenance, modification, or removal of existing utility facilities prior to the initiation of any work within the state highway right-of-way. (3-30-01)

02. Utility Locations. Final utility locations shall be identified on the appropriate roadway and bridge plans. (3-30-01)

03. Interstate Highways. As addressed in the 1996 Telecommunications Act, longitudinal placement of telecommunication utilities in any Interstate right-of-way shall require a permit approved by the Department for the installation of utilities. Longitudinal placement of all other utilities in Interstate right-of-way shall require a utility permit approved by both the Department and the FHWA. (3-27-13)

04. Utility Maintenance and Emergency Repair. Right-of-way encroachment permits, approved annually by the Department, shall be required for all maintenance or emergency repairs of utility facilities. The utility shall notify the Department in advance of any work that affects the traveling public. (3-15-02)

05. Conduits Under the Roadway. (12-26-90)

a. Conduits crossing under highways that carry utility structures including, but not limited to, water, sewage, chemicals, electrical wire, and communications cables, shall be installed by jacking, driving or boring unless trenching can be justified. Acceptable justification would only be poor soil conditions, such as rock or boulders, inadequate room for a boring pit, or conflicts with other utility lines which cannot be located accurately (gas lines, multiple telephone conduits). If gravel or boulders prevent boring or jacking on the first attempt, at least two (2) other documented attempts should be made at different locations before contacting the District about an alternate installation method, unless the utility can provide documentation from a qualified agency or engineer that indicates the strata is not conducive to boring, driving or jacking. Normally installation of conduit twenty-four (24) inches or less outside diameter should be attempted by jacking, driving or boring before consideration of trenching as an alternative. (3-27-13)

b. The applicant is required to submit for review and approval, a set of construction plans stamped by an engineer licensed in the state of Idaho. The plans shall show all details on casing, conduits, bulkheads and placement, vertical and horizontal dimensions of the pit and shoring, method of installing the conduit, drainage, void filling, and traffic control devices. Sluicing or jetting shall not be allowed. If required by the engineer, casings should be installed from highway right-of-way line to highway right-of-way line to allow for servicing of the utility facility with minimal disruption to traffic flows. Casings should be installed wherever feasible to allow for placement of multiple conduits. (3-15-02)

c. Conduits under interstate highways shall not be installed by cutting through the pavement under any circumstance. (3-30-01)

06. Conduits Attached to Structure. Conduits attached to any structure shall meet the following requirements: (3-30-01)

a. A set of construction plans showing all details and calculations of a crossing or proposed attachments, stamped by an engineer licensed in the state of Idaho, shall be submitted to the Department for review and approval at the time of permit application. A copy of the existing structure plans shall also be submitted that are marked to show the proposed structure modifications. (3-30-01)

b. Reinforcement shall be located prior to the placement of threaded inserts to suspend utilities using a method approved by the Department. (3-30-01)

c. All attaching hardware shall be galvanized or coated as directed by the Department. (3-30-01)

d. Bolts for the attachment clamps shall be a minimum of one-half (1/2) inche in diameter. (3-27-13)

e. Slip joints shall be installed as directed by the Department. (3-30-01)

f. Drilling of any bridge structural element shall be prohibited without approval from the Department. (3-30-01)

g. Utilities shall be attached to bridges in an interior bay, unless interior attachment is not practical due to the bridge diaphragm or end beam construction. (3-30-01)

h. Placing brackets along or around the structure rail is prohibited. (3-30-01)

i. The installing utility shall relinquish exclusive rights to future use of a hanger system, once installed. However, the responsibility for required maintenance shall remain with the installing utility until the hangar system is placed into a joint-use system. At that time, the responsibility for maintenance shall become a shared responsibility. (3-30-01)

j. A set of "as-built" plans for all conduit or utility crossings and structure attachments shall be submitted to the Department and the local utility locating service with all details of construction within thirty (30) days of the work completion. All "as-built" plans are required to be stamped by an engineer licensed in the state of Idaho. (3-30-01)

501. -- 599. (RESERVED)

600. LOCATION AND DESIGN STANDARDS FOR OTHER ENCROACHMENTS.

01. Approved Permit Required. An approved right-of-way encroachment permit shall be required for all portable objects or signs, memorials, urban improvements, landscaping, farming, irrigation or drainage, mailbox stands or turnouts, recreational parking facilities, park-and-ride lots, school bus turnouts, or structures within the state highway right-of-way other than those authorized or installed by the Department, or those which the government entity deems necessary for regulating, warning, and guiding of traffic. (3-30-01)

02. Benches, Planters, and Other Urban Structures. Structures, including protrusions and overhangs, shall be a minimum of eighteen (18) inches behind the face of curb. When a structure is within a sidewalk area, at least four (4) feet of unobstructed space shall be available for pedestrians. (3-27-13)

03. Overhanging Displays, Canopies and Marquees. In a curb section, encroachments shall not extend closer than eighteen (18) inches behind face of curb. In a non-curb section, encroachments supported by a building shall not extend more than twelve (12) inches into right-of-way. Signs or displays shall be no lower than twelve (12) feet above the sidewalk or ground level. Canopies and marquees shall be no lower than eight (8) feet. (3-27-13)

04. Landscaping, Farming and Associated Irrigation. Repair of landscaping in the state highway right-of-way shall be the responsibility of the permittee, and the Department will not be responsible for, or participate in, any repair or maintenance costs. All requests for landscaping, farming and irrigation shall require a review of current access control records for restrictive covenants. Applications may be approved provided the following conditions are met: (3-30-01)

a. Landscaping, farming, and irrigation systems shall maintain the structural integrity of the state highway right-of-way. No undercutting of the present highway fill and ballast section nor shall access to a state highway from unprotected bare soil be allowed. (3-27-13)

b. Unless otherwise specified, the degree of landscaping will be limited to what is necessary to insure that the appearance of the state highway right-of-way is compatible with the appearance of the surrounding area and shall not interfere with public safety and overall maintenance operations. (3-30-01)

c. Landscaping, farming, and irrigation systems shall not disturb, obstruct, or add to the normal

drainage patterns of the state highway right-of-way. No new ditches shall be constructed without prior approval. (3-30-01)

d. Landscaping, farming, and irrigation systems shall not interfere with utility installations, removals, or operations. (3-30-01)

e. Provisions shall be established for the responsibility of future maintenance. (3-30-01)

f. Only planting of forage plants, grasses, flowers, and shrubs with a mature height not to exceed three (3) feet will be allowed within the clear zone of the state highway right-of-way. Type and size of grasses, flowers, and shrubs will be determined by the Department. (3-27-13)

g. No trees shall be allowed within the clear zone of the state highway right-of-way. (3-15-02)

h. All work within the highway right-of-way shall be required to return the right-of-way to either original condition or to the requirements of the encroachment permit as approved by the Department. (3-27-13)

i. Irrigation systems shall be no closer than five (5) feet from the pavement edge and shall be adjusted so water does not cover any portion of the highway pavement. (3-27-13)

j. No grading, excavation or other ground disturbing activities will be performed during rainy periods. If work cannot be avoided during rainy periods, the permittee will install check dams or other approved device(s) or structure(s) in drainage channels and provide a sediment retention basin to avoid discharging sediment containing runoff into the drainage system, or any wetlands, or water bodies (streams, rivers, lakes and ponds). No work shall be performed in or adjacent to any wetland or water body without providing the Department with copies of the appropriate permits from the Army Corps of Engineers, Idaho Department of Water Resources, and the Idaho Division of Environmental Quality. (3-30-01)

k. All areas within the state highway right-of-way disturbed by construction shall be returned to its original condition and reclaimed (re-seeded, fertilized and mulched) as directed by the Department or delegated local highway agency. (3-30-01)

l. Appropriate best management practices to temporarily control erosion and resulting sediment shall be used. Typical soil surface protection practices include erosion control blankets, tacified mulches of straw, wood fiber, paper fiber, soil amendments, or rock mulch. Typical sediment control practices may include silt fences, fiber wattles, rock check dams, sediment basins/ponds, inlet culvert risers, and inlet rock filters. For further information on best management practices, contact the Department. (3-30-01)

m. Travel lanes shall be kept reasonably free of dirt, rocks and other debris resulting from construction or maintenance of landscaping, farming, or irrigation. (3-30-01)

05. Recreational Parking and Park-and-Ride Lots. (3-30-01)

a. Parking areas shall be designed to safely accommodate an adequate number of parking spaces as determined by the Department. (3-30-01)

b. Access points shall be located so that adequate sight distance is maintained for the safety of approaching traffic and so that minimal interference with the normal flow of traffic on the traveled way results. (3-30-01)

c. Approaches shall be constructed in accordance with Department standards. (3-15-02)

d. Installation of fencing and delineation should be considered to restrict ingress and egress locations and widths. (3-30-01)

e. Unrestricted drainage shall be provided and shall comply with Department standards. (3-15-02)

f. Construction and maintenance of parking areas, including snow removal shall be the responsibility of the permittee. (3-30-01)

06. Mailbox Turnouts. (3-30-01)

a. Mailbox turnouts in rural areas may be combined with an adjacent approach or may be independent of the approach. For safety reasons, the mail carrier should be able to stop out of the traveled way whenever possible. The applicant should be required to construct a mailbox turnout at the same time a mailbox is installed. (3-30-01)

b. Mailbox turnouts and mailbox supports shall be constructed in accordance with Department standards. The box-to-post attachments shall resist separation when struck by a vehicle. No massive metal, concrete, stone or other hazardous supports shall be allowed. Owners of mailboxes that do not meet minimum installation requirements shall be notified that correction is required. (3-15-02)

07. School Bus Turnouts. (3-30-01)

a. School bus turnouts shall be constructed with sufficient length and width to accommodate bus length and turning maneuvers as determined by the Department. (3-30-01)

b. Turnouts shall be located so adequate sight distance is maintained for the safety of approaching traffic and so that minimal interference with the normal flow of traffic on the traveled way results. (3-30-01)

c. All permitted school bus turnouts shall include approved advance warning signs installed at Department expense. (3-30-01)

601. -- 699. (RESERVED)

700. APPLICATION FEES.

01. Fee Administration. Fees for applications for permits shall be based on the Department's cost to produce the permit and administer the program. Fees for permits are not refundable in the event of denial of the permit or in the event the permittee fails to comply with the permit. Applications shall not be processed until all applicable permit fees are received. (3-13-02)

02. Fee Schedule. The permit application fees shall be as follows: (3-13-02)

a. Approaches:

Land Use Category	Permit Application Fee
Residential, < 100 units (includes farm and field approaches)	$50
Residential, ≥ 100 units	$100
Retail, < 35,000 sq. ft.	$50
Retail, ≥ 35,000 sq. ft.	$100
Office, < 50,000 sq. ft.	$50
Office, ≥ 50,000 sq. ft.	$100
Industrial, < 70,000 sq.ft.	$50
Industrial, ≥ 70,000 sq.ft.	$100
Lodging, < 100 rooms	$50
Lodging, ≥ 100 rooms	$100

Land Use Category	Permit Application Fee
School (K-12)	$100

(3-27-13)

b. Encroachments other than approaches: fifty dollars ($50). (3-27-13)

c. Utility Permits: (3-13-02)

i. Non-interstate: new, modify, relocate with no prior easement rights, fifty dollars ($50). (3-27-13)

ii. Interstate: fees will be addressed at the time of application. (3-27-13)

iii. Interstate and non-interstate: maintenance or emergency repairs with no prior easement rights - No Charge (3-27-13)

iv. Interstate and non-interstate: new, modify, relocate with prior easement rights within an ITD State highway project) - No Charge. (3-27-13)

03. Miscellaneous Costs. In addition to the application fee, the Department may require payment of costs associated with the following: (3-30-01)

a. Study or appraisal review; or (3-30-01)

b. Appraisal fees required to establish the value of property for new, additional, modification in design or use, or relocation of approaches or other encroachments in a controlled access highway. (3-13-02)

c. Inspection fees may be charged at the discretion of the District Engineer when substantial inspection time will be required to monitor and accept work done within the right-of-way. This includes wages, travel, subsistence and other expenses incurred. The intent is to recover only Department costs. When the inspection fee is to be assessed, it shall be stipulated under the application's special provisions. Travel time in excess of one (1) hour, a loaded payroll rate, vehicle rental cost, subsistence, and other expenses incurred. If additional inspections are required, the permittee will be billed a flat fee as determined by the Department at the time the permit is issued. (3-30-01)

d. A performance bond may be required of an applicant at the discretion of the Department. The purpose of this bond is to guarantee completion of the work in accordance with the requirements of the permit. The bond amount should be large enough to cover costs to correct potential damage that might be caused by the permittee. The bond shall be executed by a surety company authorized to conduct business in Idaho. (3-30-01)

e. Construction of highway modifications or improvements, including but not limited to signals, illumination, signs, pavement markings, delineation, guardrail, and culverts; (3-30-01)

f. Changes or adjustments made to highway features or fixtures; or (3-30-01)

g. Expenses relating to photocopying highway plans, permits or related documents. (3-30-01)

04. Waivers. Permit fees may be waived and the justification included with the application for: (3-30-01)

a. Approaches resulting from right-of-way negotiations that are included in plans and completed during construction of a highway project. (3-30-01)

b. Government agencies. (3-30-01)

c. Agricultural uses of the right-of-way as included in the right-of-way agreement. (3-30-01)

d. Approaches and other encroachments where direct benefit to the Department is gained. (3-30-01)

e. Utility adjustments or relocations per project utility agreement, or requested by the Department, or utility maintenance and emergency repairs. (3-30-01)

701. --799. (RESERVED)

800. UNAUTHORIZED AND NONSTANDARD ENCROACHMENTS.

01. Compliance. District Engineers shall ensure compliance with all applicable laws and Department policies relating to the removal or correction of unauthorized and non-standard encroachments in accordance with Department rules and policies. (3-30-01)

02. Prohibition. Approaches and other encroachments on state highway rights-of-way that are installed without an approved state highway right-of-way permit, or not constructed in accordance with the Department requirements as stated in the permit, or are naturally occurring adjacent to the state highway right-of-way line and create a hazard, are prohibited, may be removed or their use may be suspended until corrective action is taken. The application process shall be immediately initiated when applicable or the encroachment removed when such a permit cannot be approved. (3-30-01)

03. Nonstandard Encroachment. When a permitted encroachment does not meet Department standards, the applicant or permittee shall be given one (1) month to upgrade the encroachment to the encroachment standards. Encroachments may be removed by the Department and legal action initiated to collect the removal cost. (Section 40-2319, Idaho Code) The one (1) month period may be shortened if an imminent or immediate threat to the safety of the traveling public is present. Time extensions may be granted by the Department or delegated local highway agency. However, if the permittee does not comply, the permit shall be revoked and the encroachment removed. (3-30-01)

04. Encroachment Removal. Any person or entity maintaining an unauthorized encroachment of any kind upon state highway right-of-way shall be served, according to law, with a notice to remove the same. Failure to remove the encroachment within forty-eight (48) hours shall be followed by a certified letter from the Department requesting removal within ten (10) days. If the encroachment is still not removed, the Department shall institute appropriate legal action to have it removed. The Department may take immediate corrective action if an imminent or immediate threat to the safety of the traveling public is present. (3-27-13)

05. Liability of Applicant. The applicant may be held liable for injury or damages caused by the unauthorized or non-standard encroachment. The Department shall make no reimbursement for removal of unauthorized or non-standard encroachments nor shall compensation be made for any losses that may arise from their removal. The Department may initiate legal action to recover costs for the removal of unauthorized or non-standard encroachments. (3-30-01)

801. PROHIBITIONS.

01. Prohibited Uses. The use of the highway right-of-way or any portion thereof for any of the following uses or purposes shall be prohibited: (12-26-90)

a. Mobile stores, mobile lunch wagons or similar businesses that stop vehicles to offer for sale or sell their wares. (3-30-01)

b. Solicitation or sale of any goods or services, attempts to serve, distribute, petition or recruit, and all associated stopping, standing or parking of vehicles (except Department-approved vending privileges in safety rest areas. (3-30-01)

c. The storage of any substance, equipment or material, including but not limited to logs, lumber, supplies or aggregates. (3-30-01)

d. The abandonment of vehicles or other large objects. (3-30-01)

e. Servicing, refueling and repairing of vehicles, except for emergencies. (3-30-01)

f. The placement of portable objects or signs (material or copy), displays, or other unapproved highway fixtures. (3-30-01)

g. Permanent, temporary or mobile structures, manned or unmanned. (3-30-01)

h. Any obstruction that creates a traffic hazard, including trees, shrubbery, fences, walls, non-standard mailbox stands, or other appurtenances. (3-30-01)

i. Signs or displays that resemble, hide or because of their color, interfere with the effectiveness of traffic signals and other traffic control devices. (3-30-01)

02. Modification of Rule. The Department may modify this rule for emergency, temporary installations for the benefit to the highway user. (3-30-01)

03. Encroachment Hazards. Encroachments shall not interfere with the safety of the highway or the visibility and effectiveness of traffic control devices, form a wall or building support, obstruct crosswalks or wheelchair ramps, or force pedestrians into the highway. (3-30-01)

04. Board Jurisdiction. The Board, by and through the Department, may consummate agreements with cities and villages whereby they may exercise their police powers on those matters within their jurisdiction. (3-30-01)

802. -- 999. (RESERVED)

Subject Index

M

P

U

1st East / 2nd East Couplet Option

Main St

1st North

Traffic South-bound one-way on 1st East

1st East

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.

2nd East

Traffic North-bound one-way on 2nd East

3rd East

2nd North

Teton River

Yellowstone Hwy

2nd East / 3rd East Interim Couplet Option

Main St

2nd East

South-bound traffic one-way on 2nd East

Convert to One-way traffic west-bound

3rd East

Traffic North-bound one-way on 3rd East

1st North

2nd North

4th North

2nd East Couplet
3rd East Option

Main St

Interim Couplet one- way reverts back to two-way if implemented

All traffic on 2nd East flow southward in three lanes

New Railroad Crossing Required

2nd East

3rd East

All traffic on 3rd East flows northward in three lanes

Yellowstone Hwy

New Bridge over the Teton River Required

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.


7TH SOUTH ST
COUNTRYSIDE AVE
US-30
7TH SOUTH ST
NOT FOR CONSTRUCTION
EXHIBIT SHOWING TRAFFIC
PATTERNS ONLY

US-20 WEST FRONTAGE ROAD (NORTH OF THORNTON INTERCHANGE)

3800 S

McCULLOCH RD

IMPROVEMENTS WITH THE THORNTON INTERCHANGE PROJECT

3300 W

SCHEMATIC ALIGNMENT OF POTENTIAL FRONTAGE ROAD

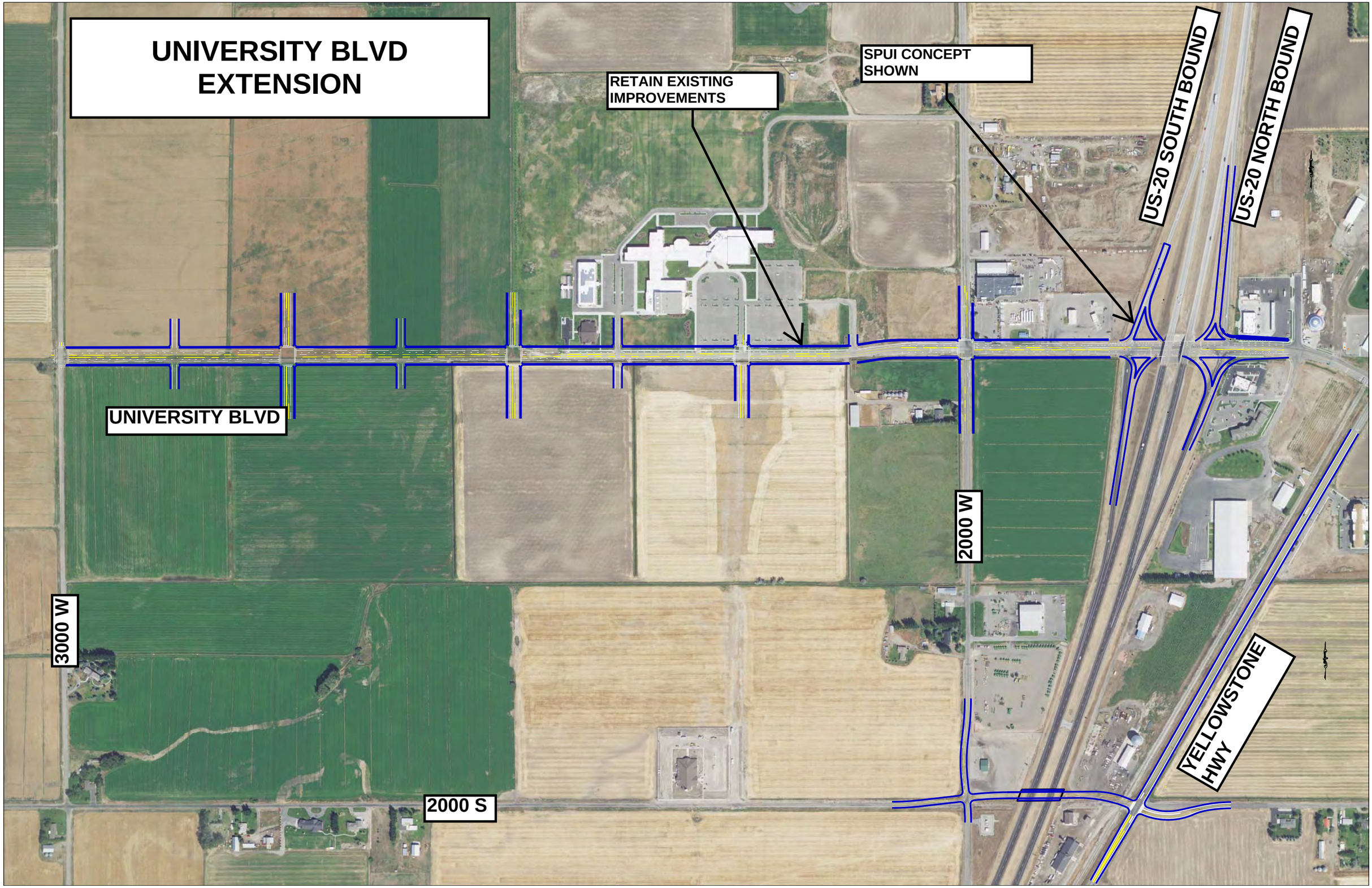
INTERSECTION TO BE CLOSED WITH THORNTON IC PROJECT

US-20

YELLOWSTONE HWY

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.

UNIVERSITY BLVD EXTENSION



3100 W ROAD (MUSKRAT ROAD)

EAST OF THORNTON INTERCHANGE

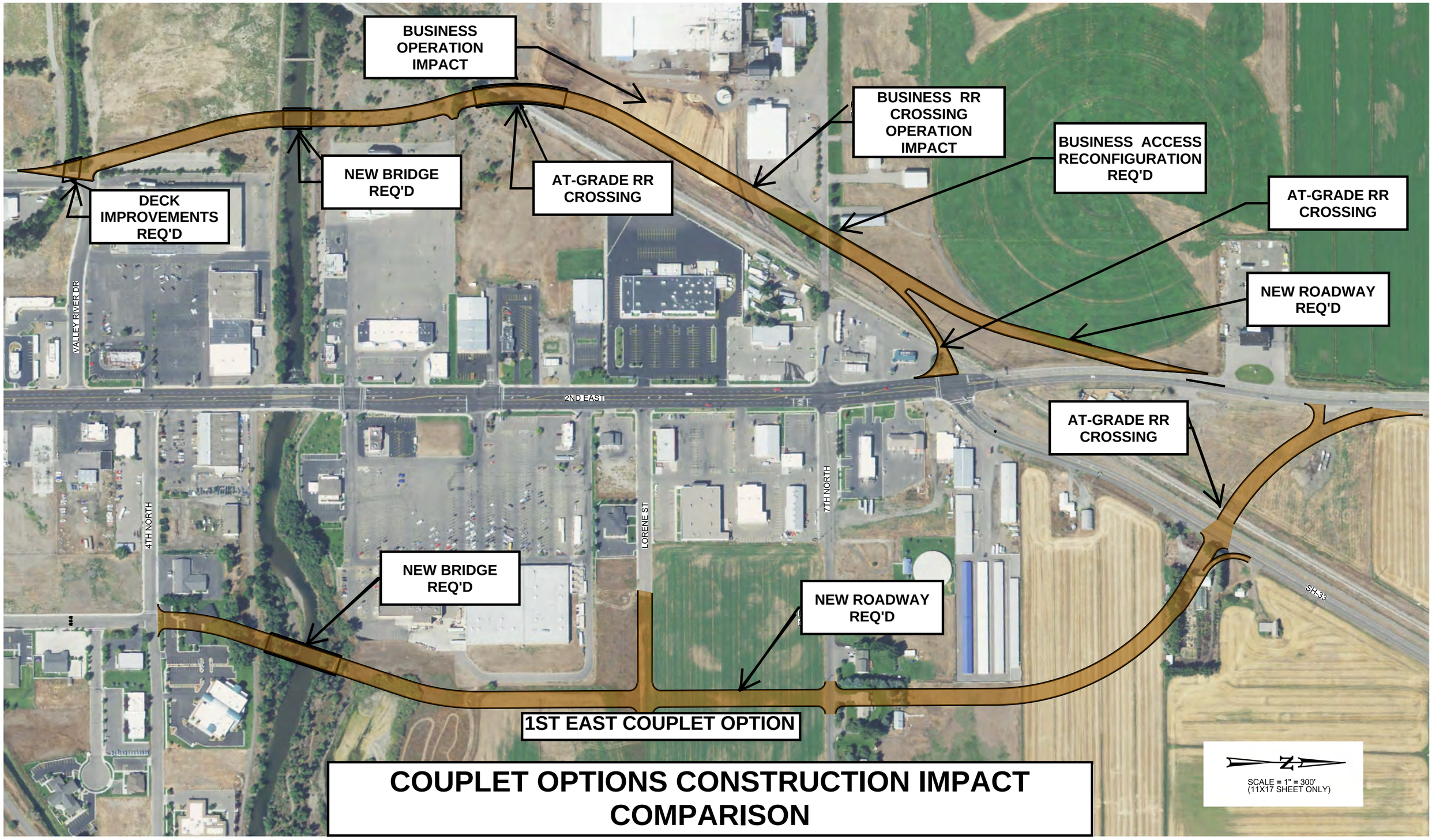
3100 W

POTENTIAL ALIGNMENT FOR ROADWAY CONNECTION

FUTURE 5000 S ROADWAY

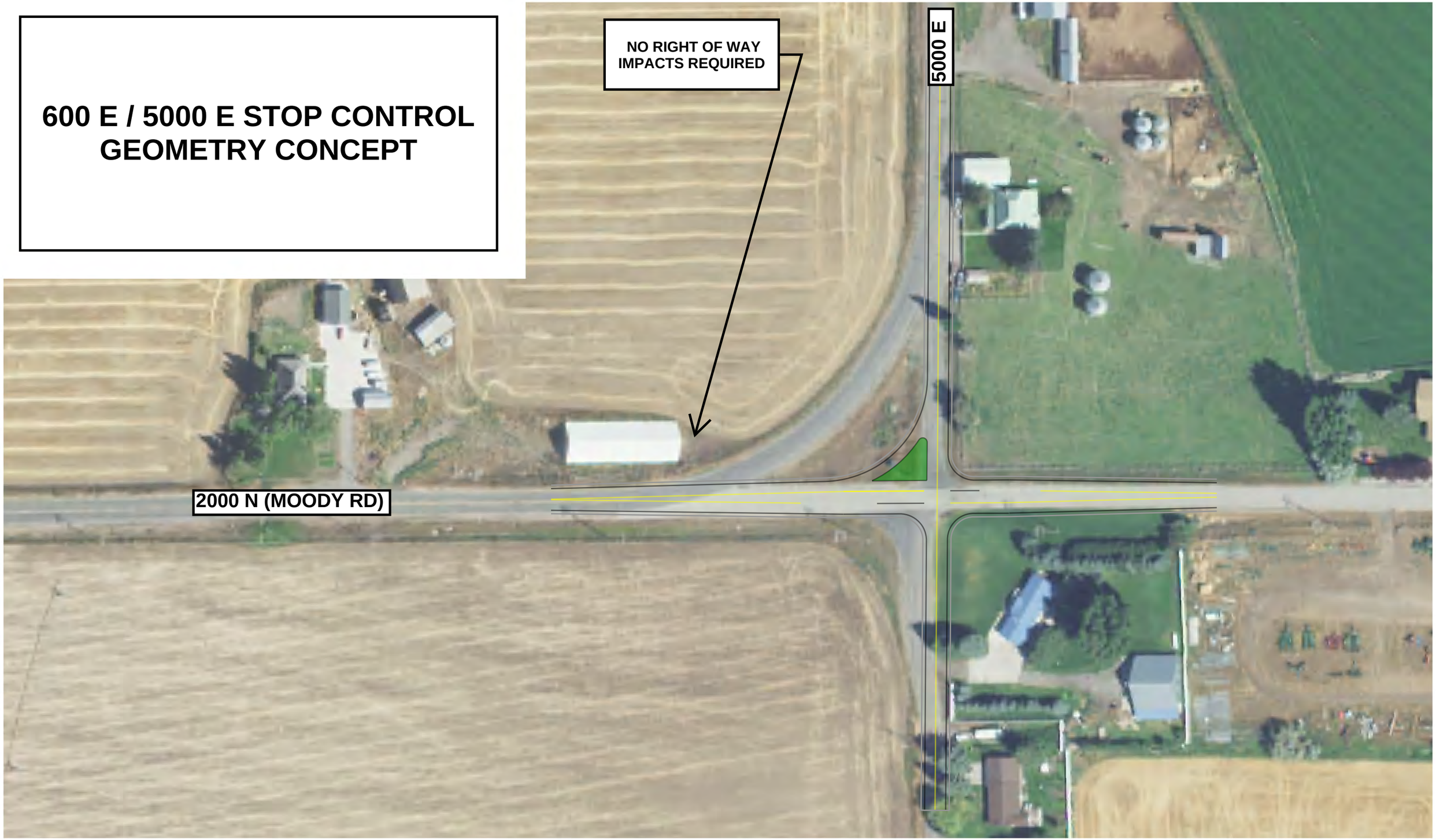
CHERRY STEM ROADWAY TO BE CONSTRUCTED WITH 5000 S PROJECT

Alignment shown is intended as schematic only and does not represent a preferred alignment. Connectivity and general concept is intended by this figure only.

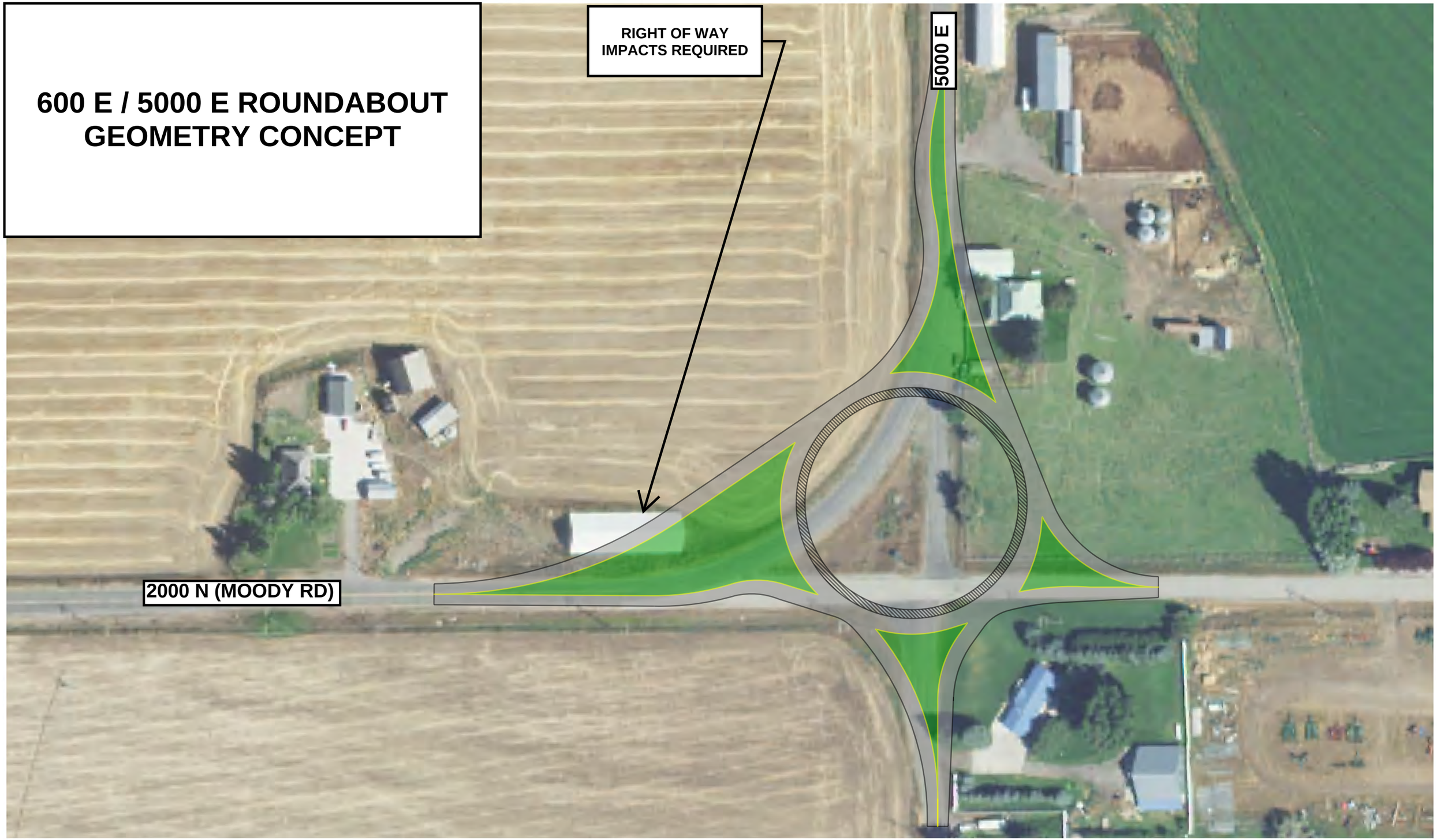


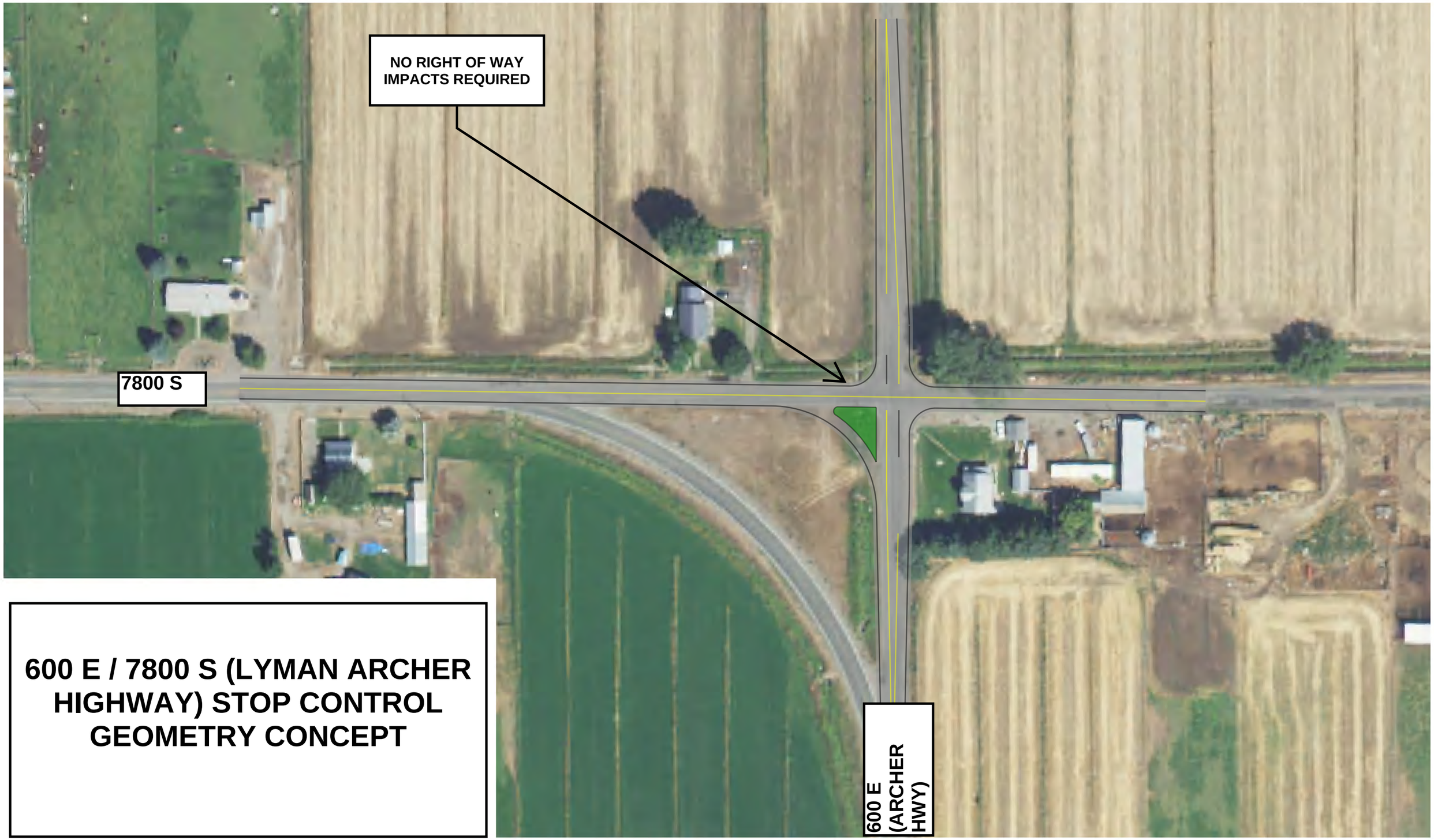
COUPLET OPTIONS CONSTRUCTION IMPACT COMPARISON

600 E / 5000 E STOP CONTROL GEOMETRY CONCEPT

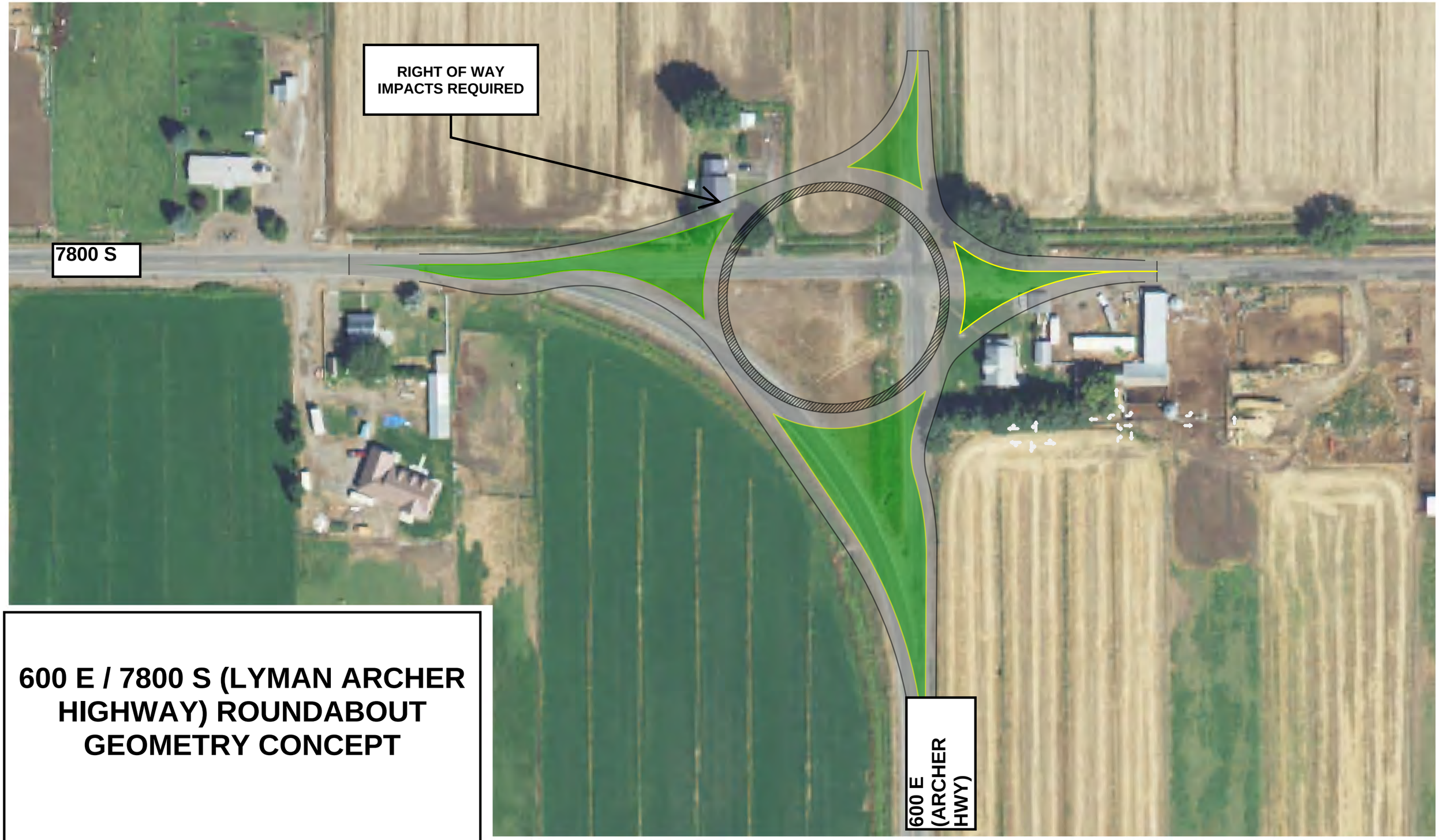


600 E / 5000 E ROUNDABOUT GEOMETRY CONCEPT

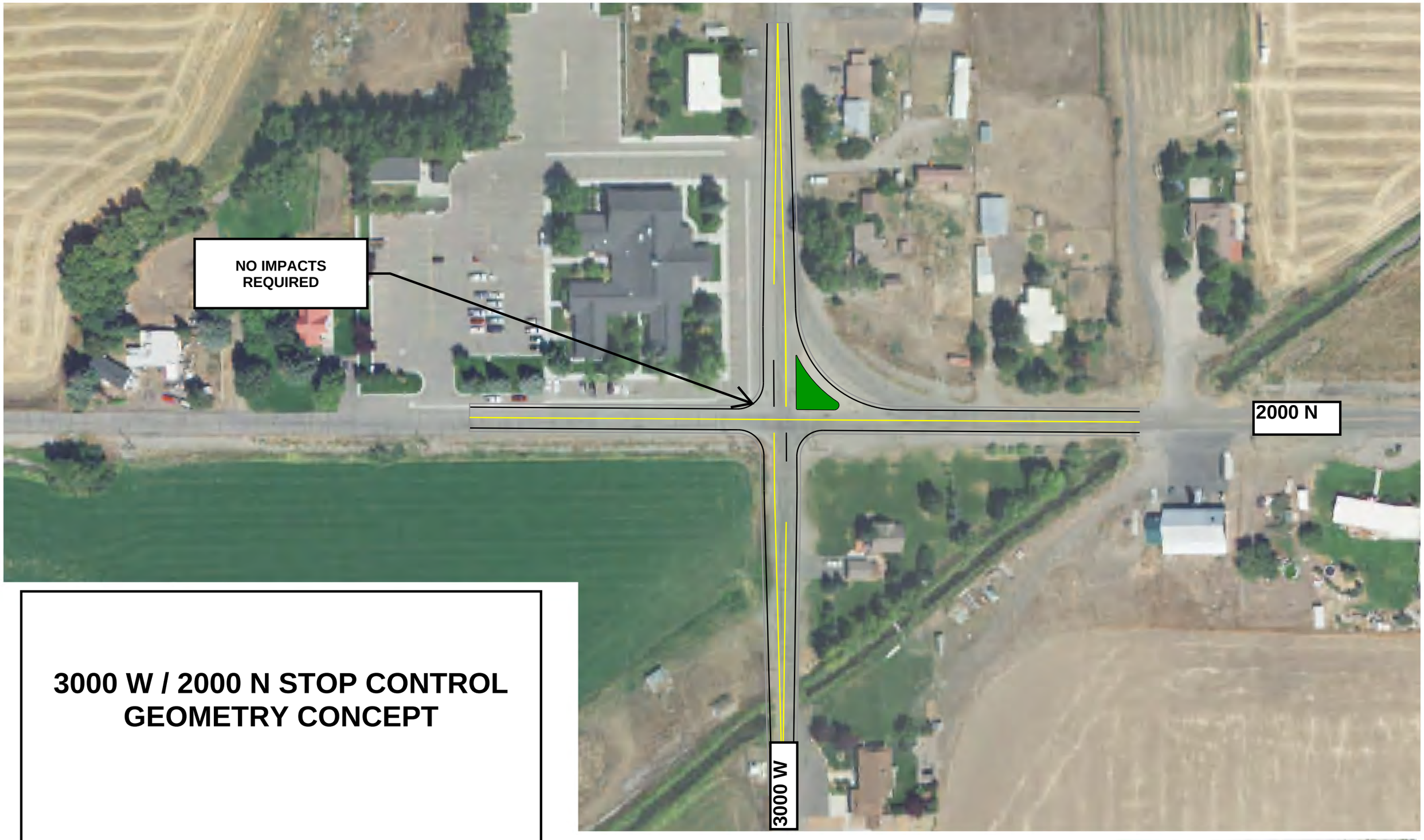




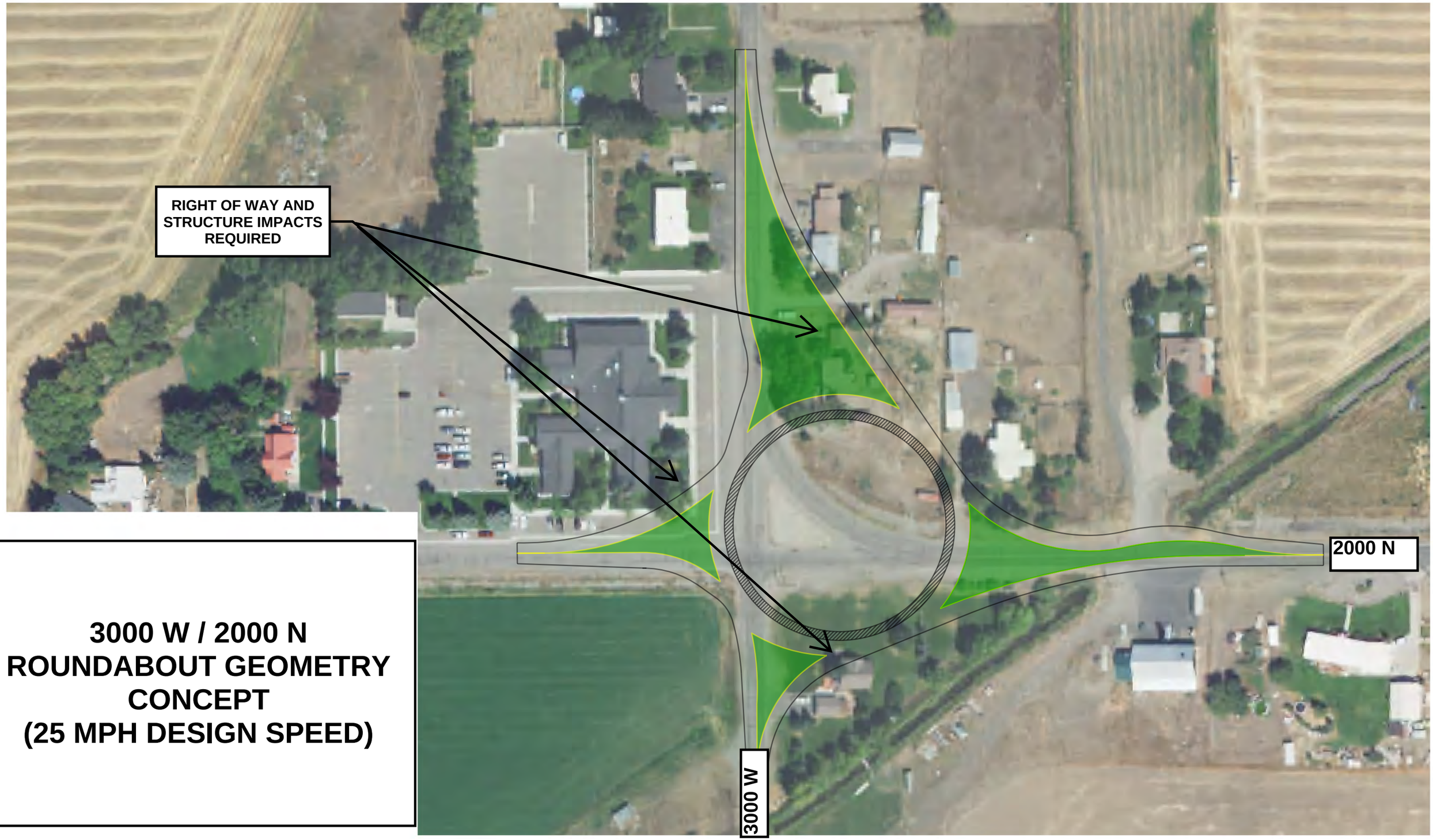
600 E / 7800 S (LYMAN ARCHER HIGHWAY) STOP CONTROL GEOMETRY CONCEPT



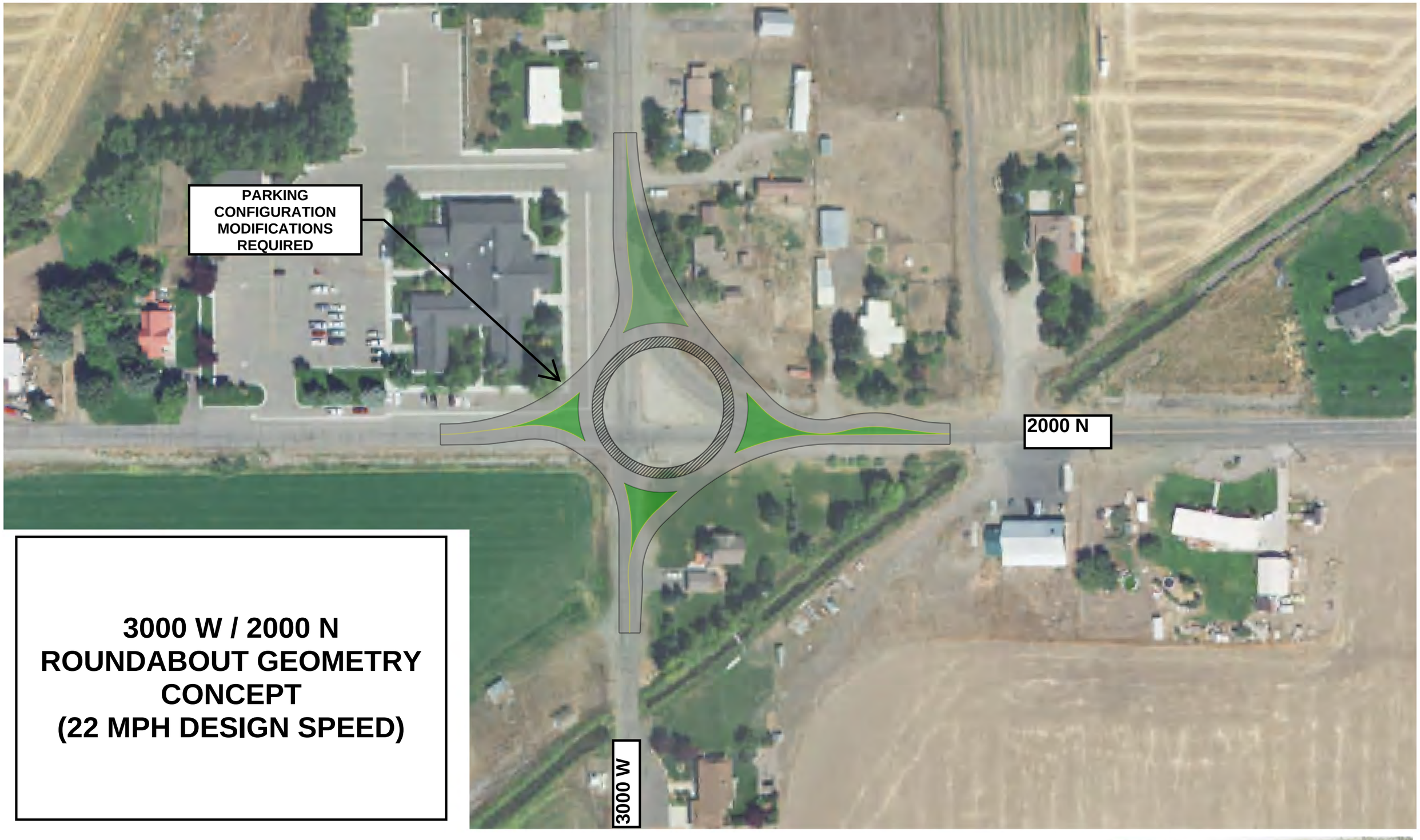
600 E / 7800 S (LYMAN ARCHER HIGHWAY) ROUNDABOUT GEOMETRY CONCEPT



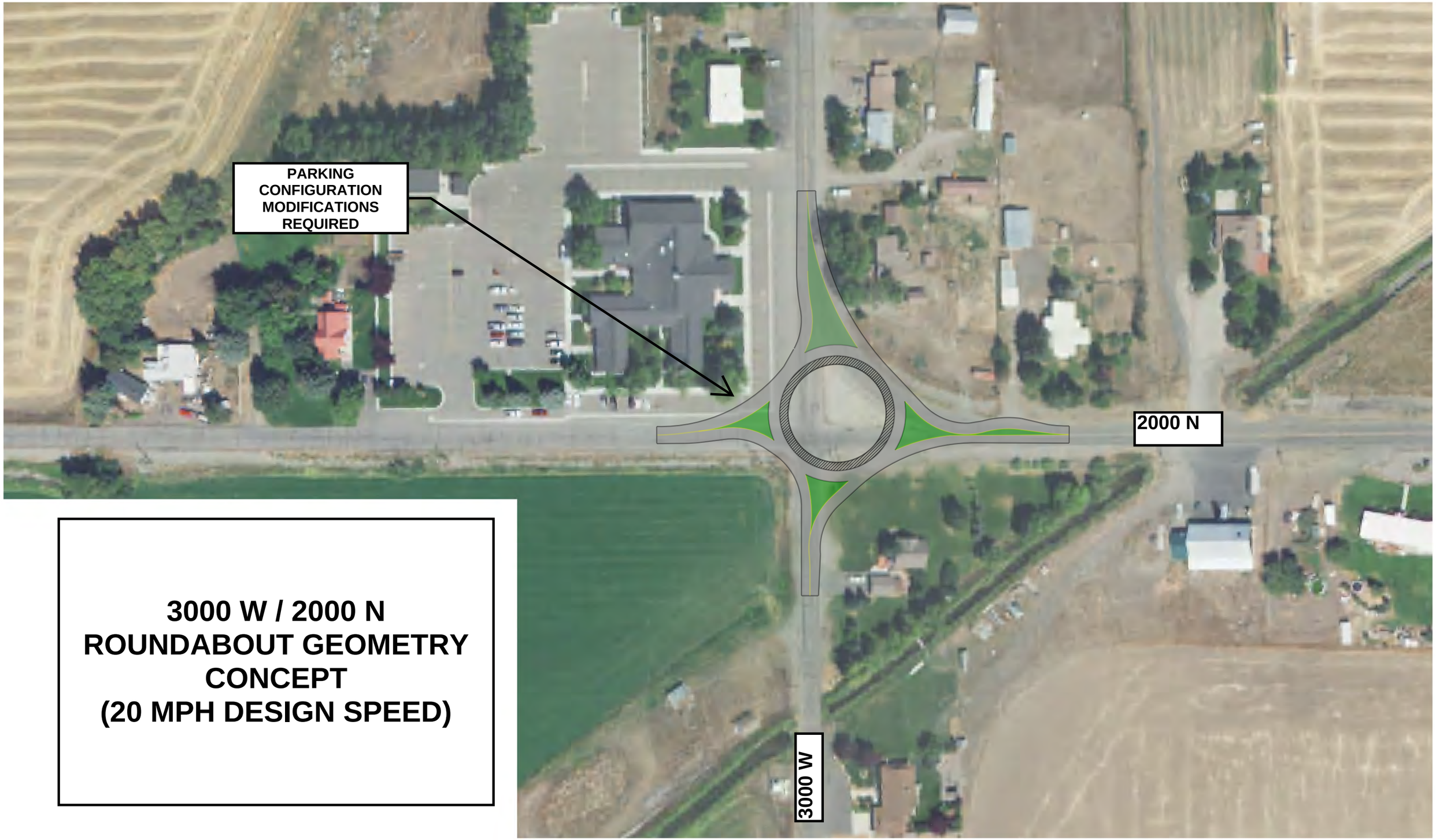
3000 W / 2000 N STOP CONTROL GEOMETRY CONCEPT



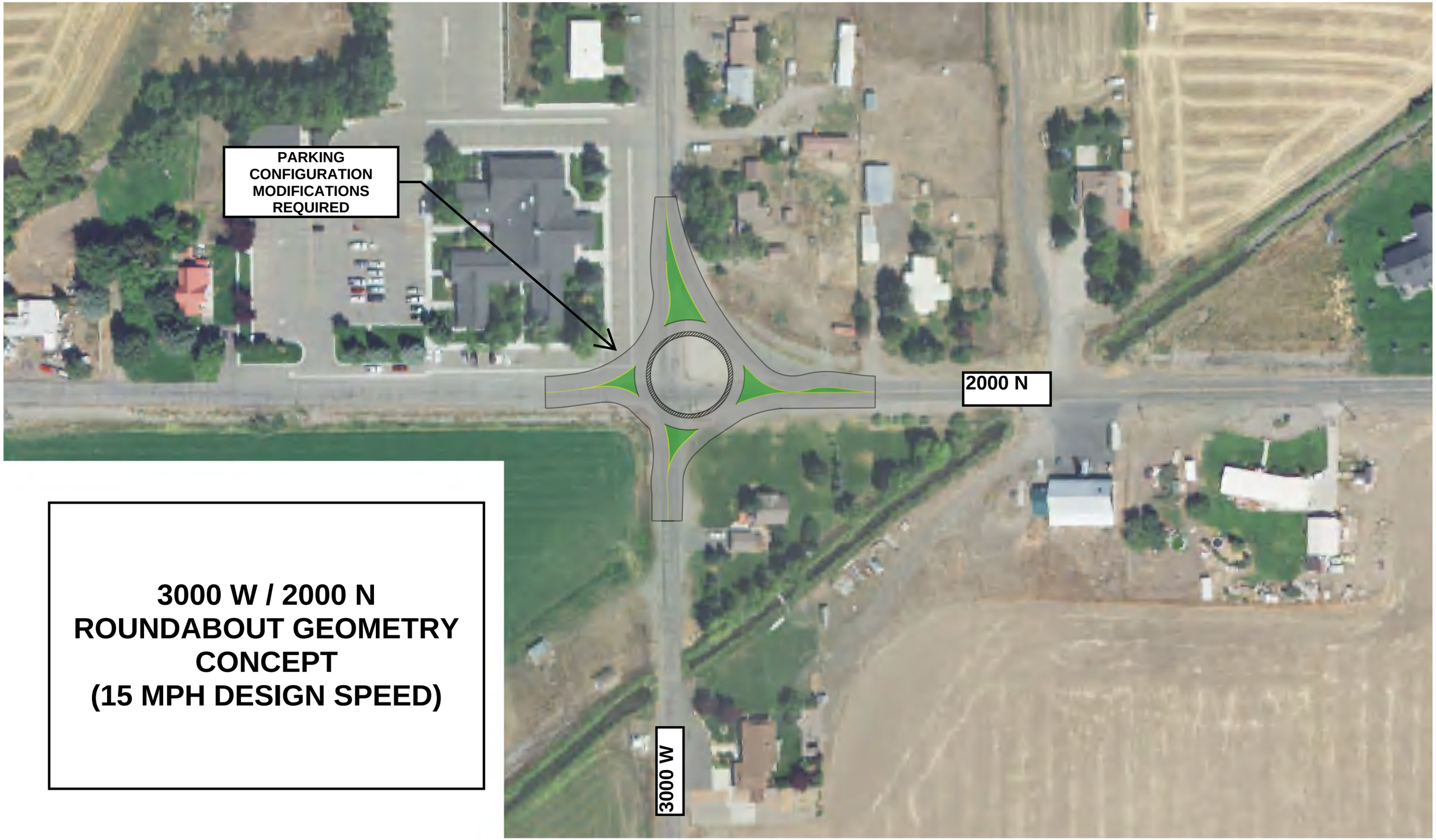
3000 W / 2000 N ROUNDABOUT GEOMETRY CONCEPT (25 MPH DESIGN SPEED)



3000 W / 2000 N ROUNDABOUT GEOMETRY CONCEPT (22 MPH DESIGN SPEED)

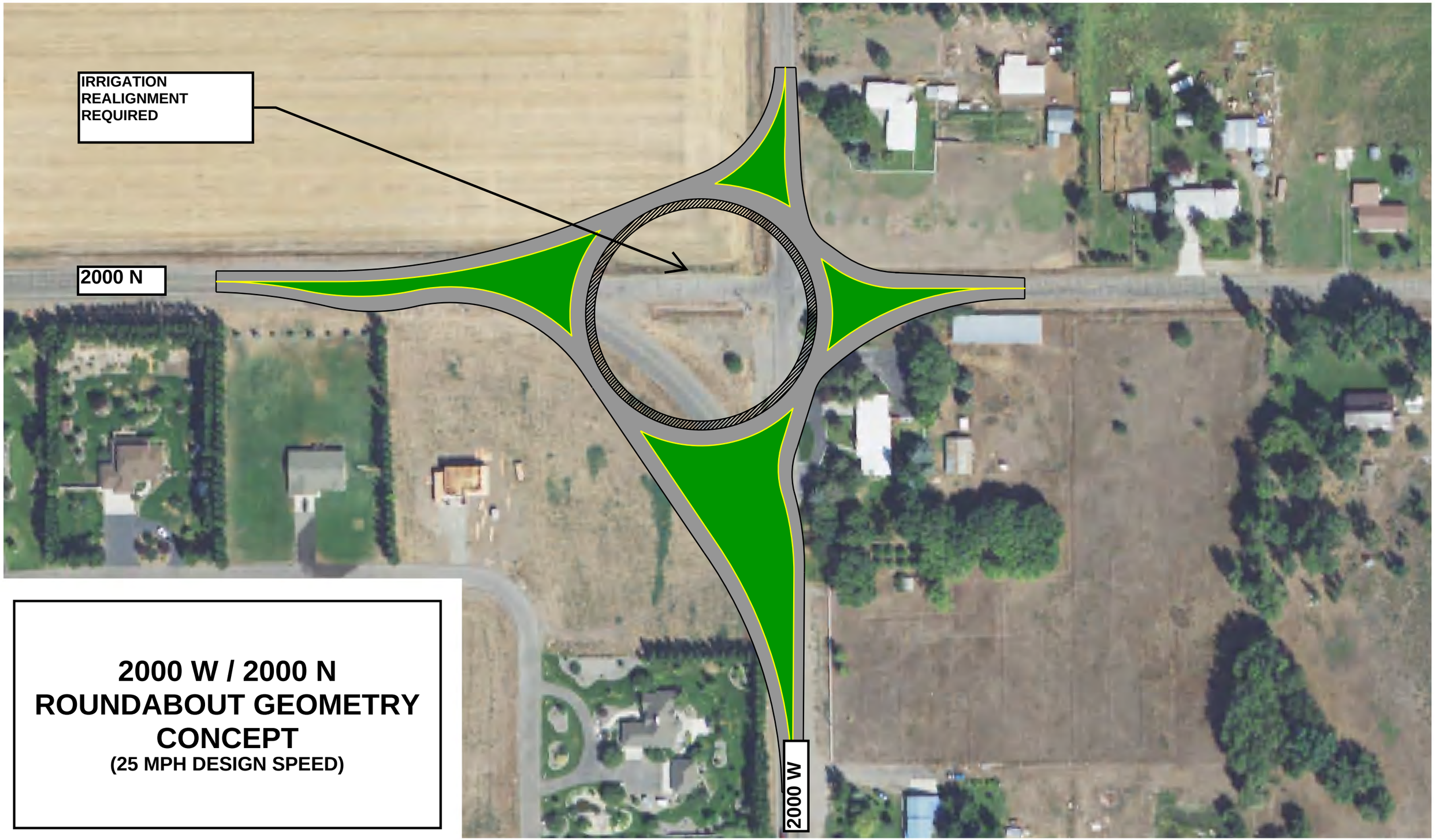


3000 W / 2000 N ROUNDABOUT GEOMETRY CONCEPT (20 MPH DESIGN SPEED)



3000 W / 2000 N ROUNDABOUT GEOMETRY CONCEPT (15 MPH DESIGN SPEED)

2000 W / 2000 N STOP CONTROL GEOMETRY CONCEPT (25 MPH DESIGN SPEED)



2000 W / 2000 N ROUNDABOUT GEOMETRY CONCEPT

(25 MPH DESIGN SPEED)

US-20/UNIVERSITY BLVD INTERCHANGE GEOMETRY CONCEPT

(SINGLE POINT URBAN INTERCHANGE)

OVERPASS STRUCTURE RECONSTRUCTION REQUIRED

UNIVERSITY BLVD

US-20 SOUTH BOUND

US-20 SOUTH BOUND

70+00

US-20/SH-33 INTERCHANGE GEOMETRY CONCEPT

(SINGLE POINT URBAN INTERCHANGE)

OVERPASS STRUCTURE RECONSTRUCTION REQUIRED

US-20 SOUTH BOUND

US-20 NORTH BOUND

PIONEER ROAD

SH-33 MAIN STREET

70+00

2000 SOUTH GEOMETRY CONCEPT

US-20 OVERPASS REQUIRED

2000 S

2000 W

US-20

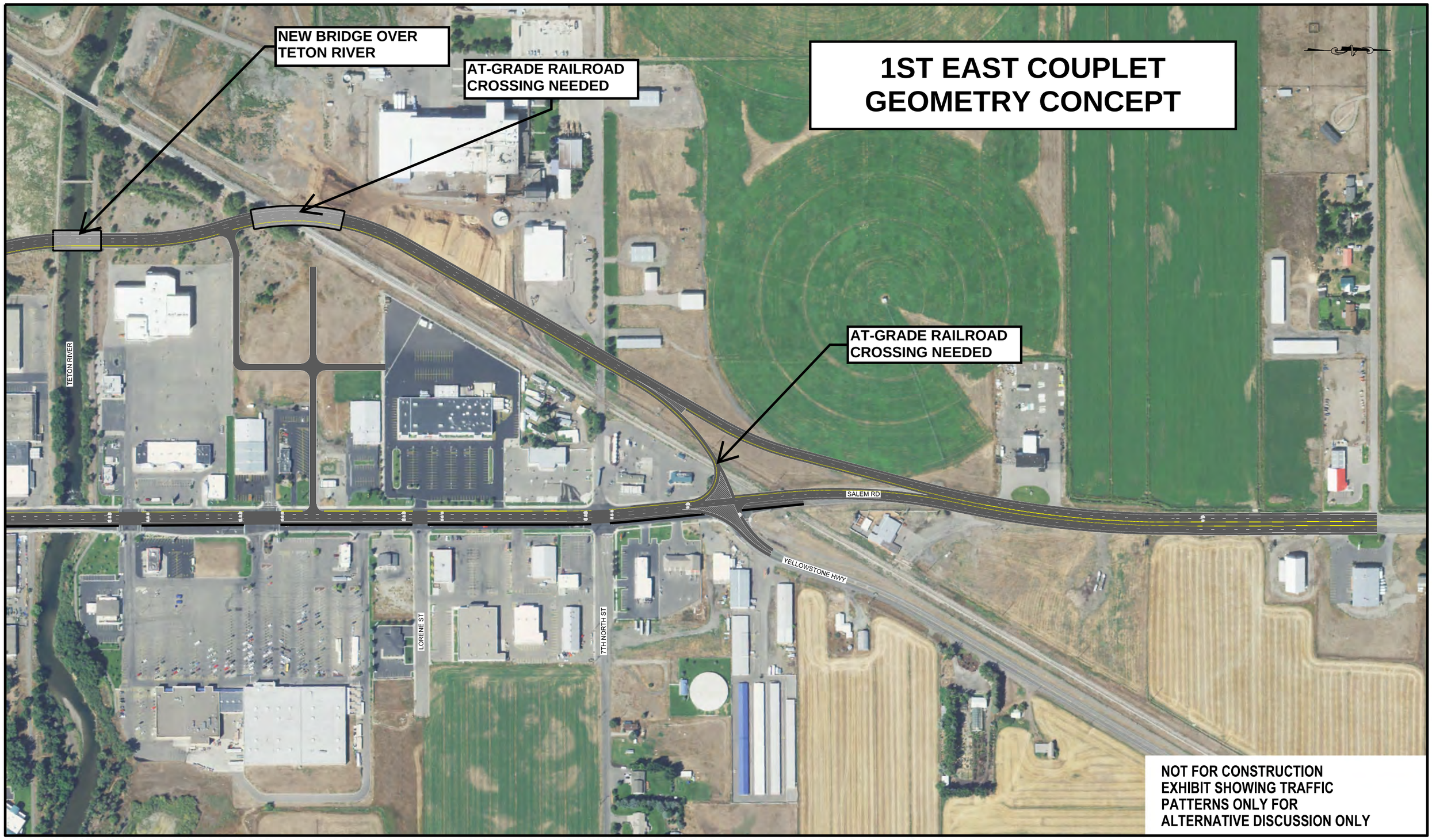
YELLOWSTONE HIGHWAY

7th SOUTH GEOMETRY CONCEPT

US-20 OVERPASS REQUIRED

ALIGNMENT SHIFT ANTICIPATED

1ST EAST COUPLET GEOMETRY CONCEPT



NOT FOR CONSTRUCTION
EXHIBIT SHOWING TRAFFIC PATTERNS ONLY FOR ALTERNATIVE DISCUSSION ONLY

HORROCKS ENGINEERS

MOODY YELLOWSTONE INTERSECTION ALIGNMENT IMPROVEMENT


NOT FOR CONSTRUCTION
EXHIBIT SHOWING TRAFFIC
PATTERNS ONLY

NOT FOR CONSTRUCTION
EXHIBIT SHOWING TRAFFIC PATTERNS ONLY

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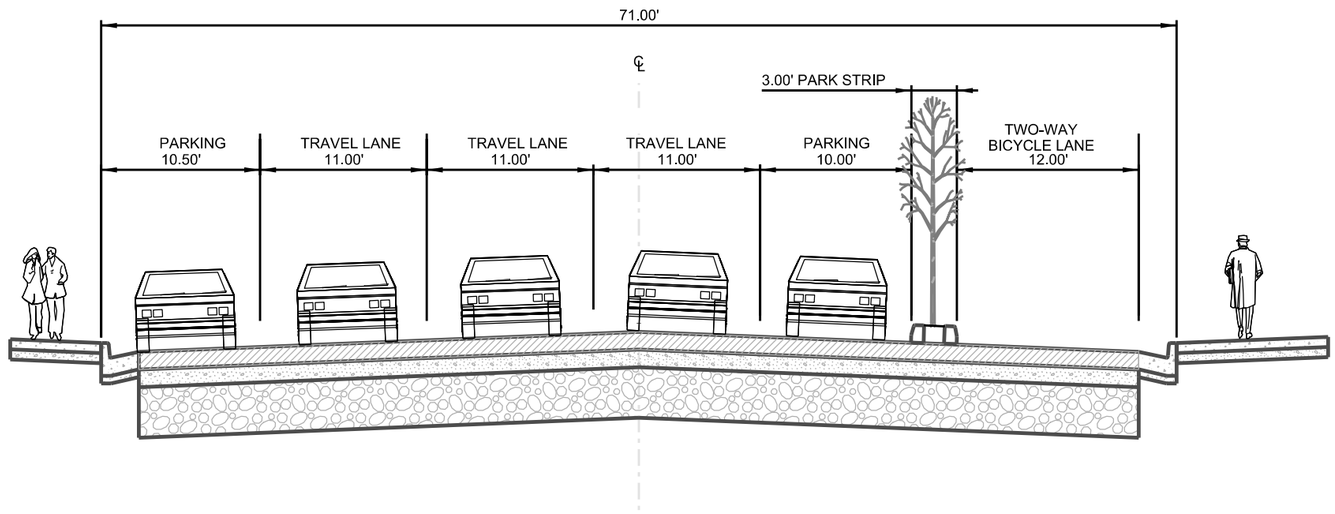


2nd East

PRELIMINARY
NOT FOR CONSTRUCTION

2ND EAST SOUTHBOUND COUPLET

TYPICAL SECTION

DRAFT

SCALE:

DATE:
2/3/2015

$$User$$
$$Date$$

Idaho Transporation Department

Bridges in Madison County

9/24/2014

BrKey	Features	Route	Milepost	Location	Material Type	Design Type	Length	SqFt	Year Built	Deck	Super	Sub	Culv	NBI Rating*	Suff Rating	Admin Jurisdiction
13905	SALEM CANAL	SH 33	339.658	1.0 N. SUGAR CITY	Concrete	Frame	20	840	1932	5	5	5	N	N	87.6	District 6
12520	TEXAS SLOUGH	US 20 WBL	328.068	AT THORNTON	Prestressed Concrete	Stringer/Girder	64	2816	1981	6	7	7	N		94.2	District 6
12555	SH 33;REXBURG IC	US 20 WBL	333.421	0.5 W. REXBURG;SH 33	Prestressed Concrete	Single/Spread Box	157	6867	1981	6	6	6	N		82.8	District 6
12565	S.FK.TETON RIVER	US 20 EBL	334.350	0.9 N. REXBURG	Steel Continuous	Stringer/Girder	180	7868	1980	6	7	6	N		96.4	District 6
12585	N.FK.TETON RIVER	US 20 WBL	339.405	2.0 N. SUGAR CITY	Prestressed Concrete	Stringer/Girder	101	4413	1979	6	6	6	N		99.6	District 6
12560	S.FK.TETON RIVER	US 20 WBL	334.349	0.9 N. REXBURG	Steel Continuous	Stringer/Girder	180	7868	1980	6	7	6	N		99.5	District 6
12580	SALEM CANAL	US 20 WBL & EBL	338.318	0.7 W. SUGAR CITY	Concrete Continuous	Culvert	19	3541	1979	N	N	N	6	N	86.3	District 6
13946	CANYON CREEK	SH 33	115.508	8.8 E. NEWDALE	Steel Continuous	Stringer/Girder	380	15960	2006	6	8	8	N		87.2	District 6
13915	TETON ISLAND CANAL	SH 33	100.501	3.2 W. TETON	Concrete	Frame	20	880	1976	7	7	6	N	N	97.0	District 6
12540	REXBURG CANAL	US 20 EBL & WBL	332.940	0.5 S. REXBURG	Concrete	Frame	14	2976	1981	6	6	6	N	N	98.8	District 6
12505	BANNOCK JIM SLOUGH	US 20 EBL & WBL	327.237	5.0 N. RIGBY	Concrete	Culvert	11	1649	1975	N	N	N	6	N	83.0	District 6
12515	TEXAS SLOUGH	US 20 EBL	328.067	AT THORNTON	Prestressed Concrete	Stringer/Girder	64	2816	1981	6	7	7	N		94.2	District 6
12535	STP 7726;S.REXBURG IC	US 20 WBL	331.924	1.5 S. REXBURG	Prestressed Concrete	Single/Spread Box	157	6868	1981	6	6	6	N		83.8	District 6
16660	WESTFIELD CANAL	SH 33	078.480	0.3 W. REXBURG	Concrete	Frame	20	2325	1956	6	6	6	N	N	80.2	District 6
13895	S.FK.TETON RIVER	SH 33	335.390	IN REXBURG	Prestressed Concrete	Stringer/Girder	144	13231	1971	7	8	6	N	FO	60.0	District 6
12525	REID CANAL	US 20 EBL & WBL	329.109	0.9 N. THORNTON	Concrete	Frame	18	3720	1981	6	6	6	N	N	98.5	District 6
16665	REXBURG CANAL	SH 33	078.988	IN REXBURG	Concrete	Frame	20	1453	1954	5	5	5	N	N	83.9	District 6
13920	TETON RIVER OVERFLOW	SH 33	101.559	1.5 W. TETON	Concrete	Slab	51	2065	1976	7	7	8	N		97.6	District 6
12530	STP 7726;S.REXBURG IC	US 20 EBL	331.923	1.5 S. REXBURG	Prestressed Concrete	Single/Spread Box	157	6868	1981	6	6	6	N		83.8	District 6
13910	SALEM CANAL	SH 33	100.456	3.2 W. TETON	Concrete	Frame	20	880	1976	7	7	6	N	N	97.0	District 6
13890	REXBURG CANAL	SH 33	335.138	AT REXBURG	Concrete	Frame	23	2475	1938	6	6	6	N		91.0	District 6
20980	US 20;SALEM RD IC	STP 7786;SALEM RD	001.519	2.0 N. REXBURG	Steel Continuous	Stringer/Girder	268	14554	1982	6	7	7	N		100.0	District 6
12550	SH 33;REXBURG IC	US 20 EBL	333.420	0.5 W. REXBURG;SH 33	Prestressed Concrete	Single/Spread Box	157	6867	1981	6	6	6	N		82.8	District 6
13900	TETON ISLAND CANAL	SH 33	337.473	2.0 N. REXBURG	Concrete	Frame	23	880	1939	6	6	6	N		91.9	District 6
13925	S.FK.TETON RIVER	SH 33	102.457	1.2 W. TETON	Concrete	Stringer/Girder	80	3178	1975	6	6	6	N		83.4	District 6
12590	N.FK.TETON RIVER	US 20 EBL	339.406	2.0 N. SUGAR CITY	Prestressed Concrete	Stringer/Girder	101	4413	1979	6	7	6	N		99.6	District 6
12510	LIBERTY PARK CANAL	US 20 EBL & WBL	327.746	0.5 S. THORNTON	Concrete	Culvert	18	3420	1982	N	N	N	6	N	83.0	District 6
12583	US 20;SH 33 SPUR IC	SH 33 SPUR	099.400	0.5 N. SUGAR CITY	P/S Conc Continuous	Stringer/Girder	241	13810	2001	7	8	6	N		99.9	District 6
12570	TETON ISLAND CANAL	US 20 EBL & WBL	334.960	2.6 N. REXBURG	Concrete	Frame	17	3534	1979	6	6	6	N	N	99.0	District 6
12578	US 20;SUGAR CITY HALF IC	CENTER STREET	100.215	IN SUGAR CITY	P/S Conc Continuous	Stringer/Girder	202	11582	2001	6	7	6	N		94.8	District 6
16645	HENRY'S FK.SNAKE RIVER	SH 33	073.436	4.5 W. REXBURG	Prestressed Concrete	Stringer/Girder	323	14768	1977	6	6	4	N	SD	64.4	District 6
12545	WESTFIELD CANAL	US 20 & IC RAMPS	333.306	0.1 S. 0.5 W. REXBURG	Concrete	Culvert	11	3645	1981	N	N	N	6	N	83.6	District 6
20970	REID CANAL	STC 6768. S2000W	009.095	1.3 E. 2.7 S. THORNTON	Concrete	Frame	33	1109	1960	6	6	6	N		79.4	Madison County
20920	S.FK.TETON RIVER	SMA 7804; N2000W	000.662	1.5 W. 0.7 N. REXBURG	Prestressed Concrete	Stringer/Girder	108	4069	1977	6	7	6	N		93.9	Madison County
32840	FARMERS CANAL	W 4000 N	101.427	4.0 N. 0.3 W. REXBURG	Concrete	Frame	27	667	1977	7	7	7	N		93.1	Madison County
20966	S. FORK SNAKE RIVER	STC 6768;S 600 E	003.803	0.6 E. 3.5 N. RIRIE	Prestressed Concrete	Stringer/Girder	163	5346	1999	7	8	4	N	SD	67.8	Madison County
32911	TEXAS SLOUGH	S 5500 W	102.523	2.6 N 2.0 W THORNTON	Steel	Stringer/Girder	42	1273	2012	9	9	9	N		99.0	Madison County
32805	TEXAS SLOUGH CANAL	W 2000 S	102.640	0.6 E. BURTON	Concrete	Stringer/Girder	25	667	1955	5	6	5	N		63.4	Madison County
32935	TEXAS SLOUGH;NW.THORNTON	W 6000 S	102.411	2.2 N. 2.5 W. THORNTON	Prestressed Concrete	Stringer/Girder	40	1195	1977	6	7	6	N		99.0	Madison County
21025	S.FK.TETON RIVER	STC 6774;E 2000 N	001.965	1.2 S. 1 E. SUGAR CITY	Concrete	Stringer/Girder	70	1855	1959	4	6	6	N	SD	49.2	Madison County

***NBI Rating: SD = Structurally Deficient FO = Functionally Obsolete**

Report by Patty Fish, Transportation Systems

Idaho Transporation Department

Bridges in Madison County

9/24/2014

BrKey	Features	Route	Milepost	Location	Material Type	Design Type	Length	SqFt	Year Built	Deck	Super	Sub	Culv	NBI Rating*	Suff Rating	Admin Jurisdiction
32915	N.FK.TETON RIVER	2000 W	102.239	4.1 N. 1.5 W. REXBURG	Prestressed Concrete	Stringer/Girder	60	1916	1977	7	7	7	N		99.0	Madison County
20925	N.FK.SNAKE R.;HIBBARD BR	STC 6760;W4000N	005.526	3.0 W. 4.2 N. REXBURG	Prestressed Concrete	Stringer/Girder	131	4941	1968	6	6	5	N		84.8	Madison County
20930	WARM SLOUGH	STC 6760; W4000N	006.026	3.3 W. 4.7 N. REXBURG	Prestressed Concrete	Stringer/Girder	88	3315	1969	6	6	5	N		86.4	Madison County
32940	CANYON CREEK	CANYON CREEK RD	103.220	6.5 S. 16.4 E. REXBURG	Wood or Timber	Stringer/Girder	31	495	1970	7	6	6	N		79.5	Madison County
20985	N.FK.TETON RIVER	STC 6770; N SALEM	002.826	4.8 N. 0.6 E. REXBURG	Prestressed Concrete	Stringer/Girder	87	3283	1976	6	7	7	N		92.7	Madison County
21030	MOODY CREEK	STC 6774;E 2000 N	003.727	2.7 E. 1.2 S. SUGAR CITY	Concrete	Frame	21	1023	1974	6	6	5	N		86.7	Madison County
32871	LIBERTY PARK CANAL	W 6800 S	100.657	1.7 S. 0.5 E. THORTON	Concrete	Frame	27	861	2001	5	5	5	N		84.2	Madison County
32950	TEXAS SLOUGH	CO. RD.;OLD US 20	328.108	AT THORNTON	Concrete	Tee Beam	40	1152	1938	5	5	6	N		59.1	Madison County
32790	N.FK.TETON RIVER	N 3000 E	100.662	4.6 N. 3.6 E. REXBURG	Prestressed Concrete	Stringer/Girder	78	2486	1976	7	7	7	N		99.0	Madison County
32795	TETON ISLAND CANAL	2000 EAST RD	101.981	0.4 S. 0.5 E. SUGAR CITY	Steel	Stringer/Girder	26	1279	1959	6	5	5	N		86.0	Madison County
32800	REID CANAL	W 7200 S	100.040	0.3 N. 1.5 W. ARCHER	Steel	Stringer/Girder	23	598	1961	7	6	6	N		84.0	Madison County
32920	LYONS CREEK	S. SNAKE RIVER RD	101.834	10.0 S. 2.3 E. REXBURG	Prestressed Concrete	Tee Beam	69	2077	1972	7	6	6	N		97.9	Madison County
32945	TEXAS SLOUGH;W.THORNTON	3300 W	102.575	0.1 S. 0.3 W. THORNTON	Prestressed Concrete	Stringer/Girder	52	1755	1981	7	8	8	N		97.6	Madison County
32830	N.FK.TETON RIVER	N 1000 E	105.298	4.2 N. 1.6 E. REXBURG	Steel	Truss-Thru	65	1508	1930	6	4	5	N	SD	45.4	Madison County
32905	TETON ISLAND CANAL	SMA 7157;N 1000 E	100.864	2.4 N. 1.6 E. REXBURG	Concrete	Frame	22	710	1977	6	6	6	N		88.3	Madison County
32810	TETON ISLAND CANAL	N 2200 E	100.487	4.4 N. 3.6 E. REXBURG	Prestressed Concrete	Slab	45	1442	1977	7	7	7	N		98.9	Madison County
32785	COMBINED SNAKE RIVERS	N 3600 E	102.170	5.1 S. 9.6 W. REXBURG	Prestressed Concrete	Stringer/Girder	340	10150	1968	6	7	5	N		79.9	Madison County
32930	CANYON CREEK	CANYON CREEK ROAD	107.924	2.5 S. 17.5 E. REXBURG	Prestressed Concrete	Tee Beam	27	761	1975	7	6	6	N		84.2	Madison County
32875	TETON ISLAND CANAL	1700 EAST RD	101.881	2.5 N. 2.2 E. REXBURG	Steel	Stringer/Girder	24	581	1964	6	6	5	N		77.5	Madison County
21020	S.FK.TETON R.OVERFLOW	STC 6774;E 2000 N	001.658	1.2 S. 0.7 E. SUGAR CITY	Concrete	Frame	23	915	1974	6	7	7	N		97.8	Madison County
32926	REID CANAL	7600 SOUTH ROAD	100.009	0.1 N. 1.5 W. ARCHER	Concrete	Frame	24	646	1997	6	6	6	N		84.3	Madison County
32900	S.FK.TETON RIVER	E 3000 N	109.960	0.2 S. 2.2 E. SUGAR CITY	Concrete	Stringer/Girder	90	3035	1988	7	8	5	N		87.0	Madison County
32820	TETON ISLAND CANAL	N 4000 E	100.517	0.3 N. 1.0 W. TETON	Prestressed Concrete	Tee Beam	47	1324	1977	6	6	5	N		84.9	Madison County
32895	S.FK.TETON R.;W.REXBURG	3000 W	102.893	2.4 W. REXBURG	Prestressed Concrete	Tee Beam	73	2185	1977	6	5	5	N		65.8	Madison County
32845	MOODY CREEK	STC 6774; 4000E	004.722	2.1 N. 4.6 E. REXBURG	Concrete	Frame	22	689	1977	7	7	7	N		92.9	Madison County
32861	INDEPENDENT CANAL	W 6000 N	103.739	6.0 N. 3.0 W. REXBURG	Concrete	Frame	23	586	2002	7	7	7	N		97.0	Madison County
32880	TEXAS SLOUGH;SE.THORNTON	S 3100 W	100.971	1.0 S. 0.2 E. THORNTON	Concrete	Frame	36	1109	1978	6	6	6	N		84.3	Madison County
32835	N.FK.TETON R;NW.TETON BR	CRANE RD(N 2300E)	100.743	0.5 N. 1.0 W. TETON	Prestressed Concrete	Tee Beam	52	1464	1977	6	6	6	N		97.0	Madison County
32890	S.FK.TETON R;NE REXBURG	N 16TH E	100.252	1.3 N. 2.6 E. REXBURG	Prestressed Concrete	Stringer/Girder	96	3057	1980	7	8	6	N		98.7	Madison County
32850	WARM SLOUGH	W 4000 N	102.048	3.8 N. 4.2 W. REXBURG	Prestressed Concrete	Tee Beam	72	2142	1968	6	6	5	N		87.0	Madison County
33010	N.FK.TETON RIVER	STC 6767;N2000E	340.177	1.5 N. SUGAR CITY	Prestressed Concrete	Stringer/Girder	92	3100	1976	7	8	7	N		96.5	Madison County
32970	REXBURG CANAL	STC 7826;W. 2ND S.	009.691	IN REXBURG;W. 2ND S. ST	Concrete	Frame	24	1249	1978	6	6	7	N		84.1	City of Rexburg
33000	REXBURG CANAL	N 3RD E	100.056	IN REXBURG;BARNEY DAIRY	Concrete	Frame	25	1345	1980	5	5	7	N		62.9	City of Rexburg
32980	REXBURG CANAL	W. 2ND NORTH ST	100.172	IN REXBURG;W.2ND N.ST	Concrete	Frame	34	1959	1977	6	6	6	N		98.0	City of Rexburg
32990	REXBURG CANAL	N. 2ND WEST STREET	000.377	IN REXBURG;N. 2ND W. ST	Concrete	Frame	24	1345	1978	6	6	6	N		84.2	City of Rexburg
32995	REXBURG CANAL	N. 1ST EAST STREET	101.068	IN REXBURG;N.1ST E.ST	Concrete	Frame	26	1679	1977	5	5	6	N		63.8	City of Rexburg
32975	REXBURG CANAL	W. 1ST NORTH ST	100.133	IN REXBURG;W.1ST N.ST	Concrete	Frame	24	1345	1976	4	4	6	N	SD	48.3	City of Rexburg
32985	REXBURG CANAL	W. 3RD NORTH ST	100.079	IN REXBURG;W.3RD N.ST	Concrete	Frame	25	1195	1977	5	5	6	N		64.9	City of Rexburg
33005	REXBURG CANAL	BARNEY DAIRY ROAD	010.324	IN REXBURG	Concrete	Frame	26	1345	1980	5	5	5	N		62.7	City of Rexburg

***NBI Rating: SD = Structurally Deficient FO = Functionally Obsolete**

Report by Patty Fish, Transportation Systems

Idaho Transporation Department

Bridges in Madison County

9/24/2014

BrKey	Features	Route	Milepost	Location	Material Type	Design Type	Length	SqFt	Year Built	Deck	Super	Sub	Culv	NBI Rating*	Suff Rating	Admin Jurisdiction
32855	SALEM CANAL	3RD NORTH STREET	103.365	IN SUGAR CITY;3RD N.ST	Concrete	Frame	23	1345	1978	6	6	7	N	FO	89.5	City of Sugar City

Total: 80

***NBI Rating: SD = Structurally Deficient FO = Functionally Obsolete**

Report by Patty Fish, Transportation Systems

CITY OF
REXBURG
America's Family Community

September 17, 2015

Mayor Richard Woodland
City of Rexburg
P.O. Box 280
Rexburg, Idaho
83440

Mr. Kelley Hoopes
Horrocks Engineers
901 Pier View Drive
Idaho Falls, Idaho
83402

Re: Rexburg/Madison County Transportation Study

Dear Kelly:

Public Works Director, John Millar and I have reviewed the Rexburg/Madison County Transportation Study and have come to the same conclusion. The study was well done and thoroughly evaluated the transportation needs for the city of Rexburg, but in the end failed to provide a clear path forward at this time to meet future needs. Over the past 15 years the city has had significant growth in population and vehicle trips and there has been minimal expansion of transportation facilities in the 2nd east and West Main areas. As traffic continues to increase there will be additional loss of free flowing transportation on these networks.

The main problem we see is the continued increase in traffic demand on our streets that connect to U5-20 with no easy solution to increase capacity of these routes. The conclusion of the study was to look at developing a one-way couplet with 2nd east and either 1st east or 3rd east. Either of these routes is fraught with problems and complications. The real problem is that there is no magic or easy answer to the development of additional capacity on Main Street, 2nd East or other streets in the north part of the city. We will continue to see the erosion of the level of service on these routes until it gets to a point that the conditions will force the use of other possible alternative routes. We've watched this happen on 17th street in Idaho Falls until the conditions got so bad that there was adequate need and support for the development of Sunnyside Road.

The study indicated that the current and projected need is for additional capacity on the connecting corroders and little chance of traffic moving to alternate possible proposed routes.

We feel that at this time there will not be public support for either of the alternatives for capacity enhancements along 2nd East. We are still in a fluid state on where our next major traffic generator will come from. At some point the University growth may slow and possibly stop and hopefully there will be additional expansion of commerce and industry that will generate additional jobs and related traffic needs. As conditions change the needs will become more defined and we will again look at what can be done to provide additional capacity.

The connections to US-20 are quickly becoming a serious problem and before we can route additional traffic to the US-20 connections, modifications will have to be made to enhance the capacity of vehicles entering onto or exiting from US-20. The south interchange is currently in failure mode for periods of the day and will continue to deteriorate as additional vehicles attempt to use this or the Main Street interchange.

Your recommendation of timing the traffic control signals along 2nd east will aid in moving traffic and will effectively buy us some time before failure occurs. We are working with the Idaho Transportation Department (ITD) on the implementation of the recommendation. If the timing of the signals does as anticipated we will look to providing the same solution on Main Street.

At the conclusion of the study there does not seem to be a project that is feasible to attempt to move forward with seeking state funding on. We feel the most pressing issue at this time is the improvement of the efficiency of the US-20 connections at University - US-20 and 2nd East - US-20. However we feel that this should be the responsibility of ITD and are reluctant to attempt to secure funding through LHTAC for funding of a project on a federal aid primary route.

The need for a second river crossing over the South Fork of the Teton River is a project that we could move forward with, but there is not a consensus as to where this new crossing would be most effective. Therefore we sit without action. We are probably at a point where the need will have to ripen more before we will make the necessary sacrifices to move forward with additional facilities. With the construction of the park on the extension of 1st east and the cost of bridging the river and also the rail road we feel this is not a good alternative at this time. The crossing of the river with the extension of 3rd East we feel is not feasible. The construction of a bridge at this location could be feasible as a relief road, but could not be developed into a primary alternative route. As traffic constricts on 2nd East some traffic would find their way to 3rd east, but connections back onto 2nd East would be difficult. This new route would be expensive and would provide minimal additional capacity without connecting the new route into existing streets through residential neighborhoods and adjacent to a major city park.

As a relief route the construction of a bridge on 3rd East and then bring the traffic onto 4th North on the south and extend a new road to 7th North and the installation of traffic control signals at both 4th North and 7th North might be feasible. While not significantly increasing capacity, it would provide an additional river crossing and a relief route if the 2nd East Bridge is restricted or closed. In the future, as traffic patterns become more defined and conditions change we would

see the extension of 2nd West north across the river and ultimately connection back onto 2nd East near the north interchange as a route that might gain public support.

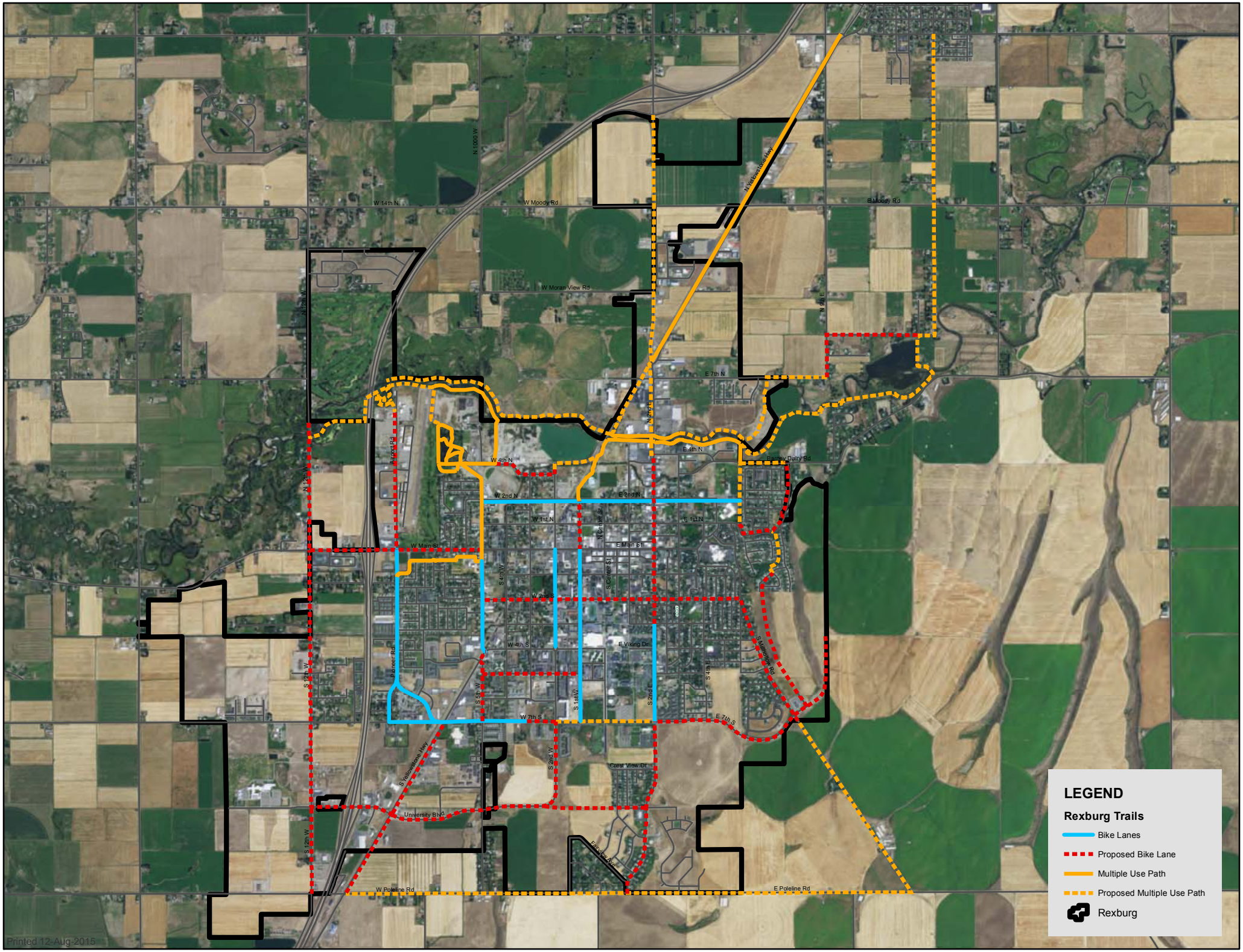
We feel the study was well done and establishes a base line where we are currently at with transportation needs, but feel that the conclusions are not feasible at this time. Many of the minor improvements developed in the study will be implemented over time. As conditions become more defined the need for a new major arterial will have to be revisited.

We hope this aids you in completion of the study and have enjoyed working with you and your staff. The work was done very thoroughly and professionally. It just is not time for a major implementation of the proposed modifications.

Sincerely,

Mayor: Richard Woodland

Public Works Director
John Millar


N 1000 W
W 14th N
W Moody Rd
N Yellowstone Hwy
E Moody Rd
W Moran View Rd
N 5th E
N 12th W
E 7th N
N 2nd E
A Canal Rd
W 4th N
E 4th N
Farmway Dairy Rd
N 12th W
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Bircher Rd
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E Viking Dr
S Millpond Rd
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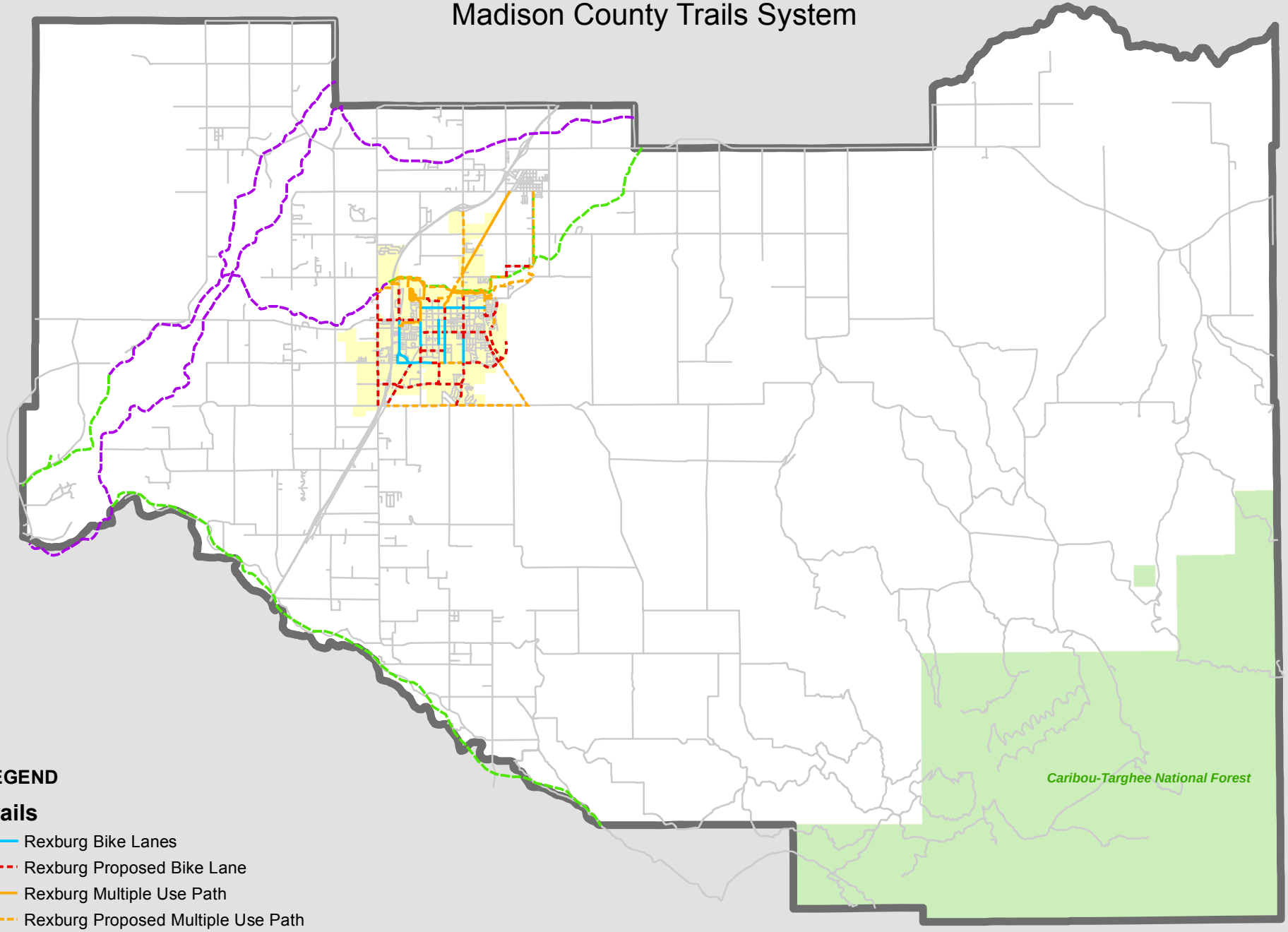
E 7th S
S Yellowstone Hwy
S 2nd W
Crest View Dr
University Blvd
S 12th W
Fairview Ave
W Poleline Rd
E Poleline Rd
LEGEND
Rexburg Trails
Bike Lanes
Proposed Bike Lane
Multiple Use Path
Proposed Multiple Use Path
Rexburg
Printed 12-Aug-2015

Madison County Trails System



LEGEND

Trails

- Rexburg Bike Lanes
- Rexburg Proposed Bike Lane
- Rexburg Multiple Use Path
- Rexburg Proposed Multiple Use Path
- Proposed Madison Trials, Multiple Use (Walking and Bicycling)
- Proposed Madison Trials, Walking Only

Printed 12-Aug-2015