



West Bountiful City

**Transportation
Capital Facilities Plan**

August 2008



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1.0 EXECUTIVE SUMMARY

This Transportation Capital Facilities Plan (TCFP) was prepared to document the evaluation of the major roads within West Bountiful City that was performed by Caldwell Richards Sorensen. Both existing conditions and built out conditions were considered. The scope of this study was limited to the collector roads which include:

- Porter Lane (2200 North) – Collector
- Pages Lane (1600 North) – Collector
- 1000 North – Collector
- 400 North – Collector
- 640 West – Arterial
- 600 West – Collector
- 800 West – Collector
- 1100 West – Collector

Several different types of problems were identified by this study. These problems currently affect the City and its residents and the majority of these problems will only get worse as the traffic load increases with the population growth. These problems are listed as follows:

- Collector roads that convey heavy traffic loads through residential areas
- Limited north-south routes cause concentrated traffic loads on 800 West and 1100 West.
- Road cross sections are not consistent.
- The Historic District does not have an approved cross section design
- Truck traffic is heavy on Porter Lane, Pages Lane, and 1100 West due to landfill traffic.
- Adequate buffer space needs to be provided between vehicles and pedestrians

Based on the issues identified, a list improvement projects along with estimated costs and recommended construction dates was created. The implementation of these improvements will help to safely mitigate and control the impact of increasing traffic on City roads. This list can be found in the Appendix of this report. It is recommended that this list of improvement projects be added to the Capital Improvement Program. A summary of the improvement costs can be found in Table 1-1.

Table 1-1: Summary of Improvement Costs

Priority	Number of Projects	Existing Deficiency	System Improvement	Project Improvement	Total
High	6	\$78,472	\$169,453	\$293,886	\$541,810
Medium	9	\$2,317,551	\$2,538,980	\$1,354,328	\$6,210,859
Low	5	\$0	\$580,000	\$0	\$580,000
Total	20	\$2,396,022	\$3,288,433	\$1,648,214	\$7,332,669



2.0 DEFINITION OF TERMS AND ABBREVIATIONS

CFP	–	Capital Facilities Plan
CIP	–	Capital Improvement Program
CRS	–	Caldwell Richards Sorensen
DSB	–	Deuell-Stone-Barton Canal
LYRB	–	Lewis Young Robertson and Burningham
MPH		Miles Per Hour
TCFP	–	Transportation Capital Facilities Plan
UDOT	–	Utah Department of Transportation



3.0 INTRODUCTION

3.23.1 Background

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This document is the Transportation Capital Facilities Plan (TCFP) for West Bountiful City. A TCFP provides an evaluation of the capacity on the City's roads under existing and future built-out conditions. A transportation study was performed in connection with the West Bountiful City General Plan that was adopted in 2007. The General Plan identifies several transportation problems and makes general improvement recommendations. These recommendations have been considered as part of this study and have largely been incorporated into the TCFP. Improvement projects that are necessary to maintain an adequate and consistent level of service have been identified and prioritized. Changes in growth patterns, system degradation, and escalating construction costs make it necessary to periodically reevaluate the performance of the roads and update the TCFP in order to maintain an adequate level of service and to verify that funding sources are adequate to support the future needs.

3.33.2 Scope of Investigation

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Caldwell Richards Sorensen (CRS) entered into a contract with West Bountiful to evaluate the City's transportation system, specifically major roads within the City. This evaluation included collecting information about the system (level of service, intended purpose, right of way, etc.) and identifying projects needed to maintain functionality of the system. Using published population projections and land use maps provided by the City, the future demands were determined and future improvements were identified. A list of all improvement projects including cost estimates and projected construction dates was prepared.

The TCFP provides documentation for the transportation system analysis performed by CRS and presents the recommended system improvement projects to be included in the City's Capital Improvement Program (CIP). Items that were not considered in the analysis of the transportation system are as follows:

- *Local roads* – Only collector and arterial roads were included in this analysis, no residential roads were considered.
- *UDOT roads* – Roads owned and operated by UDOT were not analyzed as part of this study.
- *Maintenance items* – Only capital improvement projects were considered in this analysis, no maintenance items were considered.
- *Analysis method* – A computer model was not used in this analysis. Conclusions and recommendations made in this report are based on observation of existing traffic conditions and consideration of traffic projections done by UDOT for 500 South, 500 West, 400 North, Interstate 15, and Legacy Parkway.



4.0 EXISTING CONDITIONS

4.1 Existing Roads

The existing roads that were evaluated as part of this study include the City owned collector and arterial roadways within the current City boundary or areas that are planned for annexation. The terms collector and arterial are road classifications, which for the purpose of this report, are determined by the right-of-way width as defined in the West Bountiful City Standards. This information is also provided in Table 4-1. Figure 4.1 shows the location of all existing roads included in this study as well as the type of traffic control at each of the major intersections.

Table 4-1. Right-of-way width for various streets

Street Designation	Right-of-Way Width (ft)
Local	50
Collector	60 - 66
Arterial	80

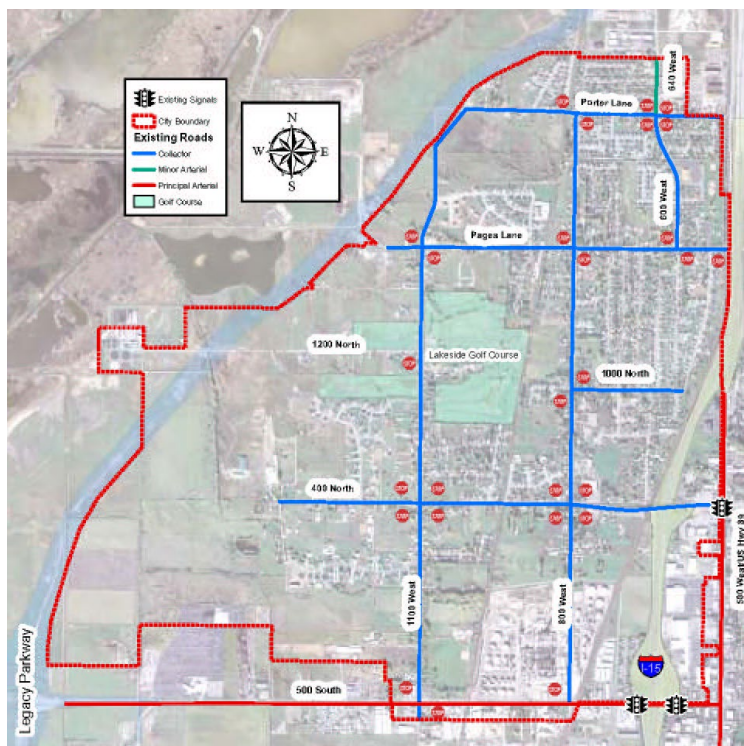


Figure 4.1. Existing Roads Map



The existing roads that were evaluated as part of this study are listed below.

- Porter Lane (2200 North) – Collector
- Pages Lane (1600 North) – Collector
- 1000 North – Collector
- 400 North – Collector
- 640 West – Arterial
- 600 West – Collector
- 800 West – Collector
- 1100 West – Collector

Major roadway systems (Freeways, Parkways, and Principal Arterials) including Interstate 15, Legacy Parkway, Highway 89 and 500 South, which are all owned and maintained by the Utah Department of Transportation (UDOT), surround West Bountiful City. This study does not include an analysis of roads owned by UDOT. Local roads were also excluded from this study based on the assumption that local roads have the capacity to handle local traffic loads.

4.2 Traffic Issues

Several types of problems were identified during this analysis. A brief description of each problem is provided in the following paragraphs.

4.2.1 Collector/Residential Roads

Collector roads in West Bountiful convey large amounts of traffic through residential areas. This is a concern because residential areas have higher numbers of pedestrians, and this concern is augmented when the pedestrians are children. This concern is compounded by the fact that many of these collector roads do not have designated pedestrian areas such as sidewalks or bicycle lanes. Plus residential areas have access points to the roadway at each residence. Each of these access points is a potential point of conflict.

4.2.2 North/South Through Traffic

There are two major north-south routes through the City, 800 West and 1100 West. These roads act as arterials except that they are not wide enough and have too many access points to safely fill such a role. Both roads convey heavy volumes of traffic during the peak morning and evening traffic. Most of this traffic does not originate nor terminate in West Bountiful and it is worst when there is an accident or road closure on Interstate 15.

4.2.3 Road Cross Sections

There are a variety of road cross sections and side treatments on the roads in West Bountiful. Some areas have curb, gutter, and sidewalk while other areas have just enough asphalt for the two traffic lanes and a wide road base shoulder. Other areas have wide asphalt shoulders with striping for bicycle lanes. These cross sections are not consistent along the collector roads and this creates a potential hazard for vehicles and pedestrians as well as a problem for drainage.

4.2.4 Historic District

The City has adopted ordinances which identify areas along 800 West and connecting streets as the Historic District. These ordinances are intended to control the look and feel of the designated area in order to preserve this historic section of the City. Development that occurs in this area will be required to follow these ordinances. However, a historic road cross section



has not yet been designed and this is necessary in order to make the area develop in a manner that is consistent with the City's vision of the Historic District.

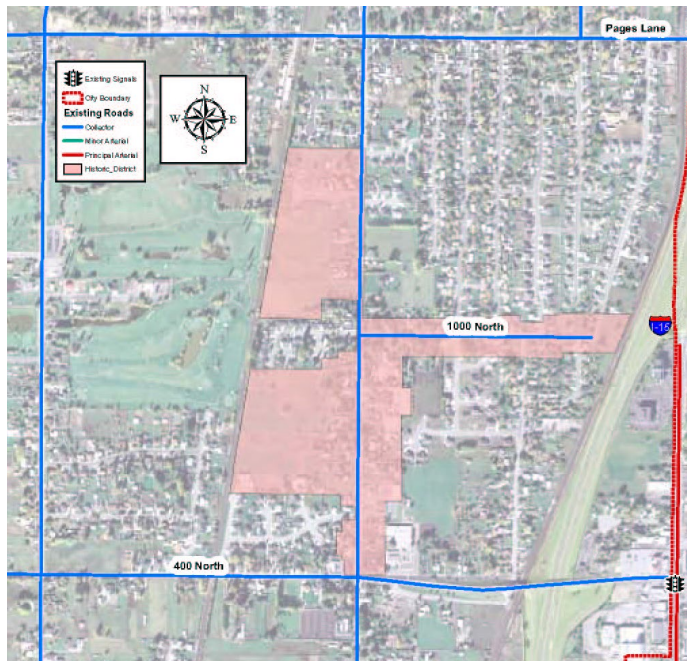


Figure 4.2. Designated Historic District

4.2.5 Truck Traffic

In the past there has been a large amount of heavy truck traffic especially on Porter Lane, Pages Lane, and 1100 West. Most of these truck trips terminate at the Bountiful City Landfill located on Pages Lane. However, with the construction of the Legacy Parkway, the landfill is no longer accessible via Pages Lane. Instead, vehicles heading to the landfill must cross the Legacy Parkway at the 500 South interchange and then head north on the west frontage road. This issue is expected to be greatly reduced by this recent change.

4.2.6 Vehicle/Pedestrian Buffer

This issue is related to others that have been discussed in the previous paragraphs. West Bountiful has tried to maintain a rural look and this is why many of the City's collector roads do not have the typical curb, gutter, and sidewalk. Instead, the majority of the collectors consist of two lanes of asphalt with shoulders of varying widths. Some areas have striped bicycle lanes, but the majority of the rural roads don't have a designated pedestrian area and this creates a serious safety hazard.



5.0 FUTURE CONDITIONS

5.1 Future Land Use

Much of the western portion of the City consists of undeveloped agricultural land. It is anticipated that by the year 2028 the City will approach built out conditions and that the currently undeveloped areas will become developed according to the Future Land Use Plan as described in the West Bountiful City General Plan (General Plan). The Future Land Use Plan is shown in Figure 5.1. Development will increase traffic loads on the major streets within the City.

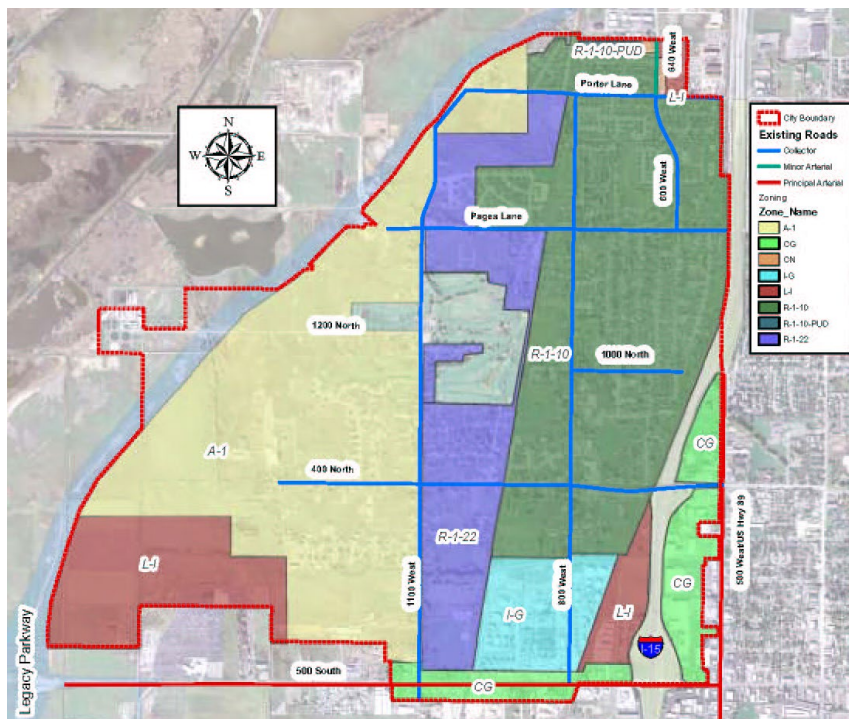


Figure 5.1. Future Land Use Plan

5.2 Road Improvements

Existing collector roads will need to be widened, extended, and connected to new roads as development occurs in the western portions of the City. Traffic control measures will need to be installed to protect residential areas from high speed traffic. Other improvements will be necessary to maintain the safety of pedestrian and vehicle traffic.



All of the concerns identified in Section 4.2 will exist under future built out conditions and most of those concerns will become worse unless improvements are planned and implemented to mitigate and control the effect of increased traffic loads. The following paragraphs generally describe the future problems and the improvements that are recommended to help control the effects of growth.

5.2.1 Collector/Residential Roads

The collector roads in West Bountiful will always run through residential areas but much can be done to reduce the risk of accident or injury. (1) Provide separate travel areas for vehicles and pedestrians. This could include the installation of sidewalks or widening the road and striping for bicycle lanes. Pedestrian walkways should be provided on both sides of the street. (2) Improve roadway and side treatments such that they are consistent along a given roadway. This helps keep the driver focused on the road and also helps keep pedestrians aware of the vehicle travel lanes. (3) Keep speeds at residential limits (25 to 30 mph) rather than increasing to typical collector speed limits (35 to 45 mph). By widening the road, as has been suggested in this paragraph, some drivers feel like they are being invited to travel faster. Some additional traffic calming measures may need to be installed to help keep speeds to the posted limits. Traffic calming measures may include narrowing the road at intersections, striping the lanes narrower, or installing speed humps.

5.2.2 North/South Through Traffic

The opening of the Legacy Parkway is expected to relieve a large portion of the traffic that has been routed through West Bountiful in the past. However, when there is an accident or road closure on Interstate 15 or the Legacy Parkway drivers will resort to old habits and make their way through West Bountiful. Plus, growth within the City will also add to the traffic volume traveling north and south along the City's collector roads.

On 800 West there are two churches, City Hall and West Bountiful Elementary School. This is a major pedestrian center and through traffic should be encouraged to find an alternate route. Widening the asphalt width in 1100 West within the existing right-of-way and re-striping the road to include a center turning lane would improve the flow of traffic and increase the capacity. As mentioned above, reducing the width of pavement at intersections would help maintain safety by keeping speeds slower.

A frontage road along either the east or west side of the Legacy Parkway would provide an alternate north-south route that would not be in a residential area. This frontage road will likely become a necessity in the future in order to handle overflow from the Legacy Parkway. The need for this project will not be driven by West Bountiful growth. It will be a function of growth within the surrounding region. Therefore, any such improvement should be funded by UDOT or some other agency and not the City.

5.2.3 Road Cross Sections

As the City grows and traffic increases it will become important to find ways to maintain the capacity of the collector roads. Making the road cross sections and side treatments consistent makes the road safer for pedestrians, as was mentioned in paragraph 4.2.1, but it also improves the flow of traffic and makes the road drainage system more effective.

As far as drainage is concerned, the best road cross section includes curb and gutter. Roads where the curb and gutter is almost completely installed such as on 800 West, should have the remaining segments filled in, along with sidewalk to make the road cross sections consistent.



Other roads that are more rural, such as 1100 West, may be better suited for a wider asphalt section with bicycle lanes. In the case of 1100 West, it is also recommended that the road be re-stripped to include a center turning lane to improve traffic flow, which will help make this the preferred route for through traffic, rather than through the pedestrian center on 800 West.

The first step to making the road cross sections consistent is to update the City's standard details, which include the standard roadway cross sections. The City's current standard details were last updated in 1993. The standard details should include a standard cross section for a rural collector (no curb, gutter, or sidewalk). Lane striping should also be specified in the standard details. Additional modifications would be necessary to bring the standard details in line with the current APWA Specifications.

5.2.4 Historic District

A special roadway cross section needs to be developed for the Historic District. This cross section along with the specified side treatments will help create the historic look and feel that the City has tried to preserve in the designated area. The development of this cross section will take a cooperative effort from the City Staff, the City Engineer, the Historic Commission, and a possibly Landscape Architect consultant.

5.2.5 Truck Traffic

The construction of the Legacy Parkway is expected to eliminate the concern of truck traffic in the future. This issue should be reevaluated if large amounts of truck traffic continue to travel through the City. The TCFP should be updated to include any new projects that result from a reevaluation of this issue.

5.2.6 Vehicle/Pedestrian Buffer

In order to preserve the safety of pedestrians, it is important that all collector roads have an adequate buffer zone between vehicle and pedestrian traffic. Curb and gutter provide a great buffer because it creates a vertical barrier in addition to a horizontal distance. In areas where curb and gutter will not be installed, a bicycle lane of adequate size (based on traffic speed limit) should be provided on both sides of the road.

5.2.7 Other Improvements

Additional improvements that will become necessary as the City approaches built out conditions include the following. (1) New traffic control measures will be necessary at key intersections in the City (400 North/1100 West, 400 North/800 West). Traffic signals will need to replace the four way stop at both intersections. (2) A few streets will need to be rerouted or extended in order to improve safety and traffic flow. These streets include 220 West, 700 West/800 West, and Jessi's Meadow. (3) Several trail installation projects are currently either being installed or considered, including the Legacy Trail, and the Rail Trail. Once these projects have been completed, a study should be performed to determine whether trail traffic warrants additional trail extensions and/or more trail connectivity. Future trail projects should be included in future updates to the TCFP. (4) New roads and extension of existing roads will be necessary as development occurs. The majority of the growth in the City will take place on the West side of the City. It will be necessary to extend the existing east/west collector roads to the west in order to convey traffic to their destinations within or without the City.



5.3 Conclusions

A number of upgrades are needed in order to maintain the level of service that is currently provided by the existing transportation system in West Bountiful. The need for many of these improvements can be attributed directly to growth within the City. Other improvements are necessary in order to address existing deficiencies in the system. All of the upgrades have been incorporated into a list of improvement projects with cost estimates and target completion dates. A discussion of all of the improvement projects is given in Section 6.0.



6.0 RECOMMENDATIONS

6.1 Transportation Capital Improvement Plan

It is recommended that the transportation system improvement projects identified in this chapter be added to the West Bountiful Capital Improvement Program. Each of the projects is briefly described in this chapter. Figure 6.1 shows the location of each of the projects, where possible.

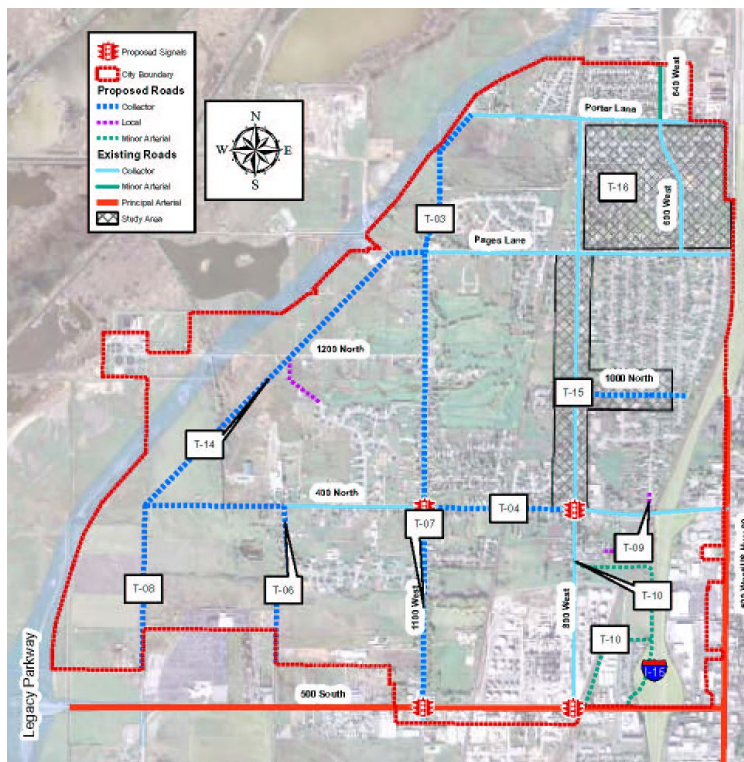


Figure 6.1. Proposed Improvements

Project T-01 High Priority

- Location-UTA rail corridor from 400 North to Sheep Road
- Description-Convert existing rail corridor to pedestrian trail with the Rails to Trails program
- Need-The existing corridor is not currently used for anything. This trail would provide an alternative route for pedestrians traveling within the City.



- Completion Date-2009
- Special Circumstances-Coordination with Rails to Trails Conservancy and UTA., UDOT to Provide \$400,000 for project.

Project T-02 High Priority

- Location-400 North and UTA Corridor crossing
- Description-Remove railroad signals
- Need-Signals are no longer needed since rail line is no longer used
- Completion Date-2010
- Special Circumstances-Coordination with UTA

Project T-03 High Priority

- Location-1100 West from Pages Lane to DSB Canal
- Description-Rebuild existing roadway
- Need-The roadway surface is in poor condition and this is planned to be part of the major route through the City
- Completion Date-2011
- Special Circumstances-None

Project T-04 Medium Priority

- Location-400 North from 800 West to 1100 West
- Description-Rebuild existing roadway
- Need-The existing roadway has surpassed its service life, has bad alligator cracking and requires extensive pothole repairs every year
- Completion Date-2012
- Special Circumstances-None

Project T-05 Medium Priority

- Location-1000 North from 800 West to 550 West
- Description-Rebuild existing roadway
- Need-This section of roadway is entirely within the designated Historic District. The existing roadway has surpassed its service life and does not conform with the roadway characteristics desired by the Historic Commission.
- Completion Date-2014
- Special Circumstances-Design standards have not yet been created for the Historic District; however, when they are developed the roadway design must conform to the standards.

Project T-06 Medium Priority

- Location-Approximately 1450 West from 400 North to southern City boundary
- Description-Construct new collector road



- Need-This will provide an alternative route for north/south traffic from 400 North that will minimize the amount of traffic directed through residential areas.
- Completion Date-2015
- Special Circumstances-Project will be built by developer of the Commercial property

Project T-07 Medium Priority

- Location-1100 West from 500 South to 400 North
- Description-Widen roadway to utilize full right-of-way
- Need-The existing roadway does not fully utilize the entire right-of-way width, growth will make it necessary to improve traffic flow
- Completion Date-2017
- Special Circumstances-None

Project T-08 Medium Priority

- Location-Redwood Road from City Boundary near 500 South to 400 North
- Description-Construct new roadway
- Need-This project will tie in with Project T-14 and will provide an alternative route along the west edge of the City
- Completion Date-2017
- Special Circumstances-UDOT is expected to construct this road if and when a new frontage road is constructed along the east side of the Legacy Parkway

Project T-09 Medium Priority

- Location-220 North 660 West
- Description-Construct new roadway from 220 North and tie in with 660 West along rail corridor
- Need-Reduce the number of dead-end streets within the City
- Completion Date-2019
- Special Circumstances-Property acquisition will be necessary

Project T-10 Low Priority

- Location-Approximately 700 West from 500 South to 200 North
- Description-Construct new roadway connecting 800 West to 500 South around Holly Oil Refinery property
- Need-The future decommissioning of 800 West from the Millcreek Canal to 500 South will create a dead end of 800 West. This new road will provide access to 500 South from 800 West
- Completion Date-2025
- Special Circumstances-Coordination with UDOT for the reconstruction of the off-ramp and overpass structure for I-15 at 500 South, Grade separated crossing of UPRR tracks will be required (very expensive)



Project T-11 Low Priority

- Location-1100 West 400 North
- Description-Install new traffic signal
- Need-Increased traffic due to growth will require a signal in order to prevent excessive congestion in this area
- Completion Date-2021
- Special Circumstances-None

Project T-12 Low Priority

- Location-800 West 400 North
- Description-Install new traffic signal
- Need- Increased traffic due to growth will require a signal in order to prevent excessive congestion in this area
- Completion Date-2023
- Special Circumstances-None

Project T-13 Low Priority

- Location-Pages Lane from 1100 West to new road associated with Project T-14
- Description-Upgrade existing roadway
- Need-This portion of Pages Lane will be part of the planned north/south route for through traffic. The current condition and size of the road is not sufficient for the anticipated traffic volume.
- Completion Date-2025
- Special Circumstances-None

Project T-14 Low Priority

- Location-Eastern side of Legacy Parkway from 400 North to Pages Lane
- Description-Construct new roadway
- Need-This will provide a preferred route for traffic bypassing either the Legacy Parkway or I-15 through the City. This route will minimize conflicts with through traffic and residential areas.
- Completion Date-2026
- Special Circumstances-None

Project T-15 High Priority

- Location-Not Applicable
- Description-800 West streetscape plans
- Need-Develop historic roadway cross section
- Completion Date-2008
- Special Circumstances-None



Project T-16 Medium Priority

- Location-Not Applicable
- Description-Traffic study for entire block from 1000 North to Porter Lane and 800 West to 500 West
- Need-Prevent through traffic from outside City from traveling through City on residential roads
- Completion Date-2015
- Special Circumstances-None

Project T-17 Medium Priority

- Location-Not Applicable
- Description-Develop curb, gutter, and sidewalk plan throughout the City
- Need-This will develop a standard for developers to follow which will save time and money for plan reviews and inspections.
- Completion Date-2020
- Special Circumstances-None

Project T-18 High Priority

- Location-Not Applicable
- Description-Prepare Transportation System Capital Facilities Plan
- Need-Develop a list of projects around budgets can be arranged
- Completion Date-2008
- Special Circumstances-None

Project T-19 High Priority

- Location-Not Applicable
- Description-Update Road Impact Fees
- Need-Update impact fee collected for roads in order to fund projects necessary because of growth
- Completion Date-2008
- Special Circumstances-None

Project T-20 Medium Priority

- Location-Not Applicable
- Description-Update Transportation System Capital Facilities Plan and Road Impact Fees in 5 years
- Need-Update impact fee collected for roads in order to fund projects necessary because of growth
- Completion Date-2013
- Special Circumstances-None



6.2 Cost Estimate

A Comprehensive list of road improvement projects, the estimated costs for the design and construction of the projects, and the approximate year that each project will be constructed is contained in the Appendix of this report. The total construction costs are divided into three components: *Existing Deficiencies*, *System Improvements*, *Project Improvements*.

Existing Deficiency Costs are the portion of the costs necessary to repair existing problems or replace components of the current system.

System Improvement Costs are the portion of the costs necessary to upgrade roadway to meet future growth related demands, without improving the level of service. System improvement costs include the cost to modify the road or side treatment in order to meet system needs outside of the immediate project area. For example, in a new residential development, the developer would be required to pay for the installation of a residential road to provide access to homes in the development. But, if additional growth is expected to take place, which would need to use the same road for access, then the developer could be required to install a new 66 foot wide collector road instead of a 50 foot wide residential road. The project improvement costs would include the cost to install the 50 foot wide portion. This portion of the cost will only benefit the new development. The system improvement costs will cover the additional expense to widen the road an extra 8 feet on each side to make it a 66 foot wide collector, which will benefit areas outside of the immediate project area.

Project Improvement Costs represent the developer's responsibility to install a road system that complies with the City's standards and will only benefit the newly developed area.

Table 6-1 presents a summary of the improvement costs broken down into the three components: existing deficiency, system, project improvements.

Table 6-1: Summary of Project Costs

Priority	Number of Projects	Existing Deficiency	System Improvement	Project Improvement	Total
High	6	\$78,472	\$169,453	\$293,886	\$541,810
Medium	9	\$2,317,551	\$2,538,980	\$1,354,328	\$6,210,859
Low	5	\$0	\$580,000	\$0	\$580,000
Total	20	\$2,396,022	\$3,288,433	\$1,648,214	\$7,332,669

6.3 Impact Fees

It has been demonstrated in this report that a significant amount of development related growth is expected within West Bountiful City over the next few decades. In order to serve the future businesses and residents while maintaining the level of service to current residents it will be necessary to require developers pay a road impact fee. The impact fees will be determined by analyzing the total system improvement costs throughout the City. This analysis will be performed by Lewis Young Robertson and Burningham (LYRB), the City's financial analysis consultant.



7.0 REFERENCES

1. Cooper Roberts Simonsen Associates. *West Bountiful City General Plan – 2007 Update*. May 2007.
2. Lewis Young Robertson & Burningham, Inc. *West Bountiful City, Utah City-Wide Impact Fee Analysis*. December 2002.
3. State of Utah, Department of Natural Resources, Division of Drinking Water. *State of Utah Drinking Water Rules, R308-510, Minimum Sizing Requirements*.



8.0 APPENDIX

Project List and Estimated Costs