

**ORDINANCE NO. 211
CITY OF LIBERTY LAKE
SPOKANE COUNTY, WASHINGTON**

**AN ORDINANCE OF THE CITY OF LIBERTY LAKE, WASHINGTON AMENDING
THE HARVARD ROAD MITIGATION PLAN.**

WHEREAS, the City Council adopted Ordinance No. 55 which adopted by reference the Spokane County Harvard Road Mitigation Plan with the intent of assuming responsibility for the supervision of the projects developed pursuant to that plan;

WHEREAS, the City adopted Ordinance No. 82 establishing, among other things, a fund known as the "Harvard Road Mitigation Fund";

WHEREAS, the City is desirous of updating the Harvard Road Mitigation Plan after completion and review of the projects identified therein;

WHEREAS, the City intends to update 1) the boundaries contained in the Harvard Road Mitigation Plan to coincide with the City of Liberty Lake's corporate limits, 2) the identified projects and related costs thereto, and 3) the trip generation analysis set forth in the Harvard Road Mitigation Plan;

WHEREAS, the City held a workshop and Developers and interest parties provided feedback on this amendment;

WHEREAS, the City held public hearings on February, 18, 2014 and March 18, 2014 to allow for public comment from citizens and any interested parties on the proposed updates to the Harvard Road Mitigation Plan.

NOW, THEREFORE, the City Council of the City of Liberty Lake, Washington, do ordain as follows:

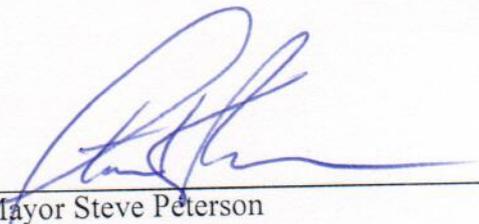
Section 1. Harvard Road Mitigation Plan. The Harvard Road Mitigation Plan is hereby amended as set forth herein and the attached Exhibit A, which is incorporated herein by this reference. All other references, rules, and regulations contained in the Harvard Road Mitigation Plan as adopted by Ordinance No. 55 and/or Ordinance No. 82 shall remain in effect, as applicable, and as presently constituted or hereinafter amended. In the event of any conflict between this Ordinance and Ordinance No. 55 and/or Ordinance No. 82 relating to the updates contained herein, this Ordinance shall control. The funds collected under amended Harvard Road Mitigation Plan shall commence on May 1, 2014.

Section 2. Copy on File. The City Clerk is to maintain one copy on file of the updated Harvard Road Mitigation Plan adopted by this Ordinance.

Section 3. Severability. If any section, sentence, clause or phrase of this Ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this Ordinance.

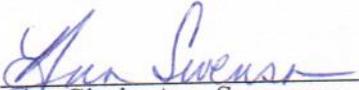
Section 4. Effective Date. This Ordinance shall be in full force and effect five (5) days after publication of this Ordinance or a summary thereof in the official newspaper of the City as provided by law.

PASSED by the City Council this 18 day of March, 2014.



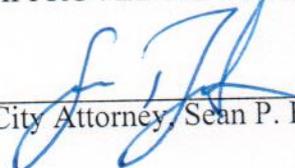
Mayor Steve Peterson

ATTEST:



City Clerk, Ann Swenson

APPROVED AS TO FORM:



City Attorney, Sean P. Boutz

Harvard Road Mitigation Plan 2013 Update

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Harvard Road Mitigation Plan

2013 Update

Summary and Need Statement

The Harvard Road Mitigation Plan was finalized in October 1995. The intent of the plan was and is to:

1. Identify future transportation deficiencies, and
2. provide a voluntary means for development to mitigate its transportation impact without the cost and potential burden of a transportation study.

More than eighteen years have passed since the adoption of the original plan. The purpose of this update is to:

- a. Update the Mitigation Plan Boundary,
- b. Update the Mitigation Plan Project List, and
- c. Update the Mitigation Plan Fees.

The City incorporated in 2001 and has annexed additional land since then. The Mitigation Plan Boundary must be updated to reflect the current incorporated City Limits.

Many of the projects outlined in the 1995 plan have been constructed. Transportation needs have evolved since 1995 and a new project list must be incorporated into the Plan.

By updating the Boundary and Project List, a new set of fees may be calculated and future development is afforded an opportunity to participate in the voluntary Plan. Development that has paid in to the Mitigation Plan or that constructed improvements in lieu of paying fees will not be affected by the updated plan; this update recognizes their obligations as fulfilled. Those trips already mitigated will not be included in the future trip count.

Mitigation Plan Boundary

The previous boundary can be seen in the attached map. The updated boundary is shown in the same figure in transparent blue. The updated boundary follows our 2014 incorporated limits. Originally, the plan included unincorporated areas outside the City limits and areas within then unincorporated Spokane Valley. Reshaping our boundary keeps improvement dollars within the City limits.

Land Use

It is assumed that our City will continue to develop in a similar manner as it has in the past and that future development will follow our existing zoning. Small changes in zoning should not affect the proposed project list significantly.

Previous Policies

All previous Policies will remain intact except that all references to Spokane County or County shall now reference Liberty Lake (or City) as the lead agency.

Mitigation Plan Project List

All new projects are for capacity improvements. Also, so far all improvements are intersection improvements, except for the Interchange Project Development. Link improvements (adding traffic

lanes, etc) will be borne by the adjacent developers. Development of additional lane capacity is not expected with the exception of infrequent left/right turn pockets at intersections.

The Interchange Project Development is to aid in the development of a new interchange or interchange modification for Liberty Lake. This project in total has been estimated by WSDOT to cost between \$16M and \$20M. New development will be responsible for \$4,000,000 of project costs.

As a planning tool, the rounded costs for roundabout and signal projects will cost approximately \$465,000.00 and \$574,000 respectively. Both of these costs are for complete projects; development, design and delivery. Note that the non-rounded numbers are used below and in the fee calculations.

Below are the included projects:

Intersection: Mission Av/Molter Rd

After counting for 2013 traffic levels the intersection is performing at LOS B with capacity through 50% buildout of the adjacent development. Between 50% and 75% build out, the LOS for the intersection drops to E. The WB leg drops to an F. The amount of lanes needed to accommodate Buildout WB volume is too great (probably 3) for an AWSC intersection; it would produce an unsafe intersection. At full build out, either a signal or roundabout will accommodate the future traffic amount. The signal itself may cost less than a roundabout, but the extra paving to install new lanes on the WB leg could bring the capital costs for the two options close.

Current Configuration: AWSC

Future Configuration: Roundabout / Signal

Estimated Cost: \$574,495.79

Intersection: Country Vista/Mission Av

This intersection will most likely see an equivalent increase in traffic (approx. 90%) on the SB and EB legs at full build out. The WB leg is unlikely to see much, if any traffic growth. Leaving the intersection a stop control on the SB leg appears to provide an adequate LOS for the buildout year. This intersection will be especially sensitive to additional traffic WB on Country Vista. If traffic growth occurs on this leg, it will likely trigger the need for a roundabout. The tree growth in this intersection and approach configuration would make a signal design very difficult, but a roundabout would be ideal.

Current Configuration: Stop control on SB leg

Future Configuration: Roundabout

Estimated Cost: \$465,146.82

Intersection: Appleway Av/Signal Rd

Current directional split at this stop controlled intersection will be used for assigning future trips along Appleway. Levels of service for 2013 are an A for EB/WB and C for NB. Future traffic generated along this corridor (LL Rd to E City Limits) was assumed to follow the same pattern we have now, 63% wb and 37% eb. The EB-in and WB-out traffic for the corridor were routed through the intersection, providing a 91% increase in traffic volume. The increase causes the NB leg to degrade to a LOS of F, EB/WB to a B. Since we must maintain this NB approach, we will need to install a signal. A roundabout is not a viable option due to the current roadway geometry, it would create more problems than it solved.

Current Configuration: Stop control on NB leg

Future Configuration: Signal

Estimated Cost: \$574,495.79

Intersection: Appleway Av/Madson Rd

After evaluating this intersection, it was apparent that it will need a signal before full buildout of the Appleway corridor. The intersection as of today processes approximately 1,061 vehicles during the PM peak. It is very likely that the south leg processes more traffic than I recorded. The parking lots of the adjacent businesses seemed very empty by the time I was recording traffic.

Current configuration: Stop control on NB/SB legs

Future configuration: Signal

Estimated Cost: \$574,495.79

Intersection: Harvard/Indiana

This intersection was evaluated based on existing traffic flows on Harvard and with future traffic on the side streets originating on the east side of Harvard and a short distance west of Harvard as well. A signal would be the most likely candidate for this intersection due to the 4 north/south lanes and two/three EW lanes. A roundabout would shift traffic too many times on Harvard.

Current configuration: Stop control on WB leg.

Future configuration: Signal

Estimated Cost: \$574,495.79

Intersection: Mission/Harvest Parkway

Since this future intersection will be installed on a 2-3 lane roadway, a roundabout or signal will be the best choice for intersection control. Intersection control will be required. TWSC or AWSC cannot handle the level of traffic proposed for this area. The E/W directional split is assumed to be close to that of Country Vista near Legacy Ridge. It must be noted that two intersections must be constructed for the major commercial core of the River District. Just the one on Harvest Parkway will not be sufficient to carry all traffic leaving this area, however, a location for this intersection is not known at this time. This second intersection may need to be added to the project list in the future.

Current configuration: Two lane road

Future Configuration: Roundabout / Signal

Estimated Cost: \$574,495.79

Intersection: Country Vista/Henry

The existing roadway EW is a five lane section with a TWLTL. Henry Road intersects Appleway on the south as a three lane approach. When built out, the intersection must be controlled by more than a stop sign, otherwise excessive delay will result for the NB lanes. A roundabout will not suit this location, so a signal is proposed.

Current configuration: Stop control on NB approach

Future configuration: Signal

Estimated Cost: \$574,495.79

Intersection: Country Vista/Legacy Ridge

The existing roadway EW is a five lane section with a TWLTL. Legacy Ridge Rd intersects Country Vista on the south as a two lane approach. When built out, the intersection must be controlled by more than a stop sign, otherwise excessive delay will result for the NB lanes. A roundabout will not suit this location, so a signal is proposed.

Current configuration: Stop control on NB approach

Future configuration: Signal

Estimated Cost: \$574,495.79

Intersection: Appleway/Country Vista Blvd

This intersection will most likely see an equivalent increase in traffic (approx. 90%) on the SB and EB legs at full build out. The WB leg is unlikely to see much, if any traffic growth. Leaving the intersection a stop control on the SB leg appears to provide an adequate LOS for the buildout year. This intersection will be especially sensitive to additional traffic WB on Country Vista. If traffic growth occurs on this leg, it will likely trigger the need for a signal or roundabout.

Current Configuration: Stop control on SB leg

Future Configuration: Roundabout / Signal

Estimated Cost: \$574,495.79

Analysis Summary

The traffic analysis was performed with the traffic volumes shown on the maps located in the Appendix. Directional distribution for new traffic generated to and from the future development was distributed following the existing traffic flow patterns. For example, if traffic directional split is currently 60/40, this same distribution is reinforced with the new trips. At a future date when better information is available a more detailed analysis could be performed, but for now, the current analysis firmly establishes the need for system improvements. More refined future analysis will need to be performed on a project by project basis to ensure the best fix is applied at the correct time and place. Care was taken to use conservative numbers from the ITE traffic generation manual. Land use studies with small sample sizes were avoided if possible. For some traffic generation categories, the peak hour of adjacent traffic was used instead of the peak hour of the generator if the sample size for one was larger than the other.

All capacity analysis was performed with HCS+. The results of the intersection analysis are provided in the appendix.

A full traffic model of the City has not been maintained since the original study. The current model maintained by SRTC is of a regional nature and not suitable for intersection analysis needed for this work.

The Harvard Road interchange analysis will be performed by WSDOT or a private consultant. It is clear that a new interchange or interchange modification is needed, but the analysis of this is not yet possible since we do not have a final concept.

The ITE Trip Generation manual, 7th edition was used to generate the anticipated trip generation rates for various land uses.

Facility square footage for most of our commercial zones averages from 25% to 60% of the property area. On average facility square footage is about 40% to 50% of the property area. For the update, ITE category "Land Use: 140 Manufacturing" was more heavily emphasized for the update. This is due to the increased use of office space for other company uses (R&D, design, etc.).

The new land uses in the River District area take into account proposed development and existing uses on the north side of the freeway.

Traffic Counts

New intersection traffic counts were performed for this analysis. The only intersection that was not counted was Mission Avenue/Harvest Parkway. This was not counted purely for practical reasons. There is not significant traffic on this section of Mission Avenue now.

Impact Fee Selection and Justification

The project sponsor has the same choices available under the original HRMP and SEPA provisions:

- Pay a voluntary mitigation fee (as calculated under this plan and described below);
- Construct all or a portion of the improvements described in this mitigation plan (as credit towards or in lieu of the mitigation fees); or
- Prepare a separate traffic study and mitigation plan for the proposed use.

As previously, the mitigation fee is intended to represent the pro rata contribution of each proposed land use to the cumulative cost of the traffic system improvements described in the plan.

As before, the basis for the fee is in the total of proposed improvements and the total of future peak trips. The new total of AM and PM peak trips is 11,883. The total for improvements proposed in this update is \$9,061,113.11. This provides a cost of \$762.53 per average peak hour trips.

Due to the volatility of construction costs, it is best to revisit the fees every two years.

The new fee schedule can be found after the report.

Note that fees must be calculated for each new proposal. The land use list in the appendix is only partial and should not be construed as exhaustive. If a land use does not fit into the fee schedule, a professional engineer with a background in traffic engineering should make the determination of the estimated average peak trips generated by the proposed project. The fee may be generated from that calculation.

Project Phasing

No phasing is proposed for this updated project list. The progression of development will determine which improvements are needed first.

Since all but one of the projects in our list are strictly local, the 2014 HRMP will be paying for 100% of the impacts, which includes approximately 15% background traffic according to the 1995 HRMP. Originally, 15% of the total cost was shared by the County and WSDOT. The updated project list does not include them as part of the total cost of improvements. No trips are counted as bypass trips for this update.

Recommendations

Every two years the cost estimates and traffic counts should be evaluated. Every traffic count does not need to be evaluated, just spot checking. As before, any obvious discrepancies must be addressed.

New Fee Per Trip \$762.53

Updated Harvard Road Mitigation Plan Fees

Land Use	ITE Category	Unit	Current Fee Per Unit	Proposed Fee Per Unit	Interchange Work, 46%	All Other Projects, 54%
Residential						
Single Family	210	Dwelling Unit	\$ 416.63	\$ 671.02	\$ 296.22	\$ 374.80
Multi Family	220	Dwelling Unit	\$ 218.79	\$ 352.39	\$ 155.56	\$ 196.83
Condo/Townhouse	230	Dwelling Unit	\$ 233.71	\$ 376.41	\$ 166.17	\$ 210.25
Retirement	251	Dwelling Unit	\$ 104.42	\$ 168.18	\$ 74.24	\$ 93.94
PUD	270	Dwelling Unit	\$ 268.52	\$ 432.47	\$ 190.91	\$ 241.56
Hotel	310	Room	\$ 338.13	\$ 544.60	\$ 240.41	\$ 304.19
Motel	320	Room	\$ 298.35	\$ 480.53	\$ 212.13	\$ 268.40
Commercial						
Office	750	1,000 sf	\$ 795.60	\$ 1,281.40	\$ 565.67	\$ 715.73
Medical/Dental	720	1,000 sf	\$ 1,601.15	\$ 2,578.82	\$ 1,138.41	\$ 1,440.41
R&D Center	760	1,000 sf	\$ 546.98	\$ 880.96	\$ 388.90	\$ 492.06
Light Industrial	110	1,000 sf	\$ 447.53	\$ 720.79	\$ 318.19	\$ 402.60
Manufacturing	140	1,000 sf	\$ 362.99	\$ 584.64	\$ 258.09	\$ 326.55
Warehouse	150	1,000 sf	\$ 313.27	\$ 504.55	\$ 222.73	\$ 281.82
Mini Warehouse	151	1,000 sf	\$ 99.45	\$ 160.18	\$ 70.71	\$ 89.47
Retail & Other***						
Convenience Store w/gas	853	1,000 sf	\$ 4,047.62	\$ 6,519.12	\$ 2,877.85	\$ 3,641.28
Bank w/Drive Thru	912	1,000 sf	\$ 4,047.62	\$ 6,519.12	\$ 2,877.85	\$ 3,641.28
Restaurant, Fast Food	934	1,000 sf	\$ 4,047.62	\$ 6,519.12	\$ 2,877.85	\$ 3,641.28
Supermarket	850	1,000 sf	\$ 2,993.45	\$ 4,821.27	\$ 2,128.33	\$ 2,692.93
Day Care	565	1,000 sf	\$ 2,993.45	\$ 4,821.27	\$ 2,128.33	\$ 2,692.93
Shopping Center 30k sf	820	1,000 sf	\$ 2,993.45	\$ 4,821.27	\$ 2,128.33	\$ 2,692.93
Shopping Center 100k sf	820	1000 sf	\$ 1,939.28	\$ 3,123.41	\$ 1,378.82	\$ 1,744.59
Restaurant, High Turnover	932	1,000 sf	\$ 1,939.28	\$ 3,123.41	\$ 1,378.82	\$ 1,744.59
Specialty Retail	814	1,000 sf	\$ 1,939.28	\$ 3,123.41	\$ 1,378.82	\$ 1,744.59
Discount Store	815	1,000 sf	\$ 1,939.28	\$ 3,123.41	\$ 1,378.82	\$ 1,744.59
Warehouse Club Store	813	1,000 sf	\$ 1,939.28	\$ 3,123.41	\$ 1,378.82	\$ 1,744.59
Furniture Store	890	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Auto Sales	841	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Automobile Care Center	942	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Home Improvement Superstore	816	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Building Materials and Lumber Store	812	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Nursery (Garden Center)	817	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37
Tire Store	848	1,000 sf	\$ 1,422.14	\$ 2,290.50	\$ 1,011.14	\$ 1,279.37

**CITY OF LIBERTY LAKE
APPLEWAY/MOLTER ROAD TRAFFIC SIGNAL PROJECT
BID TABULATION
JANUARY 23, 2008 @ 11:00 AM**

Pay Item	Description	Pay Unit	Estimated Quantity	Engineer's Estimate		Thorco		Aztech Electric		Colvico		
				Unit Price	Total Amount	Unit Price	Total Amount	Unit Price	Total Amount	Unit Price	Total Amount	
SECTION: 1 PREPARATION												
1	MOBILIZATION	L.S.	1	\$ 21,000.00	\$ 21,000.00	\$ 12,000.00	\$ 12,000.00	\$ 4,000.00	\$ 4,000.00	\$ 5,000.00	\$ 5,000.00	
2	REMOVAL OF SELECT TREE	EACH	1	\$ 250.00	\$ 250.00	\$ 600.00	\$ 600.00	\$ 800.00	\$ 800.00	\$ 1,350.00	\$ 1,350.00	
3	REMOVING CEMENT CONC. SIDEWALK	S.Y.	150	\$ 10.00	\$ 1,500.00	\$ 40.00	\$ 6,000.00	\$ 28.00	\$ 4,200.00	\$ 27.00	\$ 4,050.00	
4	REMOVING CEMENT CONC. CURB & GUTTER	L.F.	224	\$ 3.00	\$ 672.00	\$ 15.00	\$ 3,360.00	\$ 14.00	\$ 3,136.00	\$ 14.00	\$ 3,136.00	
SECTION: 9 SURFACING												
5	CRUSHED SURFACING TOP COURSE	C.Y.	25	\$ 50.00	\$ 1,250.00	\$ 35.00	\$ 875.00	\$ 75.00	\$ 1,875.00	\$ 25.00	\$ 625.00	
SECTION: 17 EROSION CONTROL & PLANTING												
6	SOD INSTALLATION	S.Y.	20	\$ 25.00	\$ 500.00	\$ 65.00	\$ 1,300.00	\$ 50.00	\$ 1,000.00	\$ 25.00	\$ 500.00	
SECTION: 18 TRAFFIC												
7	CEMENT CONC. CURB TYPE B	L.F.	225	\$ 28.00	\$ 6,300.00	\$ 25.00	\$ 5,625.00	\$ 26.22	\$ 5,899.50	\$ 21.00	\$ 4,725.00	
8	PAINTED CROSSWALK LINE	S.F.	2004	\$ 6.00	\$ 12,024.00	\$ 3.00	\$ 6,012.00	\$ 2.60	\$ 5,210.40	\$ 2.50	\$ 5,010.00	
9	PAINTED STOP LINE	L.F.	200	\$ 10.00	\$ 2,000.00	\$ 5.00	\$ 1,000.00	\$ 5.00	\$ 1,000.00	\$ 4.50	\$ 900.00	
10	TRAFFIC SIGNAL SYSTEM AND DETECTION SYL.S.	L.S.	1	\$ 158,000.00	\$ 158,000.00	\$ 245,000.00	\$ 245,000.00	\$ 240,417.00	\$ 240,417.00	\$ 260,250.00	\$ 260,250.00	
11	PROJECT TEMPORARY TRAFFIC CONTROL	L.S.	1	\$ 10,000.00	\$ 10,000.00	\$ 17,500.00	\$ 17,500.00	\$ 7,500.00	\$ 7,500.00	\$ 20,000.00	\$ 20,000.00	
SECTION: 19 OTHER ITEMS												
12	CEMENT CONC. SIDEWALK	S.Y.	104	\$ 40.00	\$ 4,160.00	\$ 50.00	\$ 5,200.00	\$ 58.56	\$ 6,090.24	\$ 40.00	\$ 4,160.00	
13	CEMENT CONC. CURB RAMP	EACH	4	\$ 1,600.00	\$ 6,400.00	\$ 1,900.00	\$ 7,600.00	\$ 1,782.00	\$ 7,128.00	\$ 650.00	\$ 2,600.00	
14	SPCC PLAN	L.S.	1	\$ 1,000.00	\$ 1,000.00	\$ 1,500.00	\$ 1,500.00	\$ 150.00	\$ 150.00	\$ 400.00	\$ 400.00	
										\$ 313,572.00	\$ 288,406.14	\$ 312,706.00

2008 Average Bid = \$304,894.71
 2014 Dollars = \$392,514.54
 Add 30% for PE/CE
 Add \$12,000 for ROW
 10% contingency
 Total = \$574,495.79

PRAIRIE FALLS DEVELOPMENT, LLC
 6600 N. Government Way
 Coeur d'Alene, ID 83815
 (208)209-0199 Fax (208)772-6151

To: **CITY OF POST FALLS**
 408 N. Spokane Street
 Post Falls, ID 83854
 Attn: Rob Palus

Invoice No. **11029**
 Date: **11/30/2012**
 For the period: through **11/30/12**

Payment Request No.4 - retention

Project: Idaho Street Widening & Idaho St and Poleline Ave. Roundabout

Item No.	Description	Unit	Quantity	Unit Rate	Total Amount	Total to Date		Previous Totals		Total This Pay Request	
						Quantity	Amount	Quantity	Amount	Quantity	Amount
IDAHO STREET WIDENING											
1	Mobilization	LS	1	\$ 21,000.00	\$ 21,000.00	100%	\$ 21,000.00	100%	\$ 21,000.00	0%	\$ -
2	Traffic Control	LS	1	\$ 2,500.00	\$ 2,500.00	100%	\$ 2,500.00	100%	\$ 2,500.00	0%	\$ -
3	Clearing, Grubbing, Removal and Disposal	LS	1	\$ 17,300.00	\$ 17,300.00	100%	\$ 17,300.00	100%	\$ 17,300.00	0%	\$ -
4	Import Structural Material	LS	1	\$ 20,655.00	\$ 20,655.00	100%	\$ 20,655.00	100%	\$ 20,655.00	0%	\$ -
5	2" Asphalt Overlay	LS	1	\$ 53,194.40	\$ 53,194.40	100%	\$ 53,194.40	100%	\$ 53,194.40	0%	\$ -
6	2" Asphalt Paving over 6" Base Rock	LS	1	\$ 49,018.20	\$ 49,018.20	100%	\$ 49,018.20	100%	\$ 49,018.20	0%	\$ -
7	Asphalt Milling	LS	1	\$ 4,057.20	\$ 4,057.20	100%	\$ 4,057.20	100%	\$ 4,057.20	0%	\$ -
8	Sawcutting	LS	1	\$ 2,432.00	\$ 2,432.00	100%	\$ 2,432.00	100%	\$ 2,432.00	0%	\$ -
9	Standard Curb	LS	1	\$ 10,853.70	\$ 10,853.70	100%	\$ 10,853.70	100%	\$ 10,853.70	0%	\$ -
10	Standard Curb & Gutter	LS	1	\$ 19,837.50	\$ 19,837.50	100%	\$ 19,837.50	100%	\$ 19,837.50	0%	\$ -
11	Curb Drops	LS	1	\$ 1,920.00	\$ 1,920.00	100%	\$ 1,920.00	100%	\$ 1,920.00	0%	\$ -
12	Concrete Sidewalk	LS	1	\$ 28,687.50	\$ 28,687.50	100%	\$ 28,687.50	100%	\$ 28,687.50	0%	\$ -
13	Block Wall	LS	1	\$ 11,453.75	\$ 11,453.75	100%	\$ 11,453.75	100%	\$ 11,453.75	0%	\$ -
14	Pedestrian Ramps	LS	1	\$ 6,624.00	\$ 6,624.00	100%	\$ 6,624.00	100%	\$ 6,624.00	0%	\$ -
15	Concrete Approach	LS	1	\$ 2,788.80	\$ 2,788.80	100%	\$ 2,788.80	100%	\$ 2,788.80	0%	\$ -
16	Adjust Existing Valves and Manholes	LS	1	\$ 2,664.00	\$ 2,664.00	100%	\$ 2,664.00	100%	\$ 2,664.00	0%	\$ -
17	Topsoil Supply and Placement	LS	1	\$ 8,855.00	\$ 8,855.00	100%	\$ 8,855.00	100%	\$ 8,855.00	0%	\$ -
18	Grassy Swales	LS	1	\$ 2,492.00	\$ 2,492.00	100%	\$ 2,492.00	100%	\$ 2,492.00	0%	\$ -
19	600 Gallon Drywells	LS	1	\$ 5,574.00	\$ 5,574.00	100%	\$ 5,574.00	100%	\$ 5,574.00	0%	\$ -
20	Swale Drains	LS	1	\$ 1,690.00	\$ 1,690.00	100%	\$ 1,690.00	100%	\$ 1,690.00	0%	\$ -
21	Irrigation Sleeves	LS	1	\$ 1,920.00	\$ 1,920.00	100%	\$ 1,920.00	100%	\$ 1,920.00	0%	\$ -
22	Striping	LS	1	\$ 12,735.00	\$ 12,735.00	100%	\$ 12,735.00	100%	\$ 12,735.00	0%	\$ -
23	Remove Existing Striping	LS	1	\$ 1,755.00	\$ 1,755.00	100%	\$ 1,755.00	100%	\$ 1,755.00	0%	\$ -
24	Traffic Signs	LS	1	\$ 3,560.00	\$ 3,560.00	100%	\$ 3,560.00	100%	\$ 3,560.00	0%	\$ -
Sub-Total - Idaho Street Widening					\$ 293,567.05						

Item No.	Description	Unit	Quantity	Unit Rate	Total Amount	Total to Date		Previous Totals		Total This Pay Request	
						Quantity	Amount	Quantity	Amount	Quantity	Amount
IDAHO ST & POLELINE AVE ROUNDABOUT											
25	Mobilization	LS	1	\$ 19,000.00	\$ 19,000.00	100%	\$ 19,000.00	100%	\$ 19,000.00	0%	\$ -
26	Traffic Control	LS	1	\$ 6,750.00	\$ 6,750.00	100%	\$ 6,750.00	100%	\$ 6,750.00	0%	\$ -
27	Clearing, Grubbing, Removal and Disposal	LS	1	\$ 15,810.00	\$ 15,810.00	100%	\$ 15,810.00	100%	\$ 15,810.00	0%	\$ -
28	Relocate Existing Street Signs	LS	1	\$ 495.00	\$ 495.00	100%	\$ 495.00	100%	\$ 495.00	0%	\$ -
29	Relocate Existing Fence	LS	1	\$ 1,081.00	\$ 1,081.00	100%	\$ 1,081.00	100%	\$ 1,081.00	0%	\$ -
30	Abandon Existing Drywell	LS	1	\$ 426.00	\$ 426.00	100%	\$ 426.00	100%	\$ 426.00	0%	\$ -
31	Sawcutting	LS	1	\$ 969.00	\$ 969.00	100%	\$ 969.00	100%	\$ 969.00	0%	\$ -
32	Irrigation Sleeves	LS	1	\$ 864.00	\$ 864.00	100%	\$ 864.00	100%	\$ 864.00	0%	\$ -
33	Standard Curb	LS	1	\$ 13,612.50	\$ 13,612.50	100%	\$ 13,612.50	100%	\$ 13,612.50	0%	\$ -
34	Standard Curb & Gutter	LS	1	\$ 12,420.00	\$ 12,420.00	100%	\$ 12,420.00	100%	\$ 12,420.00	0%	\$ -
35	Rolled Curb	LS	1	\$ 5,505.50	\$ 5,505.50	100%	\$ 5,505.50	100%	\$ 5,505.50	0%	\$ -
36	Concrete Sidewalk	LS	1	\$ 8,644.50	\$ 8,644.50	100%	\$ 8,644.50	100%	\$ 8,644.50	0%	\$ -
37	Concrete Truck Apron	LS	1	\$ 14,875.00	\$ 14,875.00	100%	\$ 14,875.00	100%	\$ 14,875.00	0%	\$ -
38	Concrete Islands	LS	1	\$ 9,027.00	\$ 9,027.00	100%	\$ 9,027.00	100%	\$ 9,027.00	0%	\$ -
39	Curb Drops	LS	1	\$ 576.00	\$ 576.00	100%	\$ 576.00	100%	\$ 576.00	0%	\$ -
40	Bike Ramps	LS	1	\$ 2,688.00	\$ 2,688.00	100%	\$ 2,688.00	100%	\$ 2,688.00	0%	\$ -
41	Pedestrian Ramps	LS	1	\$ 6,449.60	\$ 6,449.60	100%	\$ 6,449.60	100%	\$ 6,449.60	0%	\$ -
42	3" Asphalt Paving over 6" Base Rock	LS	1	\$ 50,771.12	\$ 50,771.12	100%	\$ 50,771.12	100%	\$ 50,771.12	0%	\$ -
43	2" Asphalt Paving over 4" Base Rock	LS	1	\$ 15,596.00	\$ 15,596.00	100%	\$ 15,596.00	100%	\$ 15,596.00	0%	\$ -
44	Remove Existing/Install New Striping	LS	1	\$ 16,829.00	\$ 16,829.00	100%	\$ 16,829.00	100%	\$ 16,829.00	0%	\$ -
Sub-Total - Idaho Street Widening					\$ 293,567.05						

Handwritten notes: $293,567.05 = 890,767.05 \times 5\%$

Handwritten circled number: 7.8

Item No.	Description	Unit	Quantity	Unit Rate	Total Amount	Total to Date		Previous Totals		Total This Pay Request	
						Quantity	Amount	Quantity	Amount	Quantity	Amount
IDAHO ST & POLELINE AVE ROUNDABOUT - continued											
45	Grassy Swales	LS	1	\$ 4,605.60	\$ 4,605.60	100%	\$ 4,605.60	100%	\$ 4,605.60	0%	\$ -
46	600 Gallon Drywells	LS	1	\$ 5,574.00	\$ 5,574.00	100%	\$ 5,574.00	100%	\$ 5,574.00	0%	\$ -
47	Type I Catch Basin	LS	1	\$ 771.60	\$ 771.60	100%	\$ 771.60	100%	\$ 771.60	0%	\$ -
48	12" ADS Storm Pipe	LS	1	\$ 1,323.00	\$ 1,323.00	100%	\$ 1,323.00	100%	\$ 1,323.00	0%	\$ -
49	Adjust Existing Valves	LS	1	\$ 740.00	\$ 740.00	100%	\$ 740.00	100%	\$ 740.00	0%	\$ -
50	Roundabout Landscaping	LS	1	\$ 13,850.00	\$ 13,850.00	100%	\$ 13,850.00	100%	\$ 13,850.00	0%	\$ -
51	Traffic Signs	LS	1	\$ 14,391.00	\$ 14,391.00	100%	\$ 14,391.00	100%	\$ 14,391.00	0%	\$ -
Sub-Total - Idaho St & Poleline Ave Roundabout					\$ 243,644.42		\$ 243,644.42		\$ 243,644.42		\$ -

5% = 12,182.22

Change Orders	
1	CREDIT for labor to install remaining thermoplastic markings (City to install)

ORIGINAL CONTRACT AMOUNT		FINAL ADJUSTED CONTRACT AMOUNT	
LS	1	\$ (2,800.00)	\$ (2,800.00)
		\$ 534,411.47	\$ 534,411.47

Construction Total	\$ 243,644.42
contingency	\$ 60,911.11
construction subtotal	\$ 304,555.53
PE 15%	\$ 45,683.33
CE 15%	\$ 45,683.33
ROW Flat	\$ 12,000.00
Total	\$ 407,922.18
4% @ 2 yrs	\$ 441,208.63

TOTAL AMOUNT EARNED
LESS PREVIOUS PAYMENT REQUESTS
FINAL RETENTION AMOUNT DUE

\$ 534,411.47	\$ 534,411.47
\$ (507,690.89)	\$ (507,690.89)
\$ 26,720.58	\$ 26,720.58

PRAIRIE FALLS DEV.

PRAIRIE FALLS DEV

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(8)

Grant Application Cost Estimate

Project Name: **Sprague & Barker Roundabout**



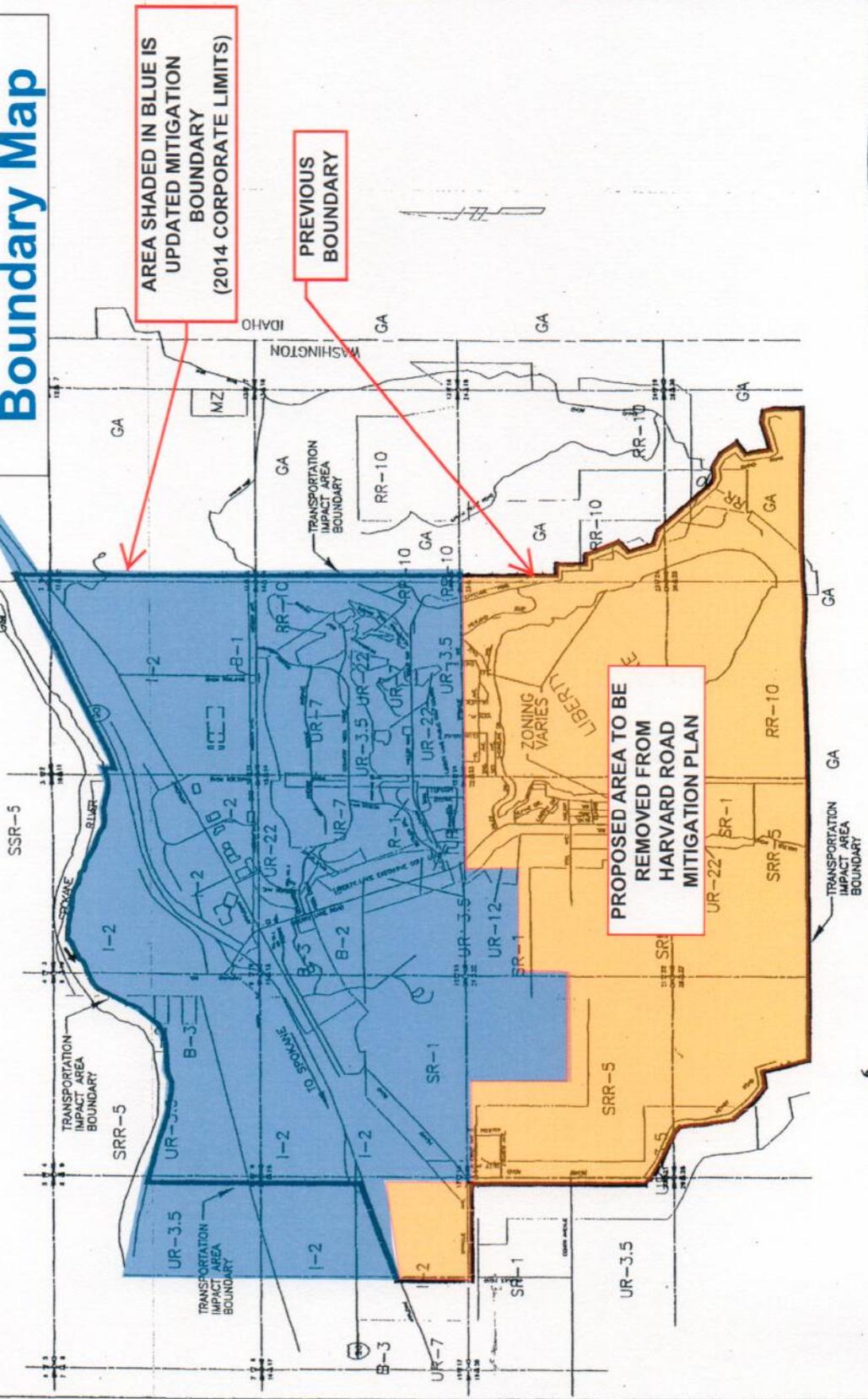
Prepared By: **Bryan D. Hicks, P.E.**
 Preparation Date: **Sept. 19th, 2013**

ITEM #	WSDOT STD. SPEC.	WSDOT STD. #	ITEM DESCRIPTION	UNIT OF MEASURE	PLANNED QUANTITY	ESTIMATED UNIT PRICE	ESTIMATED ITEM PRICE
1	1-09.7	0001	MOBILIZATION	L.S.	1	\$ 25,600.00	\$ 25,600
2	1-05.4	7038	ROADWAY SURVEYING	L.S.	1	\$ 7,500.00	\$ 7,500
4	1-05.4	7047	MONUMENT CASE, COVER & PIPE	EACH	1	\$ 1,000.00	\$ 1,000
5	1-07.15	7736	SPOC PLAN	L.S.	1	\$ 500.00	\$ 500
6	1-10		PROJECT SIGN	EACH	1	\$ 750.00	\$ 750
9	1-10.3	6971	PROJECT TEMPORARY TRAFFIC CONTROL	L.S.	1	\$ 15,000.00	\$ 15,000
10	2-01	0035	CLEARING AND GRUBBING	L.S.	1	\$ 4,000.00	\$ 4,000
12	2-02		SAWCUT ASPHALT PAVEMENT	L.F.	200	\$ 2.00	\$ 400
14	2-03	0310	ROADWAY EXCAVATION & EMBANKMENT, INCL. HAUL	C.Y.	940	\$ 18.00	\$ 16,920
16	4-04	5095	CRUSHED SURFACING BASE COURSE, 0.5-ft Depth	S.Y.	2,500	\$ 7.00	\$ 17,500
17	4-04	5115	CRUSHED SURFACING TOP COURSE	C.Y.	80	\$ 45.00	\$ 3,600
18	5-04		HMA - CL 1/2", PG 64-28, MISC. AREAS	S.Y.		\$ 50.00	\$ -
21	5-04		HMA CL. 3/4", 0.33 FT. DEPTH, PG 70-28	S.Y.	2,182	\$ 20.00	\$ 43,640
22	5-05		CEMENT CONCRETE PAVEMENT, 8-IN THICK INCL DOWELS	S.Y.	264	\$ 40.00	\$ 10,560
23	5-05		FURNISHING CONCRETE FOR CEMENT CONC PAVEMENT	C.Y.	60	\$ 140.00	\$ 8,400
25	7-04	3577	SOLID WALL PVC STORM SEWER PIPE 12 IN. DIAM	L.F.	300	\$ 40.00	\$ 12,000
29	7-05	1062	PRECAST CONCRETE DRYWELL TYPE B - SWALE	EACH	4	\$ 3,500.00	\$ 14,000
31	7-05	3091	CATCH BASIN TYPE 1, W/ FRAME & GRATE	EACH	4	\$ 1,500.00	\$ 6,000
35	7-05.3	3080	ADJUST MANHOLE	EACH	1	\$ 550.00	\$ 550
36		6243	ADJUST VALVE BOX	EACH	4	\$ 300.00	\$ 1,200
39	8-02	6405	TOPSOIL TYPE A	C.Y.	100	\$ 35.00	\$ 3,500
41	8-02		LANDSCAPE RESTORATION	L.S.	1	\$ 10,000.00	\$ 10,000
42	8-02	6555	SOD INSTALLATION	S.Y.	500	\$ 8.00	\$ 4,000
43	8-03	6071	IRRIGATION SYSTEM	L.S.	1	\$ 2,000.00	\$ 2,000
44	8-04		ROUNDBOUT TRUCK APRON CEMENT CONC. CURB	L.F.	190	\$ 20.00	\$ 3,800
45	8-04		ROUNDBOUT CENTRAL ISLAND CEMENT CONC. CURB	L.F.	95	\$ 22.00	\$ 2,090
46	8-04		CONCRETE TRAFFIC ISLAND	S.Y.	180	\$ 35.00	\$ 6,300
48	8-04	6700	CEMENT CONC. TRAFFIC CURB & GUTTER	L.F.	628	\$ 15.00	\$ 9,420
49	8-04	6707	CEMENT CONC. PEDESTRIAN CURB	L.F.	160	\$ 20.00	\$ 3,200
51	8-06	7059	CEMENT CONCRETE DRIVEWAY APPROACH	S.Y.		\$ 40.00	\$ -
52	8-13	7081	FENCING - CHAIN LINK OR WOOD	L.F.	100	\$ 30.00	\$ 3,000
53	8-14	7055	CEMENT CONCRETE SIDEWALK	S.Y.	419	\$ 33.00	\$ 13,827
54	8-14	7058	CEMENT CONCRETE CURB RAMP TYPE A	EACH	8	\$ 1,100.00	\$ 8,800
56	8-18		REMOVE AND RESET MAILBOX	EACH	2	\$ 150.00	\$ 300
57	8-20	6912	TRAFFIC SIGNAL	L.S.		\$ 235,000.00	\$ -
58	8-20	6904	ILLUMINATION SYSTEM	L.S.	1	\$ 20,000.00	\$ 20,000
60	8-21	6890	PERMANENT SIGNING	L.S.	1	\$ 2,000.00	\$ 2,000
61	8-22	6857	PLASTIC CROSSWALK LINE	S.F.	160	\$ 8.00	\$ 1,280
62	8-22	6807	PLASTIC TRAFFIC STRIPE	L.F.	1,600	\$ 1.00	\$ 1,600
63	8-22	6817	PLASTIC WIDE TRAFFIC STRIPE	L.F.		\$ 3.00	\$ -
64	8-22	6833	PLASTIC TRAFFIC ARROW	EACH		\$ 100.00	\$ -
65	8-22	6859	PLASTIC TRAFFIC STOP LINE	L.F.		\$ 10.00	\$ -
66	8-23	6888	TEMPORARY PAVEMENT MARKING	L.F.	500	\$ 0.50	\$ 250
			TOTAL CONSTRUCTION ESTIMATE				\$ 284,487

Contingency (25%)		\$ 71,122
Inflation Adjustment Factor (4%/yr)	1 years	\$ 11,379
Construction Sub-Total		\$ 366,988
PE (15%)		\$ 55,048
CE (15%)		\$ 55,048
Right Of Way		\$ 12,000
TOTAL PROJECT ESTIMATE		\$ 489,085
Cost Estimate Assumptions:		
Roundabout	PE	\$ 55,048
sidewalks,	ROW	\$ 12,000
ROW corner takes & Const. Easements	GN	\$ 422,036
	TOTAL	\$ 489,085

HARVARD ROAD MITIGATION PLAN TRANSPORTATION IMPACT AREA

Updated Mitigation Plan Boundary Map



AREA SHADED IN BLUE IS
UPDATED MITIGATION
BOUNDARY
(2014 CORPORATE LIMITS)

PREVIOUS
BOUNDARY

PROPOSED AREA TO BE
REMOVED FROM
HARVARD ROAD
MITIGATION PLAN

DATE	BY	REVISION

DATE	BY	REVISION
05/15/73		

SCALE	
1" = 1/4" AS SHOWN	

INLAND PACIFIC ENGINEERING
 1000 N. 10th St., Suite 200
 Portland, OR 97228
 Phone: (503) 253-1000
 Fax: (503) 253-1001
 www.inlandpe.com

HARVARD ROAD MITIGATION PLAN
 ZONING IN LIBERTY LAKE
 TRANSPORTATION IMPACT AREA

SHEET 5
 OF 5
 34271

Assumptions:

- a. 11% of any residential area set aside for parks/open space
- b. mixed use M area is 80% residential, 20% commercial
- c. interior traffic flow follows same general flow as freeway
- d. similar density as already constructed is used for future projections.

ITE 231

80 ac
 880 new du
 am, 590 trips, 25%in, 75%out
 pm, 686 trips, 58%in, 42%out

ITE 750

11 ac
 107,490 sf
 am, 187 trips, 89%in, 11%out
 pm, 161 trips, 14%in, 86%out

ITE 820

10 ac
 66,586 sf
 am, 69 trips, 69%in, 39%out
 pm, 250 trips, 48%in, 52%out

ITE 210

252 ac
 1,181 new homes
 am, 886 trips, 25%in, 75%out
 pm, 1,194 trips, 63%in, 27%out

ITE 210

66 new homes
 am, 50 trips, 25%in, 75%out
 pm, 67 trips, 63%in, 27%out

ITE 110

21 ac
 am, 158 trips, 83%in, 17%out
 pm, 153 trips, 22%in, 78%out

ITE 110

51.18 ac
 am, 384 trips, 83%in, 17%out
 pm, 372 trips, 22%in, 78%out

ITE 750

49 ac
 478,821 sf
 am, 833 trips, 89%in, 11%out
 pm, 718 trips, 14%in, 86%out

ITE 820

48 ac
 319,613 sf
 am, 329 trips, 69%in, 39%out
 pm, 1,199 trips, 48%in, 52%out

ITE 750

26 ac
 254,068 sf
 am, 442 trips, 89%in, 11%out
 pm, 381 trips, 14%in, 86%out

ITE 820

27 ac
 179,782 sf
 am, 185 trips, 69%in, 39%out
 pm, 674 trips, 48%in, 52%out

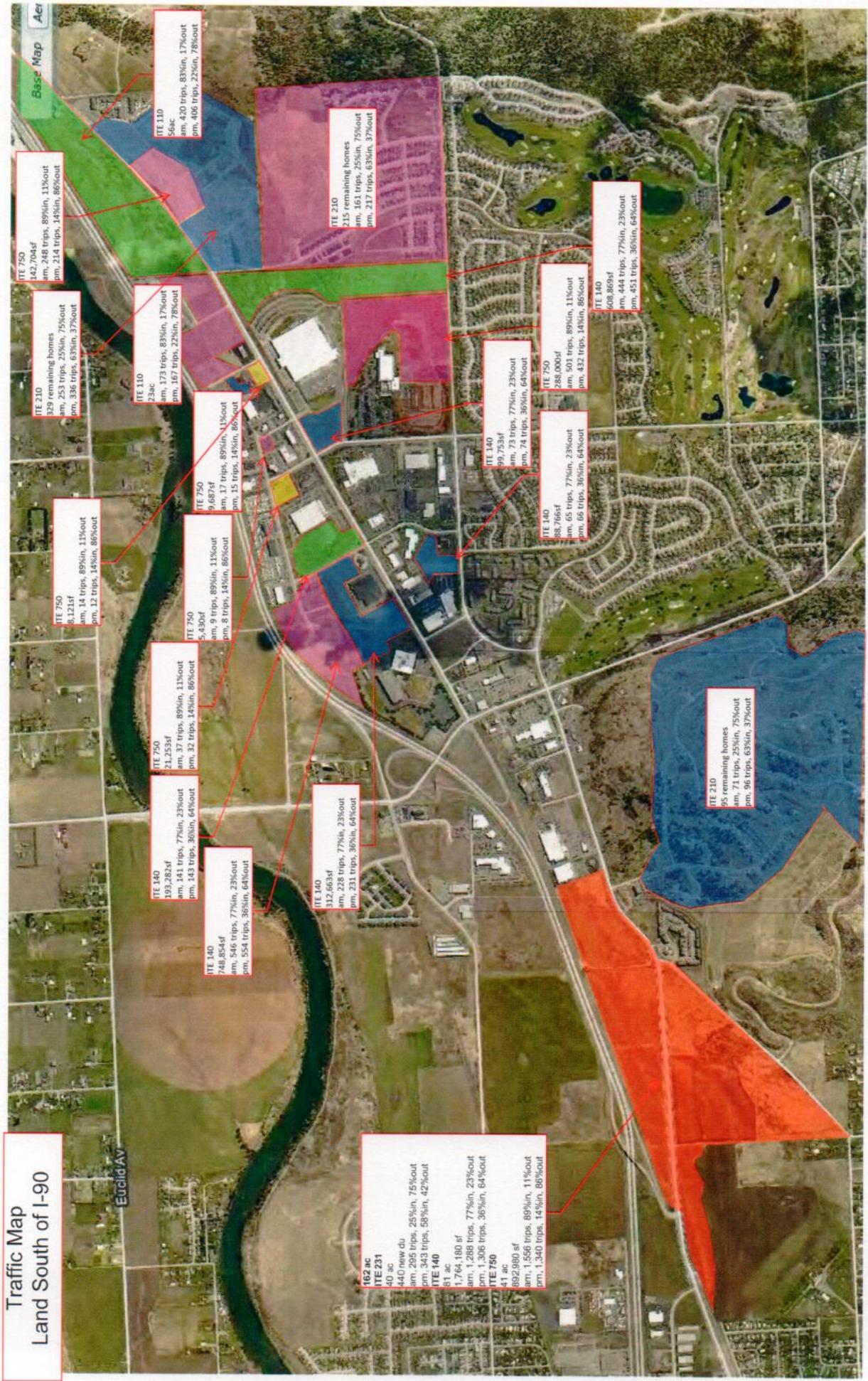
ITE 210

99 ac
 463 new homes
 am, 347 trips, 25%in, 75%out
 pm, 468 trips, 63%in, 27%out

Traffic Map Land North of I-90

- SPECIFIC AREA PLAN BOUNDARY**
- M: NEIGHBORHOOD CENTER
 - C: COMMERCIAL
 - R: MIXED RESIDENTIAL

**Traffic Map
Land South of I-90**



ITE 750
142,704sf
am, 248 trips, 89%in, 11%out
pm, 214 trips, 14%in, 86%out

ITE 210
329 remaining homes
am, 253 trips, 25%in, 75%out
pm, 336 trips, 63%in, 37%out

ITE 110
23ac
am, 173 trips, 83%in, 17%out
pm, 167 trips, 22%in, 78%out

ITE 750
8,121sf
am, 14 trips, 89%in, 11%out
pm, 12 trips, 14%in, 86%out

ITE 750
5,430sf
am, 9 trips, 89%in, 11%out
pm, 8 trips, 14%in, 86%out

ITE 750
21,253sf
am, 37 trips, 89%in, 11%out
pm, 32 trips, 14%in, 86%out

ITE 140
103,282sf
am, 141 trips, 77%in, 23%out
pm, 143 trips, 36%in, 64%out

ITE 140
748,854sf
am, 546 trips, 77%in, 23%out
pm, 554 trips, 36%in, 64%out

ITE 140
312,683sf
am, 238 trips, 77%in, 23%out
pm, 231 trips, 36%in, 64%out

ITE 140
81 ac
1,764,180 sf
am, 1,288 trips, 77%in, 23%out
pm, 1,306 trips, 36%in, 64%out

ITE 110
56ac
am, 420 trips, 83%in, 17%out
pm, 406 trips, 22%in, 78%out

ITE 210
215 remaining homes
am, 161 trips, 25%in, 75%out
pm, 217 trips, 63%in, 37%out

ITE 140
99,733sf
am, 73 trips, 77%in, 23%out
pm, 74 trips, 36%in, 64%out

ITE 750
9,687sf
am, 17 trips, 89%in, 11%out
pm, 15 trips, 14%in, 86%out

ITE 140
88,796sf
am, 65 trips, 77%in, 23%out
pm, 66 trips, 36%in, 64%out

ITE 750
288,000sf
am, 501 trips, 89%in, 11%out
pm, 452 trips, 14%in, 86%out

ITE 140
608,869sf
am, 444 trips, 77%in, 23%out
pm, 451 trips, 36%in, 64%out

ITE 210
95 remaining homes
am, 71 trips, 25%in, 75%out
pm, 96 trips, 63%in, 37%out

ITE 750
41 ac
892,980 sf
am, 1,556 trips, 89%in, 11%out
pm, 1,340 trips, 14%in, 86%out

ITE 231
40 ac
440 new du
am, 295 trips, 25%in, 75%out
pm, 343 trips, 58%in, 42%out

ITE 140
1,764,180 sf
am, 1,288 trips, 77%in, 23%out
pm, 1,306 trips, 36%in, 64%out

ITE 750
41 ac
892,980 sf
am, 1,556 trips, 89%in, 11%out
pm, 1,340 trips, 14%in, 86%out

ITE 140
88,796sf
am, 65 trips, 77%in, 23%out
pm, 66 trips, 36%in, 64%out

ITE 750
288,000sf
am, 501 trips, 89%in, 11%out
pm, 452 trips, 14%in, 86%out

ITE 140
608,869sf
am, 444 trips, 77%in, 23%out
pm, 451 trips, 36%in, 64%out

ITE 210
95 remaining homes
am, 71 trips, 25%in, 75%out
pm, 96 trips, 63%in, 37%out

ITE 140
312,683sf
am, 238 trips, 77%in, 23%out
pm, 231 trips, 36%in, 64%out

ITE 140
81 ac
1,764,180 sf
am, 1,288 trips, 77%in, 23%out
pm, 1,306 trips, 36%in, 64%out

ITE 750
41 ac
892,980 sf
am, 1,556 trips, 89%in, 11%out
pm, 1,340 trips, 14%in, 86%out

ITE 231
40 ac
440 new du
am, 295 trips, 25%in, 75%out
pm, 343 trips, 58%in, 42%out

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12/18/2013
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: APPLEWAY AV
 North/South Street: LEGACY RIDGE DR
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		768	60		84	1001	
Peak-Hour Factor, PHF		1.00	1.00		1.00	1.00	
Hourly Flow Rate, HFR		768	60		84	1001	
Percent Heavy Vehicles		--	--		0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		1	2	
Configuration		T	TR		L	T	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		47		47			
Peak Hour Factor, PHF		1.00		1.00			
Hourly Flow Rate, HFR		47		47			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage					/		/
Lanes		1		1			
Configuration		L		R			

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7 L	8	9 R	10	11	12
Lane Config		L	L		R			
v (vph)		84	47		47			
C(m) (vph)		812	108		643			
v/c		0.10	0.44		0.07			
95% queue length		0.34	1.86		0.24			
Control Delay		9.9	61.8		11.0			
LOS		A	F		B			
Approach Delay				36.4				
Approach LOS				E				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12-11-13
 Analysis Time Period:
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: APPLEWAY AV
 North/South Street: SIGNAL RD
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound	
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		337	135	23	792		
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR		337	135	23	792		
Percent Heavy Vehicles		--	--	0	--	--	
Median Type/Storage		Undivided		/			
RT Channelized?							
Lanes		2	0		1	2	
Configuration		T	TR		L	T	
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound				Southbound	
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		66		16			
Peak Hour Factor, PHF		1.00		1.00			
Hourly Flow Rate, HFR		66		16			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
Lane Config		L		LR				
v (vph)		23		82				
C(m) (vph)		1100		341				
v/c		0.02		0.24				
95% queue length		0.06		0.92				
Control Delay		8.3		18.9				
LOS		A		C				
Approach Delay				18.9				
Approach LOS				C				

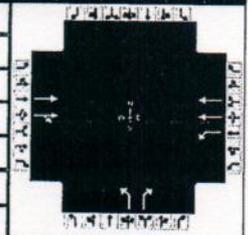
HCS 2010 Signalized Intersection Results Summary

General Information

Agency	LIBERTY LAKE		
Analyst	ADS	Analysis Date	Dec 17, 2013
Jurisdiction	LIBERTY LAKE	Time Period	PM PEAK
Intersection	SIGNAL RD	Analysis Year	BUILDOUT
File Name	ApplewaySignal Signal Buildout.xus		
Project Description			

Intersection Information

Duration, h	0.25
Area Type	Other
PHF	1.00
Analysis Period	1> 7:00



Demand Information

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		644	258	44	1861		126		31			

Signal Information

Cycle, s	43.1	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	5.0	18.8	4.3	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

Timer Results

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		8.3	1.0	4.0		9.0		
Phase Duration, s		23.8	10.0	33.8		9.3		
Change Period, (Y+R _c), s		5.0	5.0	5.0		5.0		
Max Allow Headway (MAH), s		3.1	3.1	3.1		3.2		
Queue Clearance Time (g _s), s		16.5	2.4	17.2		4.9		
Green Extension Time (g _e), s		2.2	0.0	5.1		0.2		
Phase Call Probability		1.00	1.00	1.00		0.85		
Max Out Probability		0.46	0.00	0.70		0.00		

Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18			
Adjusted Flow Rate (v), veh/h		474	428	44	1861		126		31			
Adjusted Saturation Flow Rate (s), veh/h/ln		1900	1714	1810	1809		1810		1610			
Queue Service Time (g _s), s		14.5	8.1	0.4	15.2		2.9		0.8			
Cycle Queue Clearance Time (g _c), s		14.5	8.1	0.4	15.2		2.9		0.8			
Green Ratio (g/C)		0.44	0.44	0.60	0.67		0.10		0.10			
Capacity (c), veh/h		828	747	439	2416		181		161			
Volume-to-Capacity Ratio (X)		0.573	0.573	0.100	0.770		0.696		0.192			
Available Capacity (c _a), veh/h		1323	1193	859	2416		630		560			
Back of Queue (Q), veh/ln (50th percentile)		2.4	2.1	0.1	2.2		1.1		0.3			
Queue Storage Ratio (RQ) (50th percentile)		0.59	0.53	0.00	0.54		0.28		0.06			
Uniform Delay (d ₁), s/veh		9.1	9.1	7.0	4.9		18.8		17.8			
Incremental Delay (d ₂), s/veh		0.2	0.3	0.0	1.4		1.8		0.2			
Initial Queue Delay (d ₃), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (d), s/veh		9.4	9.4	7.0	6.3		20.6		18.0			
Level of Service (LOS)		A	A	A	A		C		B			
Approach Delay, s/veh / LOS	9.4	A		6.3		A	20.1	C		0.0		
Intersection Delay, s/veh / LOS	8.0						A					

Multimodal Results

	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.2	B		0.6	A		2.8	C		2.7	B	
Bicycle LOS Score / LOS	1.2	A		2.1	B			F				

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12-11-13
 Analysis Time Period:
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: APPLEWAY AV
 North/South Street: SIGNAL RD
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		337	135	23	792		
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR		337	135	23	792		
Percent Heavy Vehicles		--	--	0	--	--	
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		1	2	
Configuration		T	TR		L	T	
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		66	16				
Peak Hour Factor, PHF		1.00	1.00				
Hourly Flow Rate, HFR		66	16				
Percent Heavy Vehicles		0	0				
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage			No	/			/
Lanes		0	0				
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	L		LR				
v (vph)		23		82				
C(m) (vph)		1100		341				
v/c		0.02		0.24				
95% queue length		0.06		0.92				
Control Delay		8.3		18.9				
LOS		A		C				
Approach Delay				18.9				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12-11-13
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: APPLEWAY AV
 North/South Street: SIGNAL RD
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach Movement	Eastbound				Westbound		
	1 L	2 T	3 R	4 L	5 T	6 R	
Volume		644	258	44	1861		
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR		644	258	44	1861		
Percent Heavy Vehicles		--	--	0	--	--	
Median Type/Storage	Undivided			/			
RT Channelized?							
Lanes		2	0		1	2	
Configuration		T	TR		L	T	
Upstream Signal?		No			No		

Minor Street: Approach Movement	Northbound			Southbound		
	7 L	8 T	9 R	10 L	11 T	12 R
Volume	126		0			
Peak Hour Factor, PHF	1.00		1.00			
Hourly Flow Rate, HFR	126		0			
Percent Heavy Vehicles	0		0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB		Northbound			Southbound		
	1	4	7	8	9	10	11	12
Lane Config		L		LR				
v (vph)	44			126				
C(m) (vph)	762			70				
v/c	0.06			1.80				
95% queue length	0.18			11.21				
Control Delay	10.0+			508.6				
LOS	B			F				
Approach Delay				508.6				
Approach LOS				F				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12-11-13
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: BUILDOUT
 Project ID: N/A
 East/West Street: APPLEWAY AV
 North/South Street: SIGNAL RD
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		644	258		44	1861	
Peak-Hour Factor, PHF		1.00	1.00		1.00	1.00	
Hourly Flow Rate, HFR		644	258		44	1861	
Percent Heavy Vehicles		--	--		0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		1	2	
Configuration		T	TR		L	T	
Upstream Signal?		No				No	

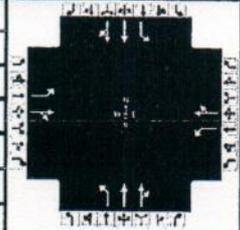
Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		126		0			
Peak Hour Factor, PHF		1.00		1.00			
Hourly Flow Rate, HFR		126		0			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage		0		No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB		Northbound			Southbound		
	1	4	7	8	9	10	11	12
Lane Config		L		LR				
v (vph)		44		126				
C(m) (vph)		762		70				
v/c		0.06		1.80				
95% queue length		0.18		11.21				
Control Delay		10.0+		508.6				
LOS		B		F				
Approach Delay				508.6				
Approach LOS				F				

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LIBERTY LAKE			Duration, h	0.25		
Analyst	ADS	Analysis Date	Dec 17, 2013	Area Type	Other		
Jurisdiction	LIBERTY LAKE		Time Period	PM PEAK	PHF	1.00	
Intersection	Indiana Av		Analysis Year	BUILDOUT	Analysis Period	1> 7:00	
File Name	HarvardIndiana Signal Buildout.xus						
Project Description							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	312	0	245	88	0	38	303	176	89	207	413	238

Signal Information				Signal Timing and Phases												
Cycle, s	64.5	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	Yes	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
				Green	4.9	2.1	4.7	9.2	3.6	15.0						
				Yellow	4.0	4.0	4.0	4.0	0.0	4.0						
				Red	1.0	1.0	1.0	1.0	0.0	1.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	17.0	16.8	9.9	9.7	17.8	23.6	14.2	20.0
Change Period, (Y+R _c), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s	3.1	3.4	3.1	3.4	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	11.6	11.5	4.8	3.4	12.4	5.8	9.2	13.2
Green Extension Time (g _e), s	0.4	0.2	0.1	0.5	0.4	1.8	0.3	1.8
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00
Max Out Probability	0.01	0.90	0.00	0.00	0.03	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	312	245		88	38		303	136	129	207	345	306
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1610		1810	1610		1810	1900	1690	1810	1900	1667
Queue Service Time (g _s), s	9.6	9.5		2.8	1.4		10.4	3.6	3.8	7.2	11.0	11.2
Cycle Queue Clearance Time (g _c), s	9.6	9.5		2.8	1.4		10.4	3.6	3.8	7.2	11.0	11.2
Green Ratio (g/C)	0.29	0.18		0.15	0.07		0.20	0.29	0.29	0.14	0.23	0.23
Capacity (c), veh/h	518	294		255	117		359	548	487	259	443	389
Volume-to-Capacity Ratio (X)	0.602	0.834		0.345	0.323		0.844	0.249	0.264	0.798	0.777	0.788
Available Capacity (c _a), veh/h	742	374		677	374		560	1175	1045	560	1175	1031
Back of Queue (Q), veh/ln (50th percentile)	3.7	4.2		1.1	0.5		4.5	1.4	1.4	3.0	4.6	4.1
Queue Storage Ratio (RQ) (50th percentile)	0.92	1.04		0.00	0.14		1.13	0.36	0.34	0.76	1.16	1.04
Uniform Delay (d ₁), s/veh	19.8	25.5		24.8	28.5		24.9	17.6	17.7	26.8	23.2	23.3
Incremental Delay (d ₂), s/veh	0.4	10.0		0.3	0.6		4.0	0.1	0.1	2.1	1.1	1.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.2	35.5		25.0	29.0		29.0	17.7	17.8	28.9	24.3	24.6
Level of Service (LOS)	C	D		C	C		C	B	B	C	C	C
Approach Delay, s/veh / LOS	26.9	C		26.3	C		23.7	C		25.6	C	
Intersection Delay, s/veh / LOS	25.5						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.8	C		2.8	C		2.3	B		2.3	B	
Bicycle LOS Score / LOS	1.4	A		0.7	A		1.0	A		1.2	A	

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12-19-13
 Analysis Time Period: PM Peak
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: Buildout
 Project ID: N/A
 East/West Street: Indiana
 North/South Street: Harvard
 Intersection Orientation: NS

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Northbound			Southbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		303	176	89	207	413	238
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR		303	176	89	207	413	238
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	2	0	1	2	0
Configuration		L	T	TR	L	T	TR
Upstream Signal?		No			No		

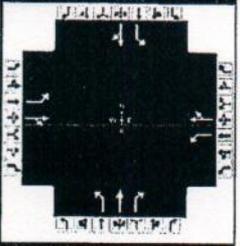
Minor Street:	Approach Movement	Westbound			Eastbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		88	0	38	312	0	245
Peak Hour Factor, PHF		1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR		88	0	38	312	0	245
Percent Heavy Vehicles		0	0	0	0	0	0
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage		No			/		
Lanes		1	1	0	1	1	0
Configuration		L		TR	L		TR

Delay, Queue Length, and Level of Service

Approach Movement	NB		Westbound			Eastbound		
	1	4	7	8	9	10	11	12
Lane Config	L	L	L		TR	L		TR
v (vph)	303	207	88		38	312		245
C(m) (vph)	945	1311	41		923	43		720
v/c	0.32	0.16	2.15		0.04	7.26		0.34
95% queue length	1.39	0.56	9.39		0.13	36.80		1.51
Control Delay	10.6	8.3	739.7		9.1	2998		12.6
LOS	B	A	F		A	F		B
Approach Delay				519.4			1685	
Approach LOS				F			F	

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LIBERTY LAKE			Duration, h	0.25		
Analyst	ADS	Analysis Date	Dec 17, 2013	Area Type	Other		
Jurisdiction	LIBERTY LAKE		Time Period	PM PEAK	PHF	1.00	
Intersection	Harvest		Analysis Year	BUILDOUT	Analysis Period	1> 7:00	
File Name	MissionHarvest Signal Buildout.xus						
Project Description							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	88	0	162	215	0	88	445	88	336	38	37	38

Signal Information				Signal Timing (s)											
Cycle, s	49.4	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.1	3.0	7.0	1.2	6.5	2.7					
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	4.0	0.0	4.0	4.0	4.0	4.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	1.0	0.0	1.0	1.0	1.0	1.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	4.0
Phase Duration, s	9.1	12.0	12.0	14.9	17.7	19.2	6.2	7.7
Change Period, (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s	3.1	3.4	3.1	3.4	3.1	3.3	3.1	3.2
Queue Clearance Time (qs), s	4.0	6.7	6.8	4.3	12.4	11.3	3.0	4.1
Green Extension Time (ge), s	0.1	0.2	0.2	0.1	0.3	0.4	0.0	0.1
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	0.41	0.64
Max Out Probability	0.00	0.01	0.01	0.00	1.00	0.78	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	88	162		215	88		445	88	336	38	75	
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1610		1810	1610		1810	1900	1610	1810	1741	
Queue Service Time (gs), s	2.0	4.7		4.8	2.3		10.4	1.7	9.3	1.0	2.1	
Cycle Queue Clearance Time (gc), s	2.0	4.7		4.8	2.3		10.4	1.7	9.3	1.0	2.1	
Green Ratio (g/C)	0.22	0.14		0.28	0.20		0.35	0.29	0.29	0.08	0.05	
Capacity (c), veh/h	447	227		459	324		628	546	463	263	95	
Volume-to-Capacity Ratio (X)	0.197	0.714		0.468	0.272		0.708	0.161	0.726	0.144	0.790	
Available Capacity (ca), veh/h	848	489		751	489		711	577	489	767	528	
Back of Queue (Q), veh/ln (50th percentile)	0.7	1.7		1.7	0.7		3.8	0.6	3.4	0.4	0.9	
Queue Storage Ratio (RQ) (50th percentile)	0.18	0.42		0.00	0.19		0.94	0.16	0.84	0.09	0.23	
Uniform Delay (d1), s/veh	15.7	20.3		14.7	16.7		13.9	13.2	15.9	21.4	23.1	
Incremental Delay (d2), s/veh	0.1	1.6		0.3	0.2		2.1	0.1	4.2	0.1	5.4	
Initial Queue Delay (d3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	15.8	21.9		15.0	16.8		16.1	13.2	20.1	21.5	28.5	
Level of Service (LOS)	B	C		B	B		B	B	C	C	C	
Approach Delay, s/veh / LOS	19.7		B	15.5		B	17.3		B	26.1		C
Intersection Delay, s/veh / LOS	18.0						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.4		B	2.3		B	2.3		B	2.3		B
Bicycle LOS Score / LOS	0.9		A	1.0		A	1.9		A	0.7		A

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12/18/2013
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: MISSION AV
 North/South Street: HARVEST PARKWAY
 Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		88	0	162	215	0	88
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR		88	0	162	215	0	88
Percent Heavy Vehicles		0	--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?					/		
Lanes		1	1	0	1	1	0
Configuration		L		TR	L		TR
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		445	88	336	38	37	38
Peak Hour Factor, PHF		1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR		445	88	336	38	37	38
Percent Heavy Vehicles		0	0	0	0	0	0
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage		No			/	No /	
Lanes		1	1	0	1	1	0
Configuration		L		TR	L		TR

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
	1	4	7	8	9	10	11	12
Lane Config	L	L	L		TR	L		TR
v (vph)	88	215	445		424	38		75
C(m) (vph)	1520	1429	233		630	102		408
v/c	0.06	0.15	1.91		0.67	0.37		0.18
95% queue length	0.18	0.53	31.76		5.15	1.50		0.67
Control Delay	7.5	8.0	460.1		21.7	59.9		15.8
LOS	A	A	F		C	F		C
Approach Delay				246.2			30.6	
Approach LOS				F			D	

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

ALL-WAY STOP CONTROL (AWSC) ANALYSIS

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12/4/2013
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: 2013
 Project ID: N/A
 East/West Street: MISSION
 North/South Street: MOLTER RD

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	131	61	13	102	40	47	66	11	89	139	110
% Thrus Left Lane									50			

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	LTR		LT	TR	L	TR
PHF	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Flow Rate	39	192	155		80	44	89	249
% Heavy Veh	1	1	1		1	1	1	1
No. Lanes		2		1		2		2
Opposing-Lanes		1		2		2		2
Conflicting-lanes		2		2		2		2
Geometry group		5		4b		5		5
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	39	192	155		80	44	89	249
Left-Turn	39	0	13		47	0	89	0
Right-Turn	0	61	40		0	11	0	110
Prop. Left-Turns	1.0	0.0	0.1		0.6	0.0	1.0	0.0
Prop. Right-Turns	0.0	0.3	0.3		0.0	0.3	0.0	0.4
Prop. Heavy Vehicle	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Geometry Group		5		4b		5		5
Adjustments Exhibit 17-33:								
hLT-adj		0.5		0.2		0.5		0.5

HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

ALL-WAY STOP CONTROL (AWSC) ANALYSIS

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12/4/2013
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: Buildout
 Project ID: N/A
 East/West Street: MISSION
 North/South Street: MOLTER RD

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	250	61	60	468	183	47	66	21	170	139	110
% Thrus Left Lane									50			

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	LT		LT	TR	L	TR
PHF	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Flow Rate	39	311	528		80	54	170	249
% Heavy Veh	1	1	1		1	1	1	1
No. Lanes		2		1		2		2
Opposing-Lanes		1		2		2		2
Conflicting-lanes		2		2		2		2
Geometry group		5		4b		5		5
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	39	311	528		80	54	170	249
Left-Turn	39	0	60		47	0	170	0
Right-Turn	0	61	0		0	21	0	110
Prop. Left-Turns	1.0	0.0	0.1		0.6	0.0	1.0	0.0
Prop. Right-Turns	0.0	0.2	0.0		0.0	0.4	0.0	0.4
Prop. Heavy Vehicle	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Geometry Group		5		4b		5		5
Adjustments Exhibit 17-33:								
hLT-adj		0.5		0.2		0.5		0.5

hRT-adj	-0.7		-0.6		-0.7		-0.7
hHV-adj	1.7		1.7		1.7		1.7
hadj, computed	0.5	-0.1	0.0		0.3	-0.3	0.5
							-0.3

Worksheet 4 - Departure Headway and Service Time

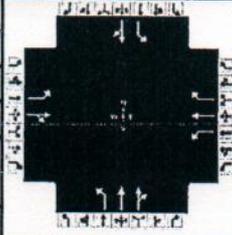
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	39	311	528		80	54	170	249
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.03	0.28	0.47		0.07	0.05	0.15	0.22
hd, final value	8.08	7.43	7.11		8.91	8.33	8.34	7.50
x, final value	0.09	0.64	1.04		0.20	0.12	0.39	0.52
Move-up time, m		2.3		2.3		2.3		2.3
Service Time	5.8	5.1	4.8		6.6	6.0	6.0	5.2

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	39	311	528		80	54	170	249
Service Time	5.8	5.1	4.8		6.6	6.0	6.0	5.2
Utilization, x	0.09	0.64	1.04		0.20	0.12	0.39	0.52
Dep. headway, hd	8.08	7.43	7.11		8.91	8.33	8.34	7.50
Capacity	289	476	528		330	304	420	471
Delay	11.55	22.49	77.87		13.80	12.21	16.34	18.02
LOS	B	C	F		B	B	C	C
Approach:								
Delay		21.27		77.87		13.16		17.34
LOS		C		F		B		C
Intersection Delay	40.25							
								Intersection LOS E

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information				
Agency				Duration, h	0.25			
Analyst				Analysis Date	12/16/2013			
Jurisdiction				Area Type	Other			
Intersection				Time Period				
File Name	MissionMolter Signal Buildout.xus			PHF	1.00			
Project Description				Analysis Year	2013		Analysis Period	1> 7:00



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	39	250	61	60	468	183	47	66	21	170	139	110

Signal Information				Signal Phases											
Cycle, s	47.8	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	2.0	3.0	11.6	2.3	3.0	5.8									
Yellow	4.0	0.0	4.0	4.0	0.0	4.0									
Red	1.0	0.0	1.0	1.0	0.0	1.0									

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.0	16.6	10.0	19.6	7.3	10.8	10.4	13.8
Change Period, (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Allow Headway (MAH), s	3.1	3.1	3.1	3.1	3.1	3.2	3.1	3.2
Queue Clearance Time (gs), s	2.8	9.4	3.1	12.9	3.1	3.1	5.8	8.4
Green Extension Time (ga), s	0.0	1.9	0.1	1.7	0.0	0.5	0.2	0.4
Phase Call Probability	0.40	1.00	1.00	1.00	0.46	0.99	0.90	1.00
Max Out Probability	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	39	311		60	468	183	47	44	43	170	249	
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1835		1810	1900	1610	1810	1900	1747	1810	1760	
Queue Service Time (gs), s	0.8	7.4		1.1	10.9	4.3	1.1	1.0	1.1	3.8	6.4	
Cycle Queue Clearance Time (gc), s	0.8	7.4		1.1	10.9	4.3	1.1	1.0	1.1	3.8	6.4	
Green Ratio (g/C)	0.29	0.24		0.35	0.31	0.31	0.17	0.12	0.12	0.23	0.18	
Capacity (c), veh/h	263	448		438	581	493	249	230	212	487	326	
Volume-to-Capacity Ratio (X)	0.148	0.694		0.137	0.805	0.371	0.189	0.190	0.204	0.349	0.765	
Available Capacity (ca), veh/h	753	1150		816	992	841	728	595	547	850	551	
Back of Queue (Q), veh/ln (50th percentile)	0.3	2.7		0.3	4.0	1.3	0.4	0.4	0.4	1.3	2.4	
Queue Storage Ratio (RQ) (50th percentile)	0.07	0.67		0.00	0.99	0.32	0.10	0.10	0.10	0.33	0.59	
Uniform Delay (d1), s/veh	13.5	16.5		11.1	15.3	13.0	17.2	18.9	19.0	15.5	18.5	
Incremental Delay (d2), s/veh	0.1	0.7		0.1	1.0	0.2	0.1	0.1	0.2	0.2	1.4	
Initial Queue Delay (d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	13.6	17.2		11.2	16.3	13.2	17.4	19.1	19.1	15.6	19.9	
Level of Service (LOS)	B	B		B	B	B	B	B	B	B	B	
Approach Delay, s/veh / LOS	16.8		B	15.1		B	18.5		B	18.2		B
Intersection Delay, s/veh / LOS	16.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.7	B	2.4	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.7	A	0.6	A	1.2	A

Phone:
E-Mail:

Fax:

ROUNDABOUT ANALYSIS

Analyst: ADS
 Agency/Co.: LIBERTY LAKE
 Date Performed: 12/16/2013
 Analysis Time Period: PM PEAK
 Intersection: N/A
 Jurisdiction: LIBERTY LAKE
 Units: U. S. Customary
 Analysis Year: BUILDOUT
 Project ID: N/A
 East/West Street: MISSION
 North/South Street:

Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	250	61	60	468	183	47	66	21	170	139	110
U-Turn Vol	0			0			0			0		
% Thrus Left Lane												
Lane Assn.	Eastbound			Westbound			Northbound			Southbound		
	Left	Right	BP	Left	Right	BP	Left	Right	BP	Left	Right	BP
RT Bypass	None			None			None			Yielding		
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
%HV	1	1	1	1	1	1	1	1	1	1	1	1
NumPeds	0			0			0			0		
U-Turn PHF	0.92			0.92			0.92			0.92		
U-Turn %HV	1			1			1			1		
Flow Rate	43	274	67	66	514	201	52	72	23	187	153	121
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Cnfl. Lanes	1			1			1			1		1
Duration, T	0.25 hrs.											

Critical and Follow-Up Headway Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	Crit. Hdwy	Flup. Hdwy	Flow									
Crit. Hdwy	5.1929			5.1929			5.1929			5.1929		
Flup. Hdwy		3.1858			3.1858			3.1858			3.1858	
Flow			406			167			504			632

Flow Computations

	Eastbound	Westbound	Northbound	Southbound
Circ. Flow	406	167	504	632
Exit. Flow	484	565	316	285

Capacity and Level of Service

Eastbound Westbound Northbound Southbound

	Left	Right	BP	Left	Right	BP	Left	Right	BP	Left	Right	BP
Entry Flow		384		781		147		339		121		
Entry Cap.		754		956		683		601		642		
Volume (vph)		380		773		146		336		120		
Cap. (vph)		746		947		676		595		636		
v/c Ratio		0.51		0.82		0.22		0.56		0.19		
Critical Lane		*		*		*		*				
Lane Delay		12.3		22.3		7.9		16.4		7.9		
Lane LOS		B		C		A		C		A		
95 % Queue		2.9		9.3		0.8		3.5		0.7		
Approach:												
Delay		12.28		22.29		7.86		14.17				
LOS		B		C		A		B				
Intersection Delay		16.81										
						Intersection LOS						C

* * * * *

CERTIFICATION

I, Ann Swenson, the undersigned City Clerk of the City of Liberty Lake, of Spokane County, Washington, HEREBY CERTIFY that the foregoing Ordinance is a full, true, and correct copy of Ordinance No. 211 duly adopted at a regular meeting of the City Council of said City, duly and regularly held at the regular meeting place thereof on March 18, 2014 of which meeting all members of said City Council had due notice and at which a majority thereof were present; and that at said meeting said Ordinance was adopted by the following vote: unanimous.

AYES, and in favor thereof: Mayor Pro Tem Kaminkas, Brickner, Dunne, Langford, and Severs.

NAYS: None.

ABSENT: Council Members Olander and Kopelson.

ABSTAINED: None.

CITY OF LIBERTY LAKE



CITY CLERK