



City of Kuna
 Planning & Zoning
 Department
 P.O. Box 13
 Kuna, Idaho 83634
 208.922.5274
 Fax: 208.922.5989
 Website: www.kunacity.id.gov

Commission & Council Review Application

Note: Engineering fees shall be paid by the applicant if required.

*Please submit the appropriate checklist (s) with application

Type of Review (check all that apply):

- Annexation
- Appeal
- Comprehensive Plan Amendment
- Design Review
- Development Agreement
- Final Planned Unit Development
- Final Plat
- Lot Line Adjustment
- Lot Split
- Planned Unit Development
- Preliminary Plat
- Rezone
- Special Use
- Temporary Business
- Vacation
- Variance

For Office Use Only	
File Number (s)	20-06-S, 20-03-ZC & 20-14-DR
Project name	Ledgestone Plaza
Date Received	06.16.2020
Date Accepted/Complete	7.7.2020
Cross Reference Files	
Commission Hearing Date	9.22.2020
City Council Hearing Date	

Contact/Applicant Information

Owners of Record: <u>Russell Hunemiller / Go For It, LLC</u>	Phone Number: _____
Address: <u>16130 N. Elder Street</u>	E-Mail: _____
City, State, Zip: <u>Nampa, Idaho 83687</u>	Fax #: _____
Applicant (Developer): <u>Trilogy Development, Inc.</u>	Phone Number: <u>208-895-8858</u>
Address: <u>9839 W. Cable Car Street, Suite 101</u>	E-Mail: _____
City, State, Zip: <u>Boise, Idaho 83709</u>	Fax #: _____
Engineer/Representative: <u>Jane Suggs / Gem State Planning</u>	Phone Number: <u>208-602-6941</u>
Address: <u>9840 W. Overland Road, Suite 120</u>	E-Mail: <u>jane@gemstateplanning.com</u>
City, State, Zip: <u>Boise, Idaho 83709</u>	Fax #: _____

Subject Property Information

Site Address: <u>2400 N. Meridian Road</u>
Site Location (Cross Streets): <u>Meridian Road/Hwy 69 and Ardell Road (future)</u>
Parcel Number (s): <u>S1418234000, S1418233650</u>
Section, Township, Range: <u>18, 2N, 1E</u>
Property size : <u>76.03 acres</u> commercial, apartments
Current land use: <u>SF home and agriculture</u> Proposed land use: <u>SF residential</u>
Current zoning district: <u>C-1</u> Proposed zoning district: <u>C-3, R-12, R-6</u>

Project Description

Project / subdivision name: Ledgestone Plaza Subdivision

General description of proposed project / request: rezone and preliminary plat for commercial lots, apartments, SF home lots of various sizes, park with amenities, pathways

Type of use proposed (check all that apply):

Residential _____

Commercial _____

Office _____

Industrial _____

Other _____

Amenities provided with this development (if applicable): park with picnic shelter and play structure, pathways, apartment clubhouse and pool for apartment residents

Residential Project Summary (if applicable)

Are there existing buildings? Yes No

Please describe the existing buildings: SF home and outbuildings

Any existing buildings to remain? Yes No

Number of residential units: 425 dwelling units Number of building lots: 247

Number of common and/or other lots: 22

Type of dwellings proposed:

Single-Family _____

Townhouses _____

Duplexes _____

Multi-Family _____

Other _____

Minimum Square footage of structure (s): _____

Gross density (DU/acre-total property): 5.59 du/ac Net density (DU/acre-excluding roads): approx. 7.3 du/acre

Percentage of open space provided: 24.7 / 13.8 % usable Acreage of open space: 18.81 / 10.46 acres usable

Type of open space provided (i.e. landscaping, public, common, etc.): park, pathways, landscaping.

Non-Residential Project Summary (if applicable)

Number of building lots: 6 Other lots: _____

Gross floor area square footage: unknown at this time Existing (if applicable): _____

Hours of operation (days & hours): _____ Building height: _____

Total number of employees: _____ Max. number of employees at one time: _____

Number and ages of students/children: _____ Seating capacity: _____

Fencing type, size & location (proposed or existing to remain): _____

Proposed Parking:

a. Handicapped spaces: _____ Dimensions: _____

b. Total Parking spaces: _____ Dimensions: _____

c. Width of driveway aisle: _____

Proposed Lighting: _____

Proposed Landscaping (berms, buffers, entrances, parking areas, common areas, etc.): none at this time

Applicant's Signature: Jane Suggs Date: 6/4/20



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Preliminary Plat Checklist

Preliminary Plats require public hearings with both the Planning & Zoning Commission and City Council. Public hearing signs will be required to be posted by the applicant for both meetings. Sign posting regulations are available online.

Project Name: Ledgestone Plaza

Applicant: Jane Suggs/Gem State Planning

All applications are required to contain on copy of the following:

Applicant (✓)	Description	Staff (✓)
<input checked="" type="checkbox"/>	Electronic copy of all required submittal items.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Completed and signed Commission & Council Review Application.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Vicinity map showing relationship of the proposed plat to the surrounding area with a 2-mile radius.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Homeowner's maintenance agreement for the care of landscaped common areas.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Legal description of the preliminary plat area: Include a metes & bounds description to the section line of all adjacent roadways stamped & signed by a registered professional land surveyor with a calculated closure sheet & a map showing the boundaries of the legal description.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Proof of ownership—A copy of your deed and Affidavit of Legal Interest (for all interested parties involved).	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Letter of intent indicating reasons and details for preliminary plat.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Commitment of Property Posting form signed by the applicant/agent.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	If preliminary plat includes 100 lots or more, please submit a traffic impact study.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	A letter from Ada County Engineer with the Subdivision Name reservation. A name change needs to be submitted and approved by the Planning & Zoning Director and Ada County Engineer.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Phasing Plan	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Landscape plan for subdivision entrances, buffers, common areas, etc.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Neighborhood meeting certification (certification & neighborhood meeting list forms shall accompany this application).	<input type="checkbox"/>
<input checked="" type="checkbox"/>	8 1/2 x 11 proposed preliminary plat.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<p>Preliminary plat drawing on 24x36 quality paper drawn to scale of 1 to 100' or more. The following information shall be contained on the preliminary plat:</p> <ul style="list-style-type: none"> ◇ Topography at two-foot (2') intervals ◇ Land uses (location, layout, types & dimensions): residential, commercial & industrial land uses. ◇ Street right-of-way: dimensions of right-of-way dedication for all roadways, street sections, improvements, etc. ◇ Easements/common space: utility easements, parks, community spaces ◇ Lots: layout and dimensions of lots ◇ Preliminary improvement drawing: show water, sewer, drainage, electricity, irrigation, telephone, natural gas, proposed street lighting, proposed street names, proposed subdivision name, fire hydrant placement, storm water disposal, underground utilities, and sidewalks. 	<input type="checkbox"/>

*NOTE: One copy of the above items need to be submitted when applying for multiple applications. This application shall not be considered complete (nor will a public hearing be set) until staff has received **all required information**. Once the application is deemed complete, staff will notify the applicant of the scheduled hearing date, fees due, additional copies needed, etc.*



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Rezone Checklist

Rezone requires public hearings with both the Planning & Zoning Commission and City Council. Public hearing signs will be required to be posted by the applicant for both meetings. Sign posting regulations are available online.

Project name: Ledgestone Plaza **Applicant:** Jane Suggs

All applications are required to contain one copy of the following:

Applicant (✓)	Description	Staff (✓)
✓	Completed and signed Commission & Council Review Application.	
✓	Letter of Intent indicating reasons for proposed rezone.	
✓	Vicinity map drawn to scale, showing the location of the subject property. Map shall contain the following information: Shaded area showing the rezone property, Street names and names of surrounding subdivisions.	
✓	Legal description of the rezone area: Include a metes & bounds description to the section line of all adjacent roadways stamped & signed by a registered professional land surveyor with a calculated closure sheet & a map showing the boundaries of the legal description.	
N/A	Development Agreement & Development Agreement Checklist	
✓	Recorded warranty deed for the property.	
✓	Proof of ownership—A copy of your deed <u>and</u> Affidavit of Legal Interest. (All parties involved)	
✓	Neighborhood meeting certification (certification & neighborhood meeting list forms shall accompany this application).	
✓	Commitment of Property Posting form signed by the applicant/agent.	

Note: Only one copy of the above items need to be submitted when applying for multiple applications.

This application shall not be considered complete (nor will a Public Hearing be set) until staff has received all required information. Once the application is deemed complete, staff will notify the applicant of the scheduled hearing date, fees due, additional copies needed, etc.

Gem State Planning, LLC

June 15, 2020

Ms. Wendy Howell, Planning Director
751 W. 4th Street
Kuna, ID 83634

Subject: LedgeStone Plaza Subdivision
Applications for Rezone, Preliminary Plat and Design Review

Dear Ms. Howell:

Please accept the attached applications and support materials for a new mixed-use development in Kuna. LedgeStone Plaza builds on the great design and connectivity found in the neighboring LedgeStone and LedgeStone South Subdivisions to the east.

This new subdivision is 76.03 acres and is located on Meridian Road/Hwy 69, just north of the new Ardell Road collector street (2N, 1W, 22). This extension of Ardell Road, an east-west mid-mile collector from Hwy 69 to Stroebel Road, will be constructed as part of this new development. LedgeStone Plaza is a true mixed use community with 6 commercial lots, 192 apartment units on 8 lots and 233 single family home lots for a total of 425 dwelling units. The development also features substantial open space, play structure, picnic shelter and pathway connections throughout the community.

Rezone to meet the Comprehensive Plan designation

We are requesting to rezone the property to multiple land use zones to meet the designation of Mixed Use in the Comprehensive Plan. Comprehensive Plan Policy 3.A.1.b, Objective 3.A.2, Goal 3.C, Objective 3.C.1, and Policy 3.C.1.c, all support the land use zones for LedgeStone Plaza. The commercial lots are zoned C-3, the apartments and adjacent small lots are zoned R-12 and the remaining single family lots are zoned R-6.

The C-3 zone is the service commercial district and is the appropriate zoning designation due to the location on Hwy 69 and access via Ardell Road. The R-12 zone promotes higher density residential development and as noted in the Kuna City Code and serves as a “transitional buffer between less intensive residential and more intensive commercial uses”. The R-6 zone is a medium density district and again provides a transition to the same zone in the LedgeStone South subdivision across Stroebel Road. Please note that many of the lots in the R-6 zoned area meet the R-4 minimum lot size. The overall density of LedgeStone Plaza, including the apartments, is 5.6 du/acre

The legal descriptions for all 3 zoning designations are included in our application package.

Preliminary Plat

Ledgestone Plaza is a true mixed use community with a great blend of housing and commercial opportunities. Ledgestone Plaza is planned for 233 single family home lots, 8 apartment lots, 6 commercial lots and 22 common lots for a total of 269 lots. Each apartment lot includes 24 apartment units, for a total of 192 apartment units. The 3-story apartment units are located adjacent to the commercial lots as a transition land use. We have provided 2 parking spaces for each of the apartment units, plus one guest parking space for each unit, for a total of 576 parking spaces. We have also planned that 282 of the required parking spaces are covered.

Like other developments with innovative housing types, we are requesting a director's allowance for reduced frontage and increased lot coverage (up to 55%) for the single family homes in the R-12 zone. We also request a 15' front setback for the alley loaded lots. These changes allow for our creative subdivision design and mix of lot and home sizes that make Ledgestone Plaza a special community for all ages and walks of life.

Open Space and Connectivity

Our landscape plan highlights the abundant open space and connectivity in Ledgestone Plaza. The 6-acre centrally located open space/park will be enjoyed by all residents. The park will include a play structure, picnic shelter and a soon-to-be popular walking path along the circumference of the park that connects to surrounding streets.

There is substantial open space in the apartment community as well. The apartment buildings surround a large open space that includes a clubhouse and swimming pool.

We have also included a pathway that runs from Stroebel Road on the east, all the way to and through the Ledgestone Plaza apartments and then connects to the commercial lots. This connectivity will be a benefit to everyone in Ledgestone Plaza and residents in adjacent Ledgestone South too.

Ledgestone Plaza has 18.8 acres of common area, which is over 24% of the total site acreage. Useable open space is 10.46 acres or 13.8% of the total site area, which exceeds the 11% requirement for 401-450 dwelling units.

We have included a Design Review application for approval of the extensive landscaping.

Streets and Utilities

A new mid-mile collector road, Ardell Road, runs east-west along the south property boundary, from Hwy 69 to Stroebel Road. Construction of this collector, plus the improvement of Stroebel Road, will benefit the traffic circulation in this area. Residents will be able to use these collectors to travel between neighborhoods instead of travelling on the arterial streets.

All local streets are public streets and constructed to ACHD and Kuna street standards: 36' back of curb to back of curb, with attached sidewalks, in a 50' right-of-way. Well designed access is provided to both Ardell Road and Stroebel Road. Stub streets to the north will allow additional future connections.

As shown on the preliminary plat we have designed one block, located just south of the apartments, with homes that face a public street, but with vehicle access from a 20' wide public alley in the rear of the homes.

A Traffic Impact Study has been completed and under review by both ACHD and ITD.

Sewer, water, and pressurized irrigation will be provided to each lot.

Neighborhood Meeting

Our neighborhood meeting was held on Monday, February 24, 2020, at 6 pm at Kuna High School Library. The attendance sheet and minutes are attached. Only one couple attended the neighborhood meeting. Their questions were mostly about the Ledgestone South project since they were unable to attend the Ledgestone South neighborhood meeting held earlier.

Summary

Ledgestone Plaza is a great example of a mixed use community, with commercial lots, apartments, and single family homes of various sizes, along with a signature park and a special pathway that connects the entire community.

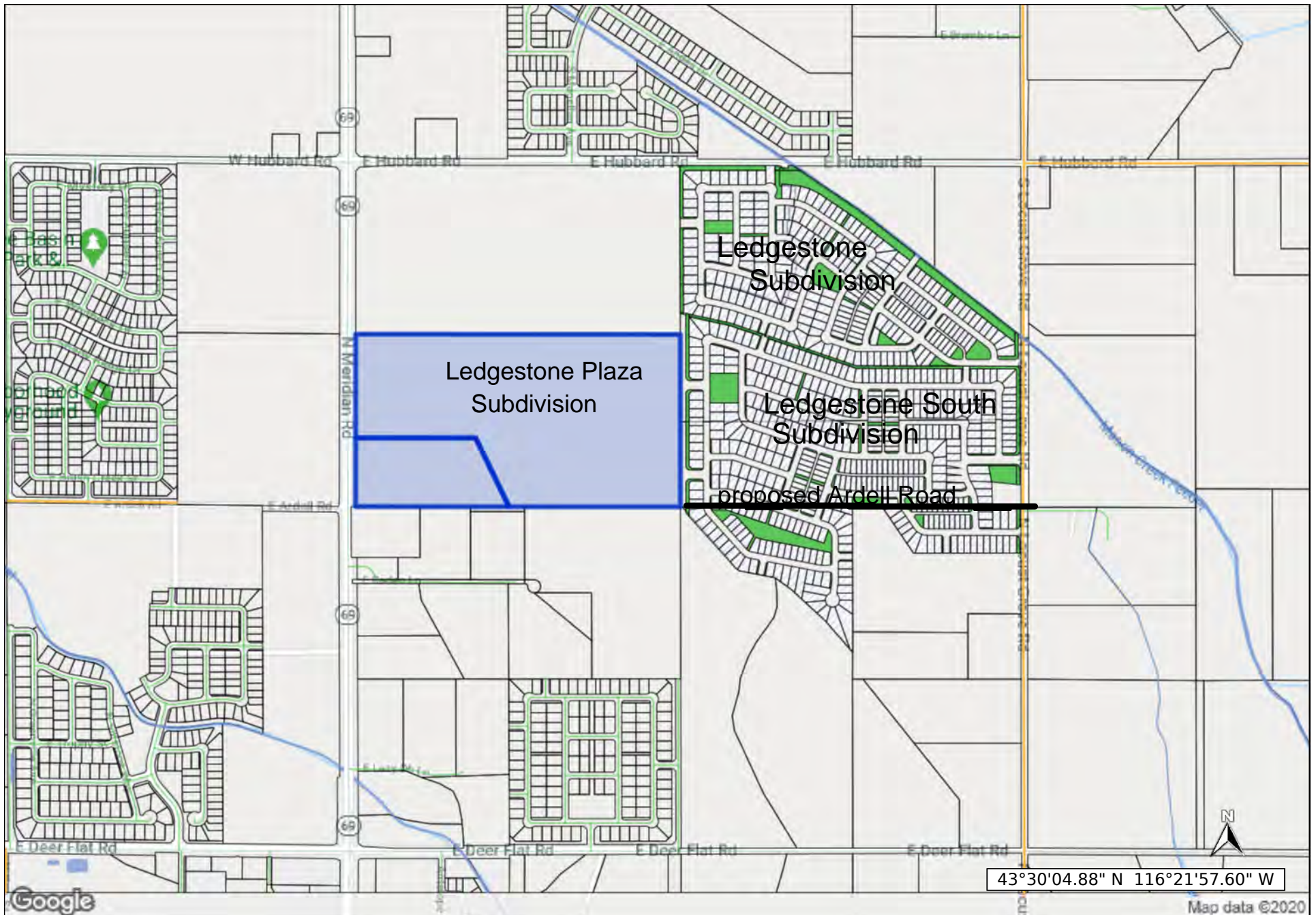
We look forward to working with you and your staff throughout the approval process. Please contact me if you have any questions or comments.

Sincerely,

Jane Suggs

Jane Suggs

Ledgestone Plaza area map





City of Kuna
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Kuna, Idaho 83634

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Web: www.kunacity.id.gov

City of Kuna AFFIDAVIT OF LEGAL INTEREST

State of Idaho)
) ss
County of Ada)

I, Go For It, LLC / Russell Hunemiller , 16130 N. Elder Street
Name Address
Nampa , Idaho 83687
City State Zip Code

being first duly sworn upon oath, depose and say:

(If Applicant is also Owner of Record, skip to B)

A. That I am the record owner of the property described on the attached, and I grant my

Permission to Gem State Planning, 9840 W. Overland Road, Suite 120, Boise, ID 83709 Name Address
to submit the accompanying application pertaining to that property.

B. I agree to indemnify, defend and hold City of Kuna and its employees harmless from any claim or liability resulting from any dispute as to the statements contained herein or as to the ownership of the property which is the subject of the application.

C. I hereby grant permission to the City of Kuna staff to enter the subject property for the purpose of site inspections related to processing said application(s).

Dated this 29 day of May, 2020

Russell Hunemiller
Signature

Subscribed and sworn to before me the day and year first above written.
Adair Koltes
Notary Public for Idaho

Residing at: Nampa, ID
My commission expires: 6-3-22





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State of Idaho)
) ss
County of Ada)

I, Russell D. Hunemiller , 16130 N. Elder Street
Name Address
Nampa , Idaho 83687
City State Zip Code

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C. I hereby grant permission to the City of Kuna staff to enter the subject property for the purpose of site inspections related to processing said application(s).

Dated this 5/29/2020 day of May, 2020

Russell D. Hunemiller
Signature

Subscribed and sworn to before me the day and year first above written.

Adam
Notary Public for Idaho

Residing at: Nampa, ID

My commission expires: 6-05-22





TitleOne

a title & escrow co.

Order Number: 18317710

ADA COUNTY RECORDER Christopher D. Rich
BOISE IDAHO Pgs=2 BONNIE OBERBILLIG
TITLEONE BOISE

2018-076828
08/14/2018 01:57 PM
\$15.00

Warranty Deed

For value received,

Robert Huff and Betty Huff, as Co-Trustees of the Robert and Betty Huff Trust under Trust Agreement dated April 6, 2000, who acquired title as Robert I. Huff and Betty J. Huff, husband and wife as community property

the grantor, does hereby grant, bargain, sell, and convey unto

GO FOR IT, LLC, an Idaho limited liability company

whose current address is 16130 N. Elder St. Nampa, ID 83687

the grantee, the following described premises, in Ada County, Idaho, to wit:

Parcel 1 of Record of Survey No. 3493 recorded April 2, 1996 as Instrument No. 96027526.

Except that portion conveyed to the State of Idaho Transportation Department on June 21, 1996 as Instrument No. 96052315.

To have and to hold the said premises, with their appurtenances unto the said Grantee, its heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that Grantor is the owner in fee simple of said premises; that they are free from all encumbrances except those to which this conveyance is expressly made subject and those made, suffered or done by the Grantee; and subject to all existing patent reservations, easements, right(s) of way, protective covenants, zoning ordinances, and applicable building codes, laws and regulations, general taxes and assessments, including irrigation and utility assessments (if any) for the current year, which are not due and payable, and that Grantor will warrant and defend the same from all lawful claims whatsoever. Whenever the context so requires, the singular number includes the plural.

Dated: August 13, 2018

The Robert and Betty Huff Trust

By: Robert Huff, Co-Trustee
Robert Huff, Co-Trustee

By: Betty Huff, Co-Trustee
Betty Huff, Co-Trustee

Robert I. Huff
Robert I. Huff

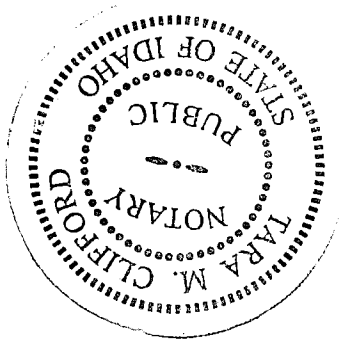
Betty J. Huff
Betty J. Huff

State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a notary public in and for said state personally appeared Robert Huff and Betty Huff, known or identified to me to be the persons whose names are subscribed to the within instrument, as co-trustees of The Robert and Betty Huff Trust and acknowledged to me that they executed the same as co-trustees.

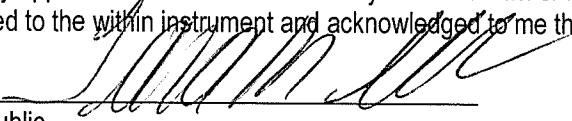
Tara M. Clifford

Notary Public
Residing In: **Eagle, Idaho**
My Commission Expires: **6/18/2022**
(seal)



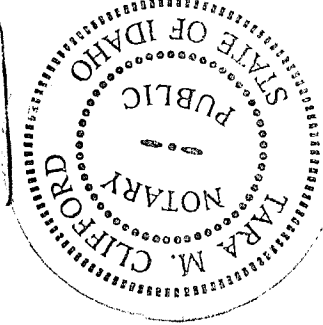
State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a Notary Public in and for said State, personally appeared Robert I. Huff and Betty J. Huff known or identified to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.



Notary Public
Residing In:
My Commission Expires:
(seal)

Residing: Eagle, Idaho
Commission Expires: 6/18/2022





TitleOne
a title & escrow co.
Order Number: 18317728

Warranty Deed

For value received,

Danny M. Cafferty, a married man, as his sole and separate property and Donald George Pica and Bonnie Lee Pica, Trustees of The Restated Donald and Bonnie Pica Trust, U/T/A dated September 16, 2010 and Derek A. Pica and Vicki J. Pica, husband and wife

the grantor, does hereby grant, bargain, sell, and convey unto

Russell D. Hunemiller and Karen Hunemiller, husband and wife

whose current address is 16130 N. Elder St. Nampa, ID 83687

the grantee, the following described premises, in Ada County, Idaho, to wit:

A parcel of land lying in the Northwest quarter of Section 18, Township 2 North, Range 1 East, Boise Meridian, Ada County, Idaho, more particularly described as follows:

Commencing at the Northwest corner of Section 18, Township 2 North, Range 1 East, Boise Meridian; thence South 00°15'24" West 2,649.50 feet to the Southwest corner of Government Lot 2 (the West quarter corner) of Section 18; thence South 89°41'42" East 60.00 feet along the South line of Government Lot 2 to a point on the Easterly right-of-way line of State Highway 69; thence North 00°15'24" East 527.18 feet along said Easterly right-of-way line to the Real Point of Beginning of this description; thence North 00°15'24" East 797.57 feet along said Easterly right-of-way line to a point on the North line of Government Lot 2; thence South 89°41'47" East 2,499.46 feet to the Northeast corner of the Southeast quarter of the Northwest quarter of said Section 18; thence South 00°10'25" West 1,323.90 feet to the Southeast corner of the Southeast quarter of the Northwest quarter (center quarter corner) of said Section 18; thence North 89°44'04" West 1,315.76 feet along the South line of the Southeast quarter of the Northwest quarter to a point on the centerline of a concrete irrigation ditch; thence North 21°05'16" West 35.20 feet along said centerline to a point; thence North 28°21'40" West 102.73 feet along said centerline to a point; thence North 25°53'44" West 450.56 feet along said centerline to a point; thence North 89°41'42" West 925.01 feet to the Real Point of Beginning.

To have and to hold the said premises, with their appurtenances unto the said Grantee, its heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that Grantor is the owner in fee simple of said premises; that they are free from all encumbrances except those to which this conveyance is expressly made subject and those made, suffered or done by the Grantee; and subject to all existing patent reservations, easements, right(s) of way, protective covenants, zoning ordinances, and applicable building codes, laws and regulations, general taxes and assessments, including irrigation and utility assessments (if any) for the current year, which are not due and payable, and that Grantor will warrant and defend the same from all lawful claims whatsoever. Whenever the context so requires, the singular number includes the plural.

Dated: August 13, 2018

Danny M. Cafferty

The Restated Donald and Bonnie Pica Trust

By: *Donald George Pica*
Donald George Pica, Trustee

By: *Bonnie Lee Pica*
Bonnie Lee Pica, Trustee

**SIGNED IN
COUNTERPART**

**SIGNED IN
COUNTERPART**

~~_____~~
Derek A. Pica

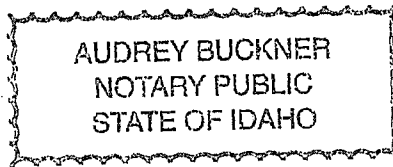
~~_____~~
Vicki J. Pica

**SIGNED IN
COUNTERPART**

State of Idaho
County of Twin Falls, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a notary public in and for said state personally appeared Donald George Pica and Bonnie Lee Pica, known or identified to me to be the persons whose names are subscribed to the within instrument, as trustees of The Restated Donald and Bonnie Pica Trust and acknowledged to me that they executed the same as trustees.

~~_____~~
Notary Public
Residing In: Jerome, ID
My Commission Expires: 2-5-24
(seal)



~~_____~~
State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a Notary Public in and for said State, personally appeared Derek A. Pica and Vicki J. Pica known or identified to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

~~_____~~
Notary Public
Residing In:
My Commission Expires:
(seal)

~~_____~~
State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a Notary Public in and for said State, personally appeared Danny M. Cafferty known or identified to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

~~_____~~
Notary Public
Residing In:
My Commission Expires:
(seal)



TitleOne

a title & escrow co.

Order Number: 18317728

Warranty Deed

For value received,

Danny M. Cafferty, a married man , as his sole and separate property and Donald George Pica and Bonnie Lee Pica, Trustees of The Restated Donald and Bonnie Pica Trust, U/T/A dated September 16, 2010 and Derek A. Pica and Vicki J. Pica, husband and wife

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Russell D. Hunemiller and Karen Hunemiller, husband and wife

whose current address is 16130 N. Elder St. Nampa, ID 83687


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Commencing at the Northwest corner of Section 18, Township 2 North, Range 1 East, Boise Meridian; thence South 00°15'24" West 2,649.50 feet to the Southwest corner of Government Lot 2 (the West quarter corner) of Section 18; thence South 89°41'42" East 60.00 feet along the South line of Government Lot 2 to a point on the Easterly right-of-way line of State Highway 69; thence North 00°15'24" East 527.18 feet along said Easterly right-of-way line to the Real Point of Beginning of this description; thence North 00°15'24" East 797.57 feet along said Easterly right-of-way line to a point on the North line of Government Lot 2; thence South 89°41'47" East 2,499.46 feet to the Northeast corner of the Southeast quarter of the Northwest quarter of said Section 18; thence South 00°10'25" West 1,323.90 feet to the Southeast corner of the Southeast quarter of the Northwest quarter (center quarter corner) of said Section 18; thence North 89°44'04" West 1,315.76 feet along the South line of the Southeast quarter of the Northwest quarter to a point on the centerline of a concrete irrigation ditch; thence North 21°05'16" West 35.20 feet along said centerline to a point; thence North 28°21'40" West 102.73 feet along said centerline to a point; thence North 25°53'44" West 450.56 feet along said centerline to a point; thence North 89°41'42" West 925.01 feet to the Real Point of Beginning.

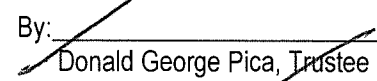
To have and to hold the said premises, with their appurtenances unto the said Grantee, its heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that Grantor is the owner in fee simple of said premises; that they are free from all encumbrances except those to which this conveyance is expressly made subject and those made, suffered or done by the Grantee; and subject to all existing patent reservations, easements, right(s) of way, protective covenants, zoning ordinances, and applicable building codes, laws and regulations, general taxes and assessments, including irrigation and utility assessments (if any) for the current year, which are not due and payable, and that Grantor will warrant and defend the same from all lawful claims whatsoever. Whenever the context so requires, the singular number includes the plural.

Dated: August 13, 2018

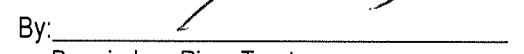


Danny M. Cafferty

The Restated Donald and Bonnie Pica Trust

By: 

Donald George Pica, Trustee

By: 

Bonnie Lee Pica, Trustee

**SIGNED IN
COUNTERPART**



[Handwritten Signature]

Derek A. Pica

[Handwritten Signature]

Vicki J. Pica

**SIGNED IN
COUNTERPART**

State of Idaho
County of _____, ss.

On this _____ day of August in the year of 2018, before me, the undersigned, a notary public in and for said state personally appeared Donald George Pica and Bonnie Lee Pica, known or identified to me to be the persons whose names are subscribed to the within instrument, as trustees of The Restated Donald and Bonnie Pica Trust and acknowledged to me that they executed the same as trustees.

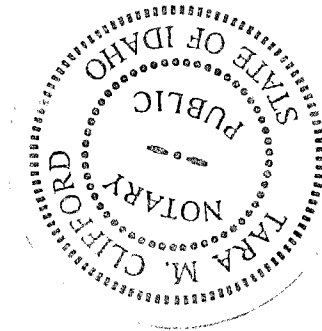
Notary Public
Residing In:
My Commission Expires:
(seal)

State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a Notary Public in and for said State, personally appeared Derek A. Pica and Vicki J. Pica known or identified to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

Notary Public
Residing In:
My Commission Expires:
(seal)

**Residing: Eagle, Idaho
Commission Expires: 6/18/2022**



State of Idaho
County of Ada, ss.

On this 14th day of August in the year of 2018, before me, the undersigned, a Notary Public in and for said State, personally appeared Danny M. Cafferty known or identified to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

Notary Public
Residing In:
My Commission Expires:
(seal)

**Residing: Eagle, Idaho
Commission Expires: 6/18/2022**



Jane Suggs

From: Sub Name Mail <subnamemail@adacounty.id.gov>
Sent: Friday, January 31, 2020 1:47 PM
To: Jane Suggs
Cc: 'Gregory Carter (gcarter@idahosurvey.com)'
Subject: RE: Ledgestone Plaza Subdivision

January 31, 2020

Greg Carter, Idaho Survey Group
Jane Suggs, Gem State Planning

RE: Subdivision Name Reservation: **LEDGESTONE PLAZA SUBDIVISION**

At your request, I will reserve the name **Ledgestone Plaza Subdivision** for your project. I can honor this reservation only as long as your project is in the approval process. Final approval can only take place when the final plat is recorded.

This reservation is available for the project as long as it is in the approval process unless the project is terminated by the client, the jurisdiction or the conditions of approval have not been met, in which case the name can be re-used by someone else.

Sincerely,



Glen Smallwood
Surveying Technician
Ada County Development Services
200 W. Front St., Boise, ID 83702
(208) 287-7926 office
(208) 287-7909 fax

From: Jane Suggs <jane@gemstateplanning.com>
Sent: Thursday, January 30, 2020 4:18 PM
To: Sub Name Mail <subnamemail@adacounty.id.gov>
Cc: Danielle Couchman <danielle@trilogyidaho.com>
Subject: [EXTERNAL] Ledgestone Plaza Subdivision

CAUTION: This email originated from outside Ada County email servers. Do not click on links or open attachments unless you recognize the sender and know the content is safe. Verify the sender by mouse-hovering over their display name in order to see the sender's full email address and confirm it is not suspicious. If you are unsure an email is safe, please report the email by using the 'Phish Alert' button in Outlook.

Hi Subnamemail....again 😊,

I would like to request a new subdivision name: **Ledgestone Plaza Subdivision**.

This subdivision is directly west of the proposed Ledgestone South Subdivision. See the attached map showing the parcels that make up Ledgestone Plaza.

The developer of both Ledgestone and Ledgestone Plaza is Trilogy Development.

EXHIBIT __
DESCRIPTION FOR
LEDGESTONE PLAZA SUBDIVISION
PRELIMINARY PLAT

A parcel of land located in the S1/2 of the NW 1/4 of Section 18, Township 2 North, Range 1 East, City of Kuna, Boise Meridian, Ada County, Idaho being more particularly described as follows:

Commencing at the W1/4 corner of said Section 18 from which the NW corner of said Section 18 bears North 00°28'49" East, 2,649.50 feet;

thence along the East-West centerline of said Section 18 South 89°28'47" East, 60.00 feet to a point on the East right-of-way line of N. Meridian Rd., point also being the **REAL POINT OF BEGINNING**;

thence along said East right-of-way line North 00°28'49" East, 1,324.75 feet to point on the North boundary line of S1/2 of the NW 1/4 of said Section 18;

thence along said North boundary line South 89°28'35" East, 2,499.53 feet to the C-N 1/16 corner of said Section 18;

thence along the North-South centerline of said Section 18 South 00°23'35" West, 1,324.01 feet to the C1/4 of said Section 18;

thence along the East-West centerline of said Section 18 for the following 2 courses and distances:

thence North 89°30'20" West, 1,325.44 feet to the C-E1/16 corner of said Section 18;

thence North 89°28'47" West, 1,176.09 feet to the **REAL POINT OF BEGINNING**. Containing 76.03 acres, more or less.



EXHIBIT __
DESCRIPTION FOR
LEDGESTONE PLAZA SUBDIVISION
C-3 REZONE

A parcel of land located in the S1/2 of the NW 1/4 of Section 18, Township 2 North, Range 1 East, City of Kuna, Boise Meridian, Ada County, Idaho being more particularly described as follows:

Commencing at the W1/4 corner of said Section 18 from which the NW corner of said Section 18 bears North 00°28'49" East, 2,649.50 feet;

thence along the East-West centerline of said Section 18 South 89°28'47" East, 60.00 feet to a point on the East right-of-way line of N. Meridian Rd., point also being the **REAL POINT OF BEGINNING**;

thence along said East right-of-way line North 00°28'49" East, 1,324.75 feet to a point on the North boundary line of the S1/2 of the NW 1/4 of said Section 18;

thence along said North boundary line South 89°28'35" East, 288.01 feet;

thence leaving said North boundary line South 00°23'35" West, 759.55 feet;

thence 133.71 feet along the arc of curve to the left, said curve having a radius of 180.00 feet, a central angle of 42°33'39" and a long chord which bears South 20°53'14" East, 130.66 feet;

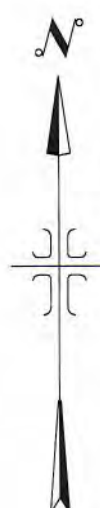
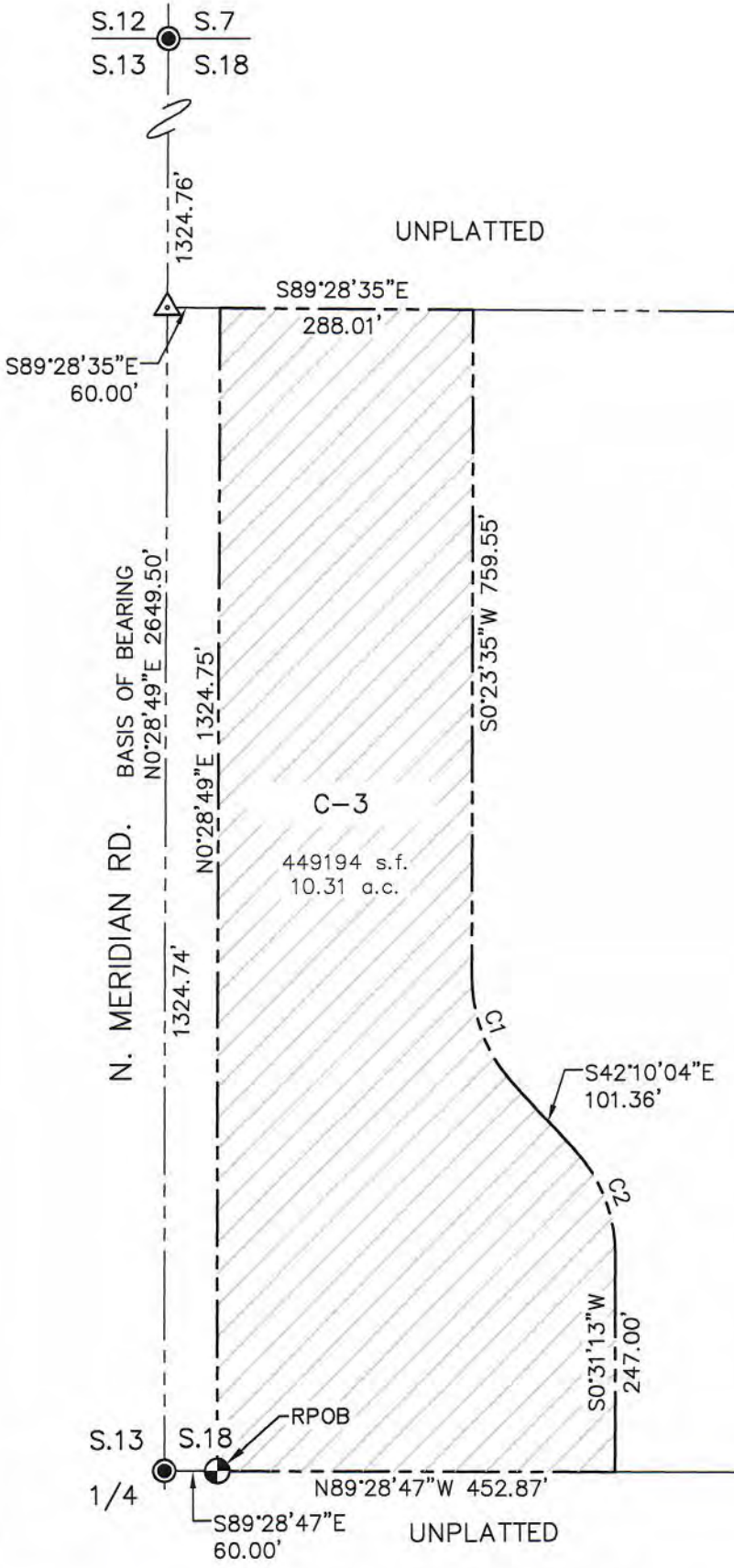
thence South 42°10'04" East, 101.36 feet;

thence 134.11 feet along the arc of curve to the right, said curve having a radius of 180.00 feet, a central angle of 42°41'17" and a long chord which bears South 20°49'25" East, 131.03 feet;

thence South 00°31'13" West, 247.00 feet to a point on the East-West centerline of said Section 18;

thence along said East-West centerline North 89°28'47" West, 452.87 feet to the **REAL POINT OF BEGINNING**. Containing 10.31 acres, more or less.





SCALE: 1" = 200'

CURVE TABLE					
CURVE	RADIUS	LENGTH	CHORD DIST.	CHORD BRG.	DELTA
C1	180.00	133.71	130.66	S20°53'14"E	42°33'39"
C2	180.00	134.11	131.03	S20°49'25"E	42°41'17"



P:\Ledgestone Plaza (Ledgestone West Topo) 20-029.dwg\REZONE\Ledgestone Plaza C-3.dwg 6/8/2020 2:15:27 PM

IDAHO SURVEY GROUP, LLC
 9955 W. EMERALD ST.
 BOISE, IDAHO 83704
 (208) 846-8570

EXHIBIT ___ DRAWING FOR
**LEDGESTONE PLAZA SUB
 C-3 REZONE**

LOCATED IN THE S ½ OF THE NW ¼ OF SECTION 18, T.2N.,
 R.1E., B.M., CITY OF KUNA, ADA COUNTY, IDAHO

JOB NO. 20-029
SHEET NO. 1
DWG. DATE 6/3/2020

EXHIBIT __
DESCRIPTION FOR
LEDGESTONE PLAZA SUBDIVISION
R-12 REZONE

A parcel of land located in the S1/2 of the NW 1/4 of Section 18, Township 2 North, Range 1 East, City of Kuna, Boise Meridian, Ada County, Idaho being more particularly described as follows:

Commencing at the W1/4 corner of said Section 18 from which the NW corner of said Section 18 bears North 00°28'49" East, 2,649.50 feet;

thence along the East-West centerline of said Section 18 South 89°28'44" East, 512.87 feet to the **REAL POINT OF BEGINNING**;

thence leaving said South boundary line North 00°31'13" East, 247.00 feet;

thence 134.11 feet along the arc of curve to the left, said curve having a radius of 180.00 feet, a central angle of 42°41'17" and a long chord which bears North 20°49'25" West, 131.03 feet;

thence North 42°10'04" West, 101.36 feet;

thence 133.71 feet along the arc of curve to the right, said curve having a radius of 180.00 feet, a central angle of 42°33'39" and a long chord which bears North 20°53'14" West, 130.66 feet;

thence North 00°23'35" East, 759.55 feet to a point on the North boundary line of said S1/2 of the NW 1/4 of said Section 18;

thence along said North boundary line South 89°28'35" East, 688.50 feet;

thence leaving said North boundary line South 00°23'35" West, 135.00 feet;

thence South 89°28'35" East, 210.11 feet;

thence 78.43 feet along the arc of curve to the right, said curve having a radius of 50.00 feet, a central angle of 89°52'10" and a long chord which bears South 44°32'30" East, 70.63 feet;

thence South 00°23'35" West, 602.68 feet;

thence 78.65 feet along the arc of curve to the right, said curve having a radius of 50.00 feet, a central angle of 90°07'38" and a long chord which bears South 45°27'24" West, 70.79 feet;

thence North 89°28'47" West, 79.94 feet;

thence South 00°31'13" West, 230.00 feet;

thence 39.27 feet along the arc of curve to the right, said curve having a radius of 50.00 feet, a central angle of 45°00'00" and a long chord which bears South 23°01'13" West, 38.27 feet;

thence South 45°28'48" East, 318.98 feet to a point on the East-West centerline of said Section 18;

thence along said East-West centerline North 89°30'20" West, 146.11 feet to the C-E1/16 of said Section 18;

thence continuing along said East-West centerline North 89°28'47" West, 723.22 feet to the **REAL POINT OF BEGINNING**. Containing 25.54 acres, more or less.

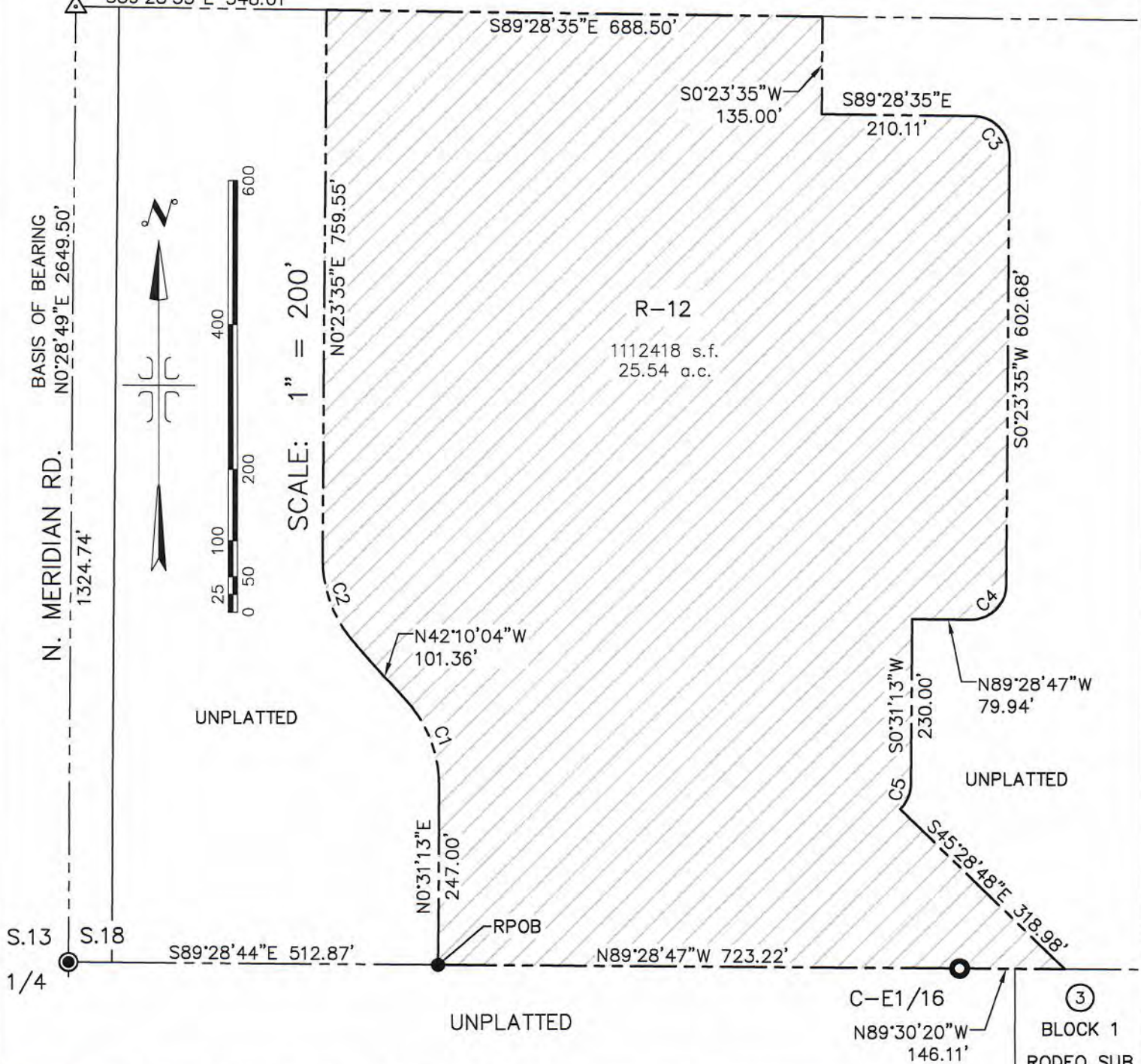


S.12 S.7
S.13 S.18



UNPLATTED

CURVE TABLE					
CURVE	RADIUS	LENGTH	CHORD DIST.	CHORD BRG.	DELTA
C1	180.00	134.11	131.03	N20°49'25"W	42°41'17"
C2	180.00	133.71	130.66	N20°53'14"W	42°33'39"
C3	50.00	78.43	70.63	S44°32'30"E	89°52'10"
C4	50.00	78.65	70.79	S45°27'24"W	90°07'38"
C5	50.00	39.27	38.27	S23°01'13"W	45°00'00"



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IDAHO SURVEY GROUP, LLC
 9955 W. EMERALD ST.
 BOISE, IDAHO 83704
 (208) 846-8570

EXHIBIT ___ DRAWING FOR
LEDGESTONE PLAZA SUB
R-12 REZONE

LOCATED IN THE S ½ OF THE NW ¼ OF SECTION 18, T.2N.,
 R.1E., B.M., CITY OF KUNA, ADA COUNTY, IDAHO

③	BLOCK 1
	RODEO SUB
JOB NO.	20-029
SHEET NO.	1
DWG. DATE	6/3/2020

EXHIBIT __
DESCRIPTION FOR
LEDGESTONE PLAZA SUBDIVISION
R-6 REZONE

A parcel of land located in the S1/2 of the NW 1/4 of Section 18, Township 2 North, Range 1 East, City of Kuna, Boise Meridian, Ada County, Idaho being more particularly described as follows:

Commencing at the W1/4 corner of said Section 18 from which the NW corner of said Section 18 bears North 00°28'49" East, 2,649.50 feet;

thence along the East-West centerline of said Section 18 South 89°28'47" East, 1,236.09 feet to the C-E1/16 corner of said Section 18;

thence continuing along said East-West centerline South 89°30'20" East, 146.11 feet to the **REAL POINT OF BEGINNING**;

thence leaving said East-West centerline North 45°28'48" West, 318.98 feet;

thence 39.27 feet along the arc of a non-tangent curve to the left, said curve having a radius of 50.00 feet, a central angle of 45°00'00" and a long chord which bears North 23°01'13" East, 38.27 feet;

thence North 00°31'13" East, 230.00 feet;

thence South 89°28'47" East, 79.94 feet;

thence 78.65 feet along the arc of curve to the left, said curve having a radius of 50.00 feet, a central angle of 90°07'38" and a long chord which bears North 45°27'24" East, 70.79 feet;

thence North 00°23'35" East, 602.68 feet;

thence 78.43 feet along the arc of curve to the left, said curve having a radius of 50.00 feet, a central angle of 89°52'10" and a long chord which bears North 44°32'30" West, 70.63 feet;

thence North 89°28'35" West, 210.11 feet;

thence North 00°23'35" East, 135.00 feet to a point on the North boundary line of said South 1/2 of the Northwest 1/4 of Section 18;

thence along said North boundary line South 89°28'35" East, 1,523.00 feet to the C-N 1/16 corner of said Section 18;

thence along the North-South centerline of said Section 18 South 00°23'35" West, 1,324.01 feet to the C1/4 of said Section 18;

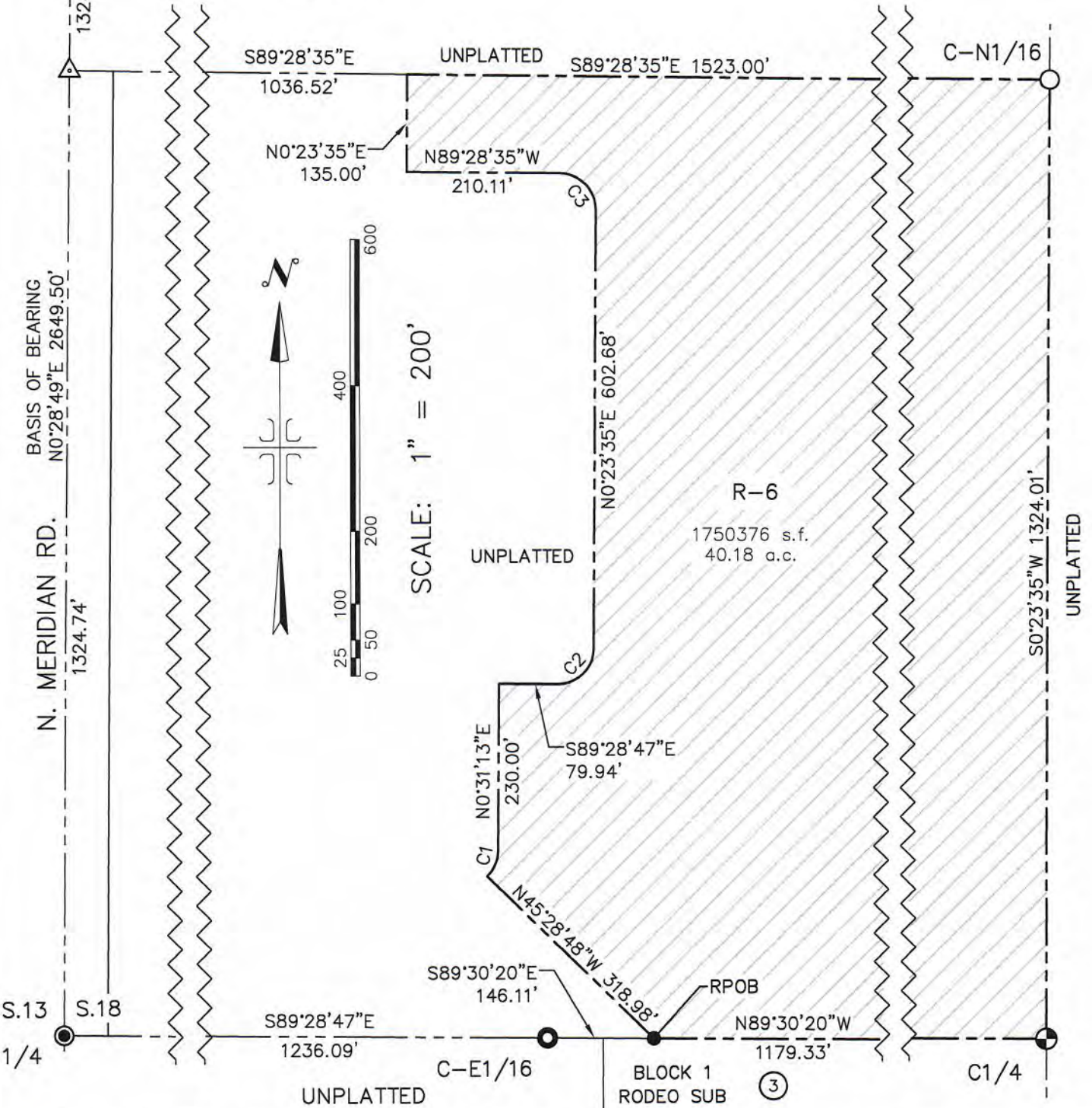
thence along the East-West centerline of said Section 18 North 89°30'20" West,
1,179.33 feet to the **REAL POINT OF BEGINNING**. Containing 40.18 acres, more or less.





CURVE TABLE					
CURVE	RADIUS	LENGTH	CHORD DIST.	CHORD BRG.	DELTA
C1	50.00	39.27	38.27	N23°01'13"E	45°00'00"
C2	50.00	78.65	70.79	N45°27'24"E	90°07'38"
C3	50.00	78.43	70.63	N44°32'30"W	89°52'10"

S.12 S.7
S.13 S.18



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IDAHO SURVEY GROUP, LLC
9955 W. EMERALD ST.
BOISE, IDAHO 83704
(208) 846-8570

EXHIBIT ___ DRAWING FOR LEDGESTONE PLAZA SUB R-6 REZONE

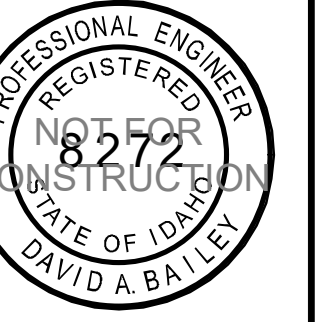
LOCATED IN THE S 1/2 OF THE NW 1/4 OF SECTION 18, T.2N., R.1E., B.M., CITY OF KUNA, ADA COUNTY, IDAHO

JOB NO. 20-029
SHEET NO. 1
DWG. DATE 6/3/2020

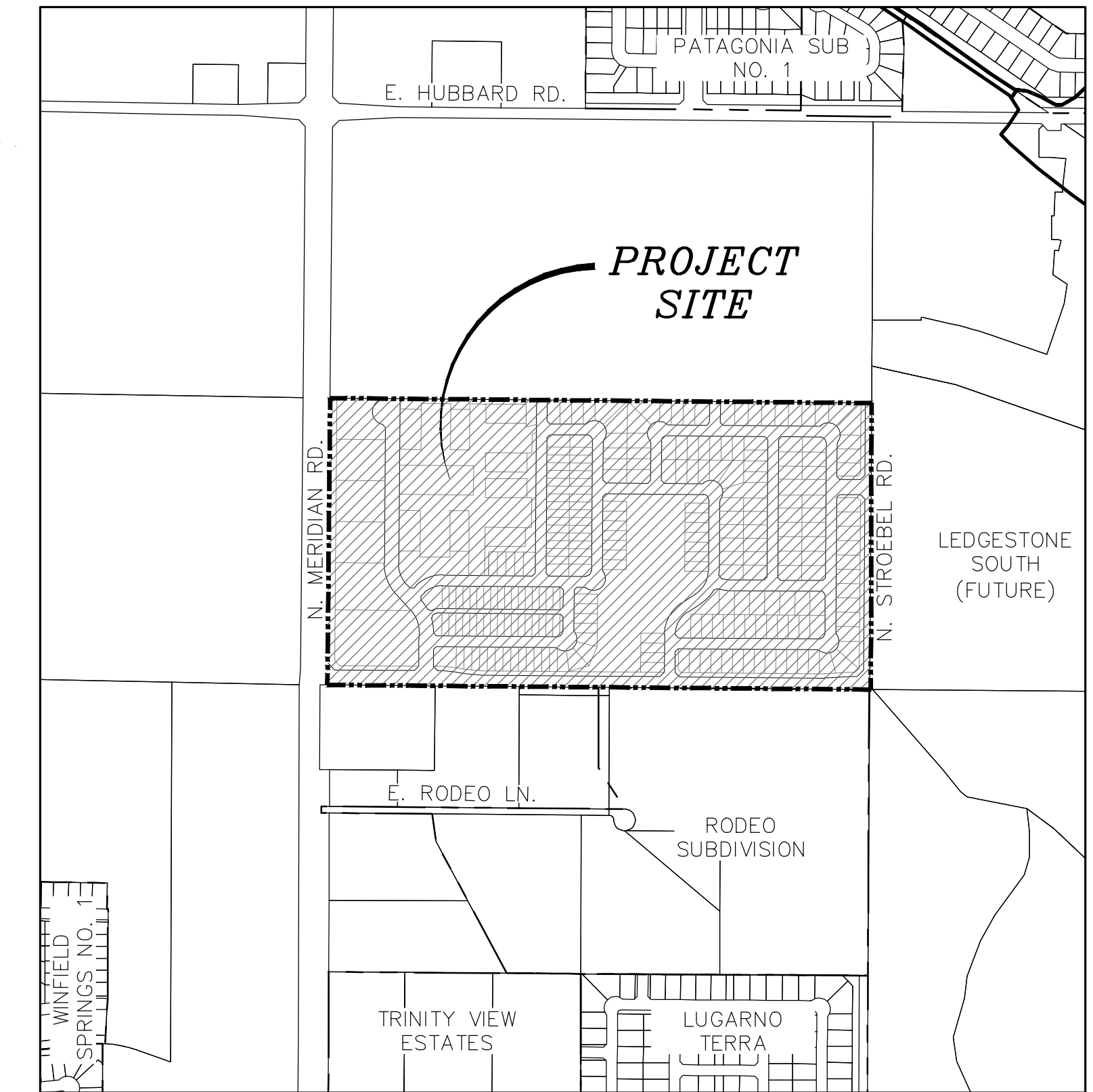
PRELIMINARY PLAT FOR LEDGESTONE PLAZA SUBDIVISION

A PORTION OF THE NW 1/4 OF SECTION 18
TOWNSHIP 2 NORTH RANGE 1 EAST
B.M., KUNA, ADA COUNTY, IDAHO
2020

Bailey Engineering, Inc.
CIVIL ENGINEERING | PLANNING | CADD
1116 E. STATE ST. STE 210
BOISE, ID 83709
TEL: 208-688-6013
WWW.BAILEYENGINEERING.COM



CHECKED BY: DAVID A. BAILEY P.E.
DRAWN BY: DAW/RSB

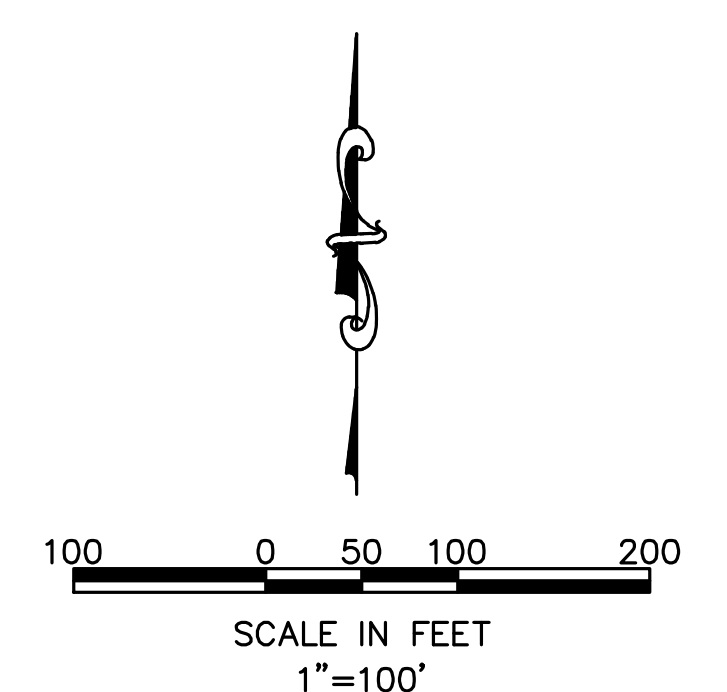


VICINITY MAP
SCALE: 1" = 600'

PLAN SHEET INDEX

- | SHEET | DESCRIPTION |
|-------|---|
| PP-1 | COVER SHEET, INDEX, VICINITY MAP & NOTES |
| PP-2 | PRELIMINARY PLAT, & COMMON LOT TABLE |
| PP-3 | CONCEPTUAL ENGINEERING PLAN & CURVE TABLE |
| PP-4 | CONCEPTUAL SEWER PROFILES |
| PP-5 | CONCEPTUAL SEWER PROFILES & LOT TABLES |

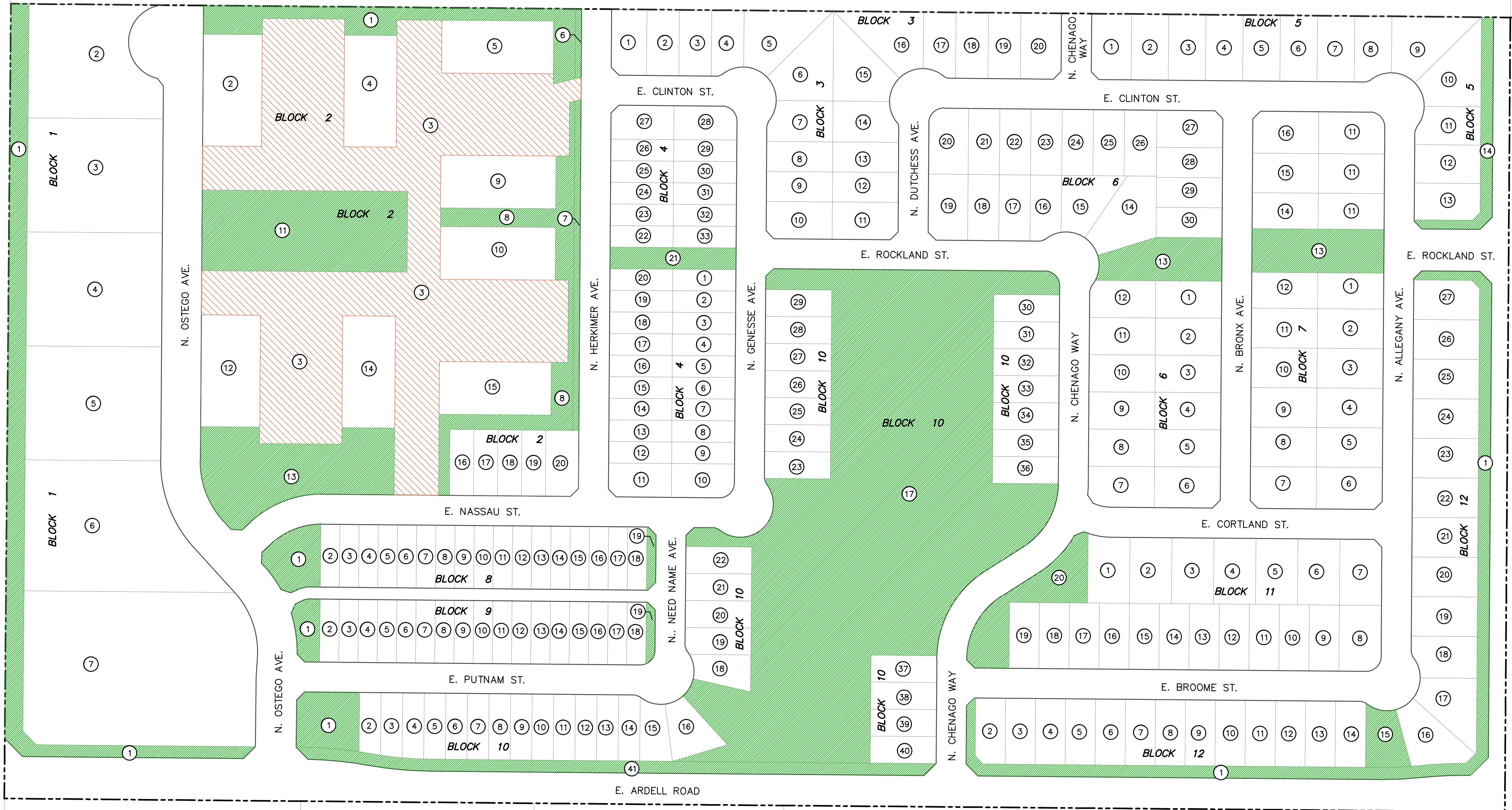
Common Lots			
Lot	Area	Perimeter	
BLOCK 1 Lot 1 OPEN	45003	3303	BUFFER
BLOCK 2 Lot 1 OPEN	21476	1591	OPEN
BLOCK 2 Lot 3 OPEN	22156	4820	PARKING
BLOCK 2 Lot 6 OPEN	1152	251	BUFFER
BLOCK 2 Lot 7 OPEN	5504	1121	BUFFER
BLOCK 2 Lot 8 OPEN	25207	2190	PATHWAY/OPEN
BLOCK 2 Lot 11 OPEN	46092	954	OFFICE/REC CENTER
BLOCK 2 Lot 13 OPEN	37086	965	OPEN
BLOCK 4 Lot 21 OPEN	7560	492	PATHWAY
BLOCK 5 Lot 14 OPEN	8526	940	BUFFER
BLOCK 6 Lot 13 OPEN	13418	537	PATHWAY
BLOCK 7 Lot 13 OPEN	15963	585	PATHWAY
BLOCK 8 Lot 1 OPEN	8359	357	BUFFER
BLOCK 8 Lot 19 OPEN	1408	225	BUFFER
BLOCK 9 Lot 1 OPEN	4145	277	BUFFER
BLOCK 9 Lot 19 OPEN	1363	219	BUFFER
BLOCK 10 Lot 1 OPEN	9754	393	BUFFER
BLOCK 10 Lot 17 OPEN	267376	3544	PARK/OPEN
BLOCK 10 Lot 41 OPEN	20959	2152	BUFFER
BLOCK 11 Lot 20 OPEN	15354	742	OPEN
BLOCK 12 Lot 1 OPEN	36453	3780	BUFFER
BLOCK 12 Lot 15 OPEN	6121	334	PATHWAY



LEGEND

- BOUNDARY
- LOT LINES
- ROAD CENTERLINE
- RIGHT OF WAY
- LOT NUMBER
- LOT AREA
- BLOCK NUMBER
- EASEMENT
- SETBACK
- CURB GUTTER SW
- STREET NAME

- SEWER LINE
- WATER LINE
- STORM DRAIN LINE
- PRESSURE IRRIGATION
- GRAVITY IRRIGATION
- FLOW ARROW
- HYDRANT
- STREET LIGHT
- CATCH BASIN



- ### NOTES:
- ALL LOT LINES COMMON TO A PUBLIC RIGHT OF WAY HAVE A 10' UTILITY EASEMENT.
 - A 10' UTILITY EASEMENT IS LOCATED ADJACENT TO THE EXTERIOR BOUNDARY.
 - ALL SIDE YARD LOT LINES HAVE A 5' DRAINAGE & IRRIGATION EASEMENT ON EACH SIDE OF THE LOT LINE UNLESS OTHERWISE SHOWN.
 - MUNICIPAL SEWER AND WATER SERVICES SHALL BE PROVIDED TO EACH LOT.
 - DRAINAGE FOR THE PUBLIC STREETS WILL BE COLLECTED IN STORM DRAIN CATCH BASINS AND ROUTED THROUGH SAND AND GREASE TRAPS TO SEEPAGE BEDS OR STORM DRAINAGE PONDS.
 - ALL COMMON AREA LOTS SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION. ALL SAID COMMON LOTS SHALL HAVE A BLANKET UTILITY AND DRAINAGE EASEMENT.
 - THIS SUBDIVISION IS SUBJECT TO COMPLIANCE WITH IDAHO CODE SECTION 31-3805(1)(b) CONCERNING IRRIGATION WATER. PRESSURE IRRIGATION WILL BE SUPPLIED TO ALL LOTS IN THIS SUBDIVISION FROM CITY OF KUNA MUNICIPAL IRRIGATION SYSTEM. EXISTING SHARES AND WATER RIGHTS SHALL BE TRANSFERRED TO THE CITY OF KUNA.
 - ALL EXISTING BUILDINGS ON SITE TO BE REMOVED.
 - THE SUBJECT PROPERTY DOES NOT FALL WITHIN A FEMA FLOOD HAZARD ZONE. REFERENCE FIRM PANEL 16027C0425F EFFECTIVE MAY 24TH, 2011.

DEVELOPMENT FEATURES

- #### ACREAGE
- TOTAL PARCEL - 76.03 ACRES
 - TOTAL LOTS - 267
 - TOTAL DWELLING UNITS - 425
- #### BUILDABLE LOTS -
- SF RESIDENTIAL - 233
 - COMMON LOTS - 22
 - APARTMENTS - 8
 - COMMERCIAL - 6
 - DENSITY DU/ACRE - 5.0
 - GROSS COMMON AREA - 18.81 ACRES - 24.7%
 - OPEN SPACE REQUIRED - 11%
 - USEABLE OPEN SPACE PROVIDED - 10.46 - ACRES - 13.8%
- #### ZONING
- EXISTING - RR
 - PROPOSED - R-6/ R-12/ COMMERCIAL
- #### PARKING - APARTMENTS
- UNIT PARKING - 384
 - GUEST PARKING - 192
 - TOTAL PARKING REQUIRED - 576
 - PARKING PROVIDED - 576
 - HC PARKING REQUIRED - 2% - 11.52
 - HC PARKING PROVIDED - 12
 - COVERED PARKING - 282
 - TRASH ENCLOSURES - 4

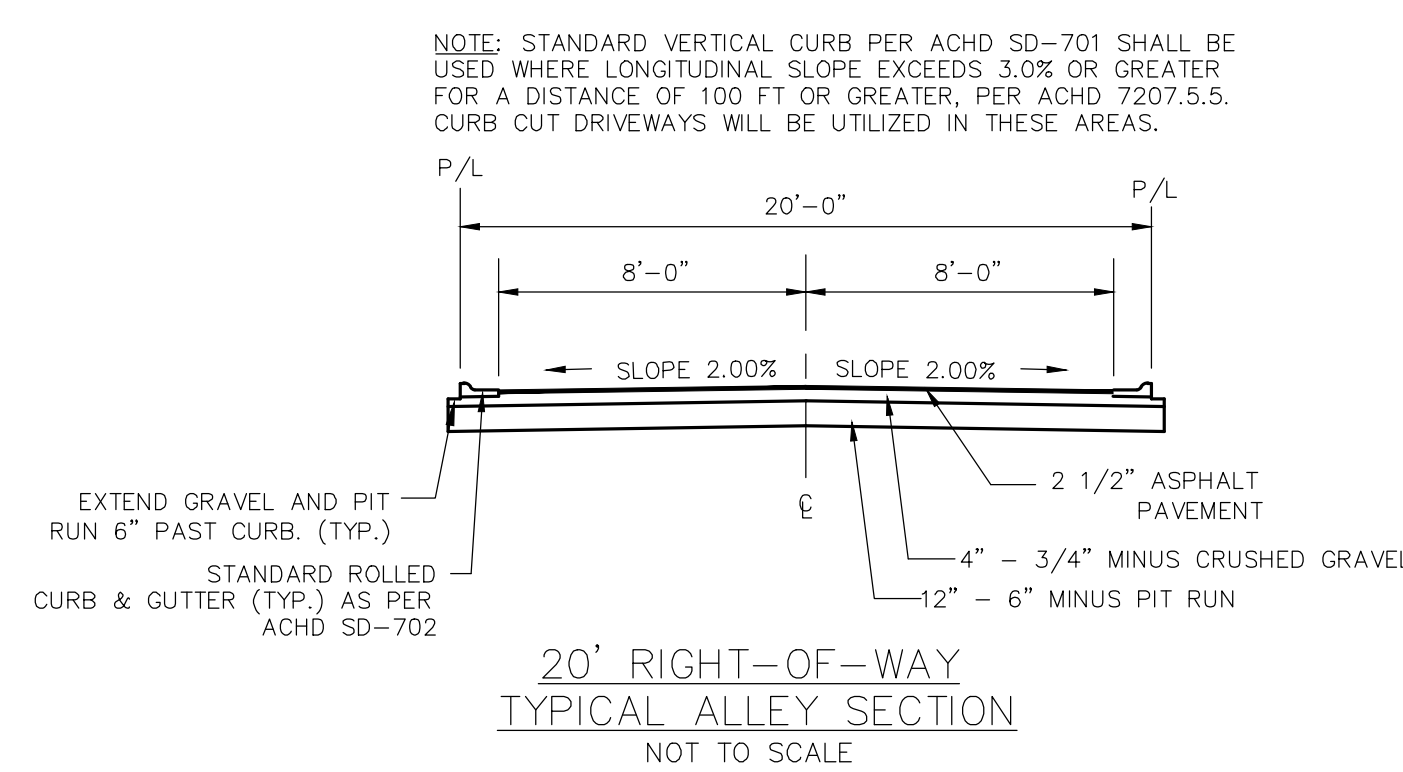
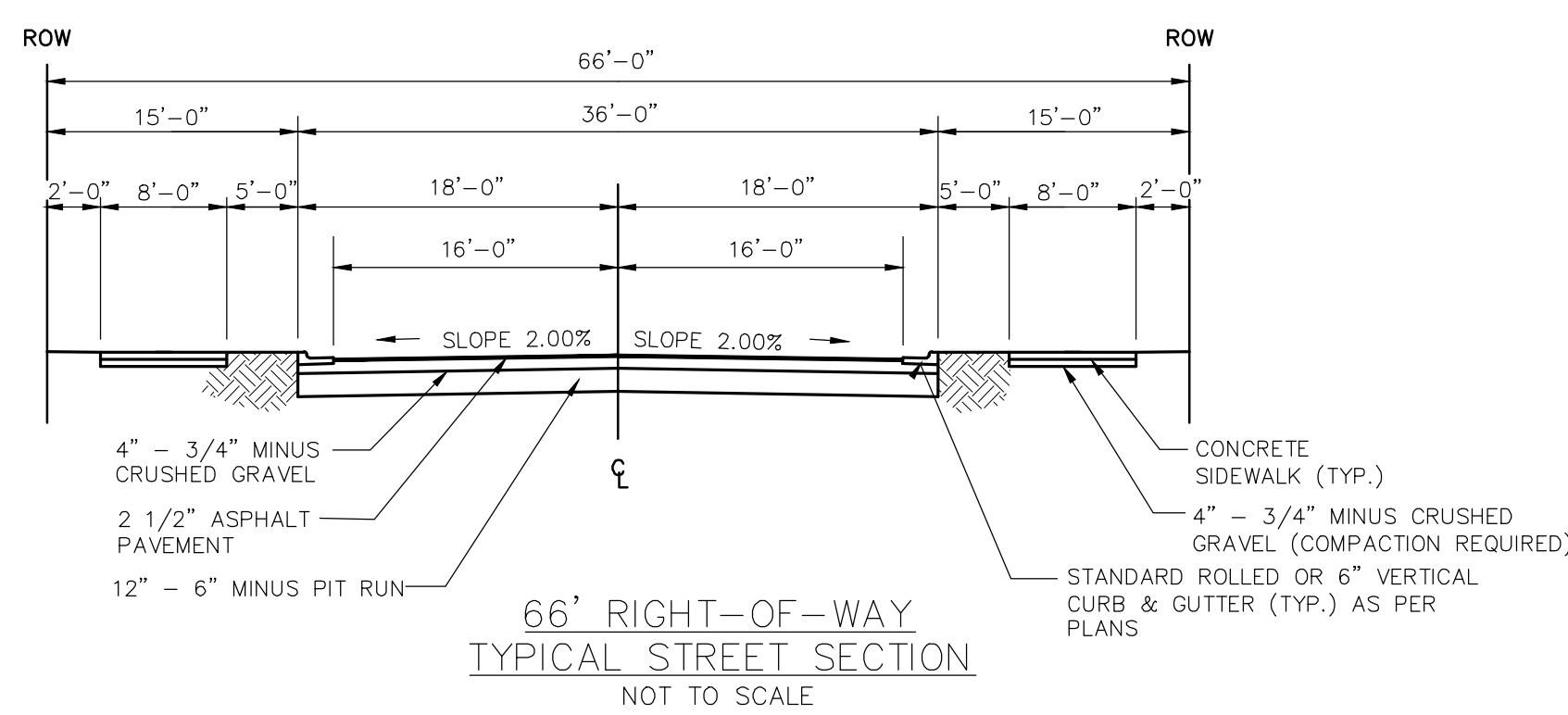
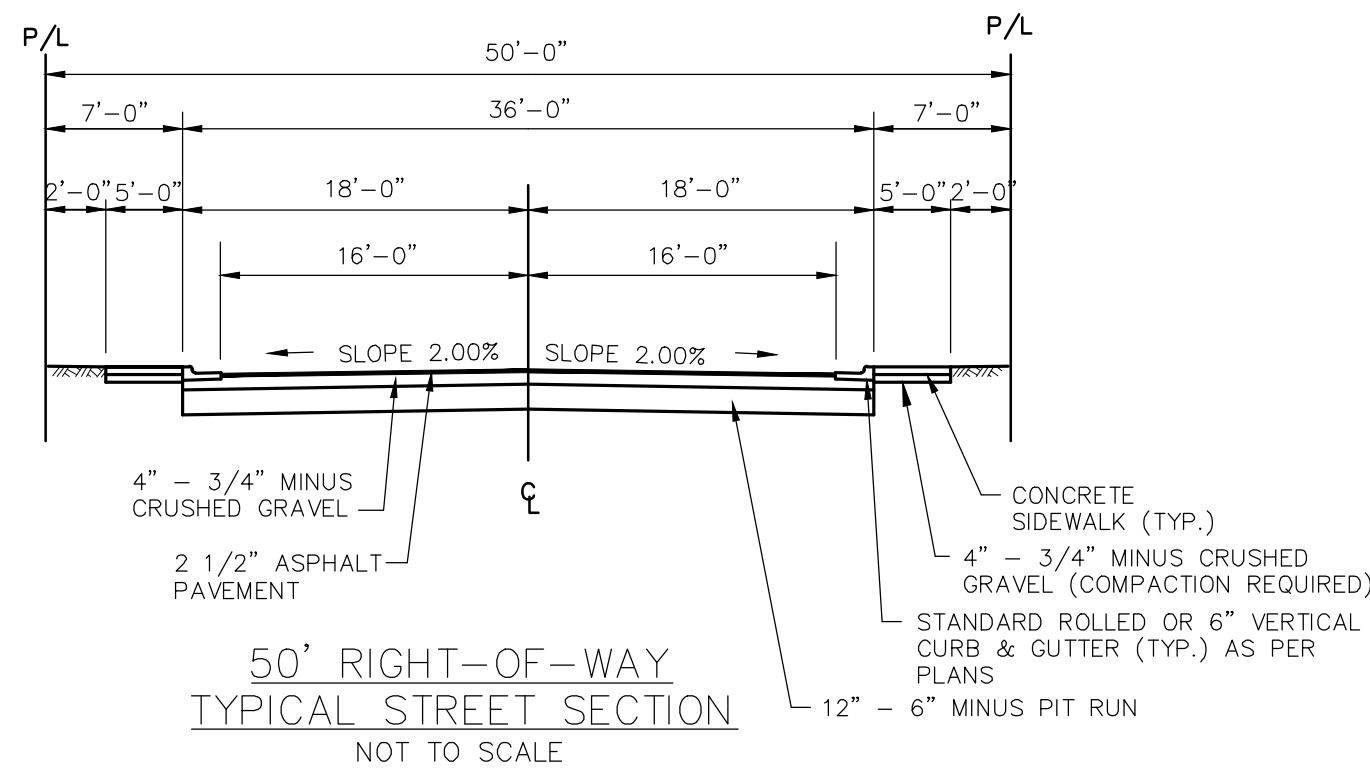
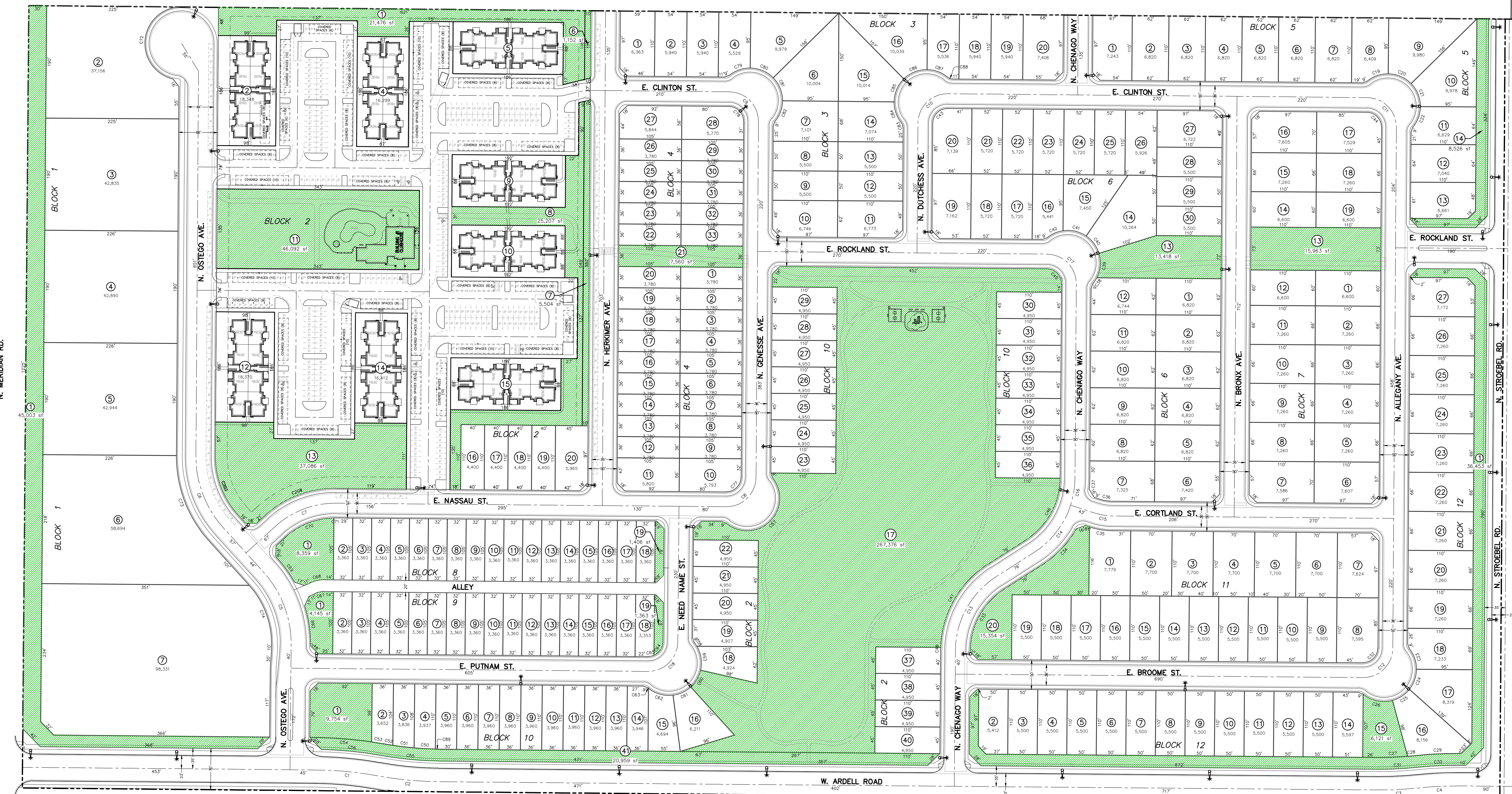
- #### SEWAGE DISPOSAL
- KUNA CITY SEWER
- #### WATER SUPPLY
- KUNA CITY WATER
- #### CITY
- KUNA CITY
- #### SCHOOL DISTRICT
- KUNA
- #### FIRE DISTRICT
- KUNA
- #### IRRIGATION DISTRICT
- NEW YORK IRRIGATION DISTRICT
 - CITY OF KUNA WILL SUPPLY P1

- #### OWNERS
- HUNEMILLER RUSSELL D
 - 16130 N. ELDER ST
 - NAMPA, ID 83867
- #### GO FOR IT LLC
- 16130 N. ELDER ST
 - NAMPA, ID 83867
- #### DEVELOPER
- TRILOGY DEVELOPMENT, INC.
 - 9839 W. CABLE CAR ST
 - BOISE, ID 83709
- #### ENGINEER
- DAVID A. BAILEY, P.E.
 - BAILEY ENGINEERING, INC.
 - 1119 E. STATE ST., SUITE 210
 - EAGLE, ID 83616

- #### PLANNER/CONTACT
- SHAWN BROOKHILL
 - TRILOGY DEVELOPMENT, INC.
 - 9839 W. CABLE CAR ST
 - BOISE, ID 83709
 - 208-695-8658

S. 12 S. 7
S. 13 S. 18
T.2N., R.1W
T.2N., R.1E
R7534260375
2075 E. RODEO LN
BASIS OF BEARING
S029°49'W 2649.50'
N. MERIDIAN RD.
R7534260375
2075 E. RODEO LN
R7534260375
2075 E. RODEO LN
R7534260375
2075 E. RODEO LN
S1418320105
2284 N. MERIDIAN RD.
S1418320144
E RODEO LN.
S1418320075
1888 E RODEO LN
RODEO SUBDIVISION
BK. 72 PG. 7413
R7534260375
2075 E RODEO LN
S1418428000
2404 E. DEER FLAT RD
S1418427800
E. DEER FLAT RD

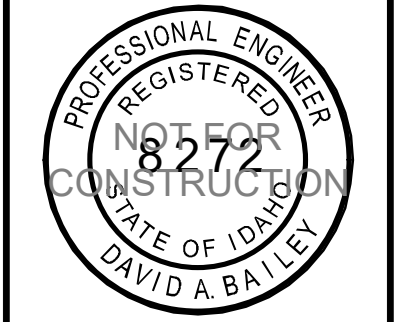
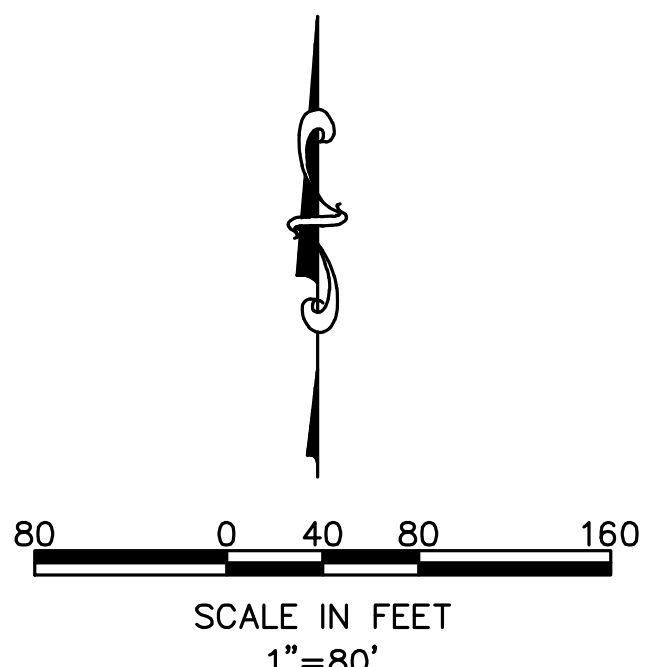
PRELIMINARY PLAT
LEDGESTONE PLAZA SUBDIVISION
TRILOGY DEVELOPMENT, INC.
DATE: 05-04-2020
PROJECT: C2019-038
SHEET
PP-1



NOTE: STANDARD VERTICAL CURB PER ACHD SD-701 SHALL BE USED WHERE LONGITUDINAL SLOPE EXCEEDS 3.0% OR GREATER FOR A DISTANCE OF 100 FT OR GREATER. PER ACHD 7207.9.5, CURB CUT DRIVEWAYS WILL BE UTILIZED IN THESE AREAS.

LEGEND

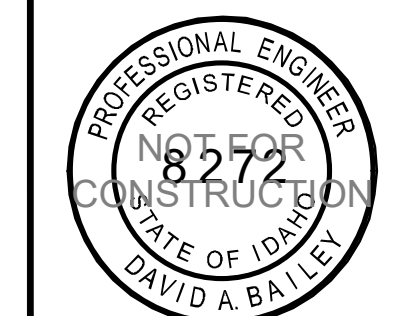
- BOUNDARY
- LOT LINES
- ROAD CENTERLINE
- RIGHT OF WAY
- LOT NUMBER
- LOT AREA
- BLOCK NUMBER
- EASEMENT
- SEBACK
- CURB CUTTER SW
- STREET NAME
- SEWER LINE
- WATER LINE
- STORM DRAIN LINE
- PRESSURE IRRIGATION
- GRAVITY IRRIGATION
- FLOW ARROW
- HYDRANT
- STREET LIGHT
- CATCH BASIN



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DRAWN BY: DMS/RSB

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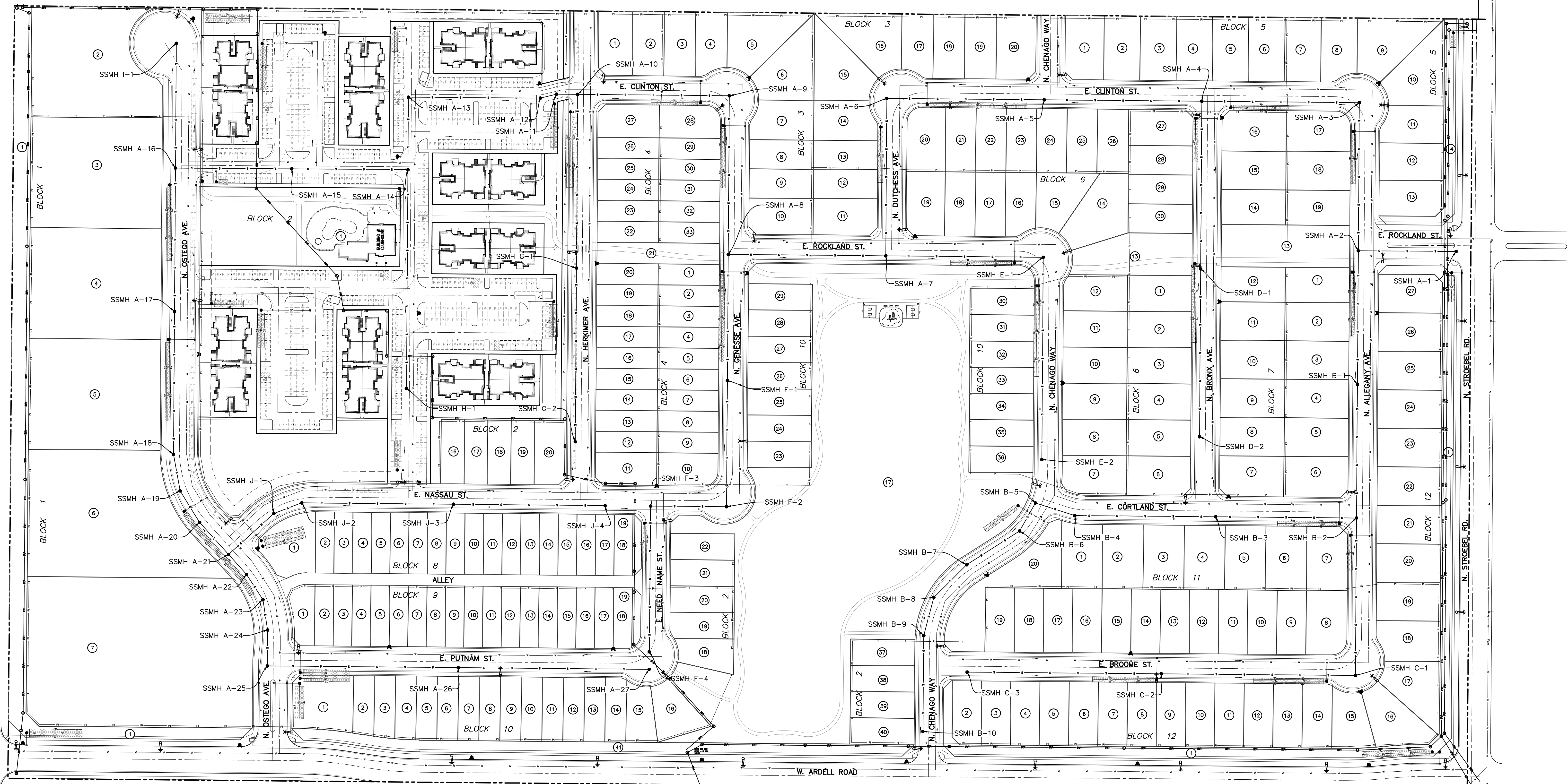
PRELIMINARY PLAT
LEDGESTONE PLAZA SUBDIVISION
TRILOGY DEVELOPMENT, INC.



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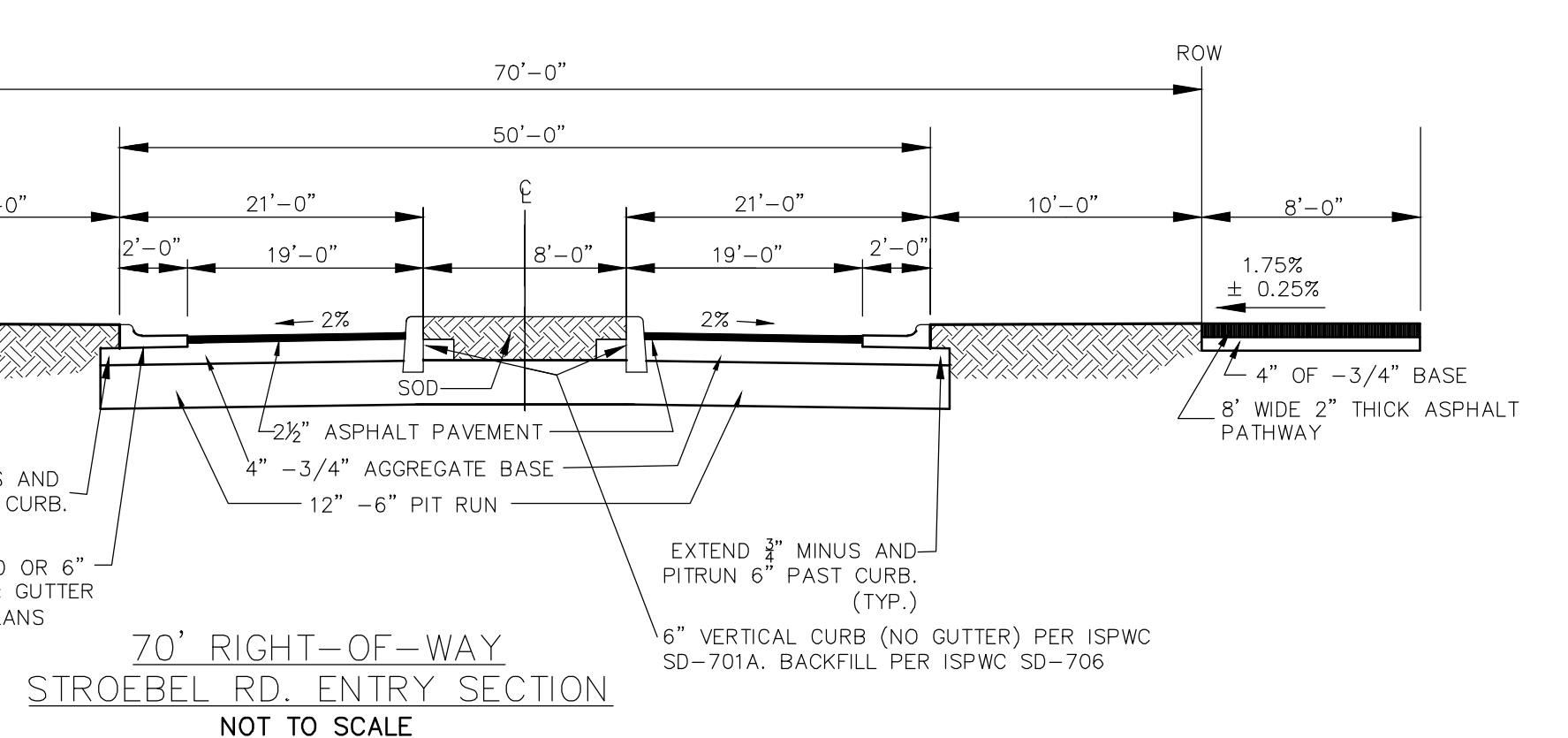
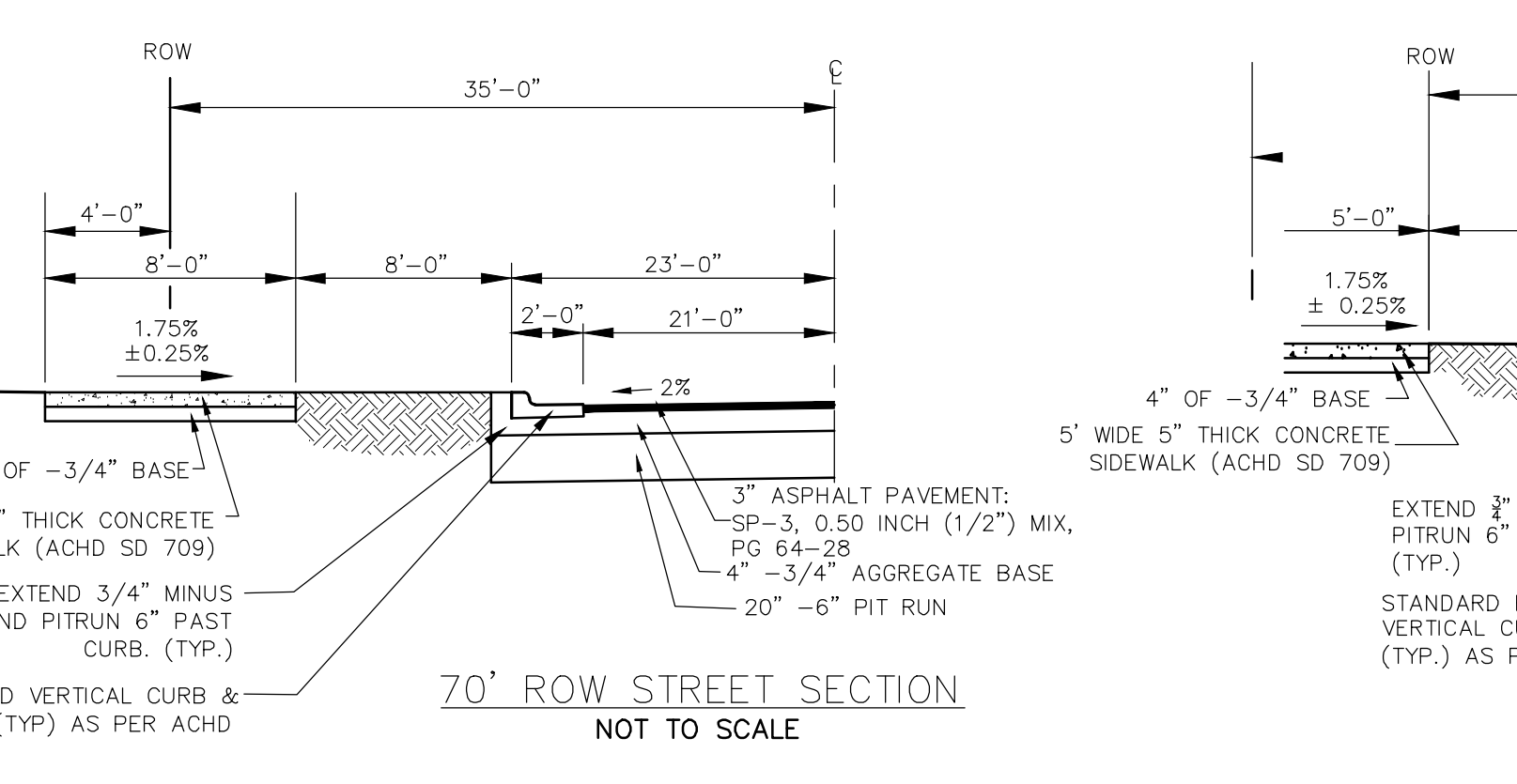
REVISED
 NO. DATE DESCRIPTION

PRELIMINARY PLAT
LEDGESTONE PLAZA SUBDIVISION
TRILOGY DEVELOPMENT, INC.



LEGEND

BOUNDARY LOT LINES	SEWER LINE	WATER LINE	STORM DRAIN LINE	PRESSURE IRRIGATION	GRAVITY IRRIGATION	FLOW ARROW	HYDRANT	STREET LIGHT	CATCH BASIN
ROAD CENTERLINE									
RIGHT OF WAY									
LOT NUMBER									
LOT AREA									
BLOCK NUMBER									
EASEMENT									
SETBACK									
CURB GUTTER SW									
STREET NAME									



Curve Table

Curve #	Radius	Length	Chord	Bearing	Delta
C1	600.00	104.05	103.92	N84°30'42"W	9°56'11"
C2	600.00	104.05	103.92	N84°30'42"W	9°56'11"
C3	600.00	69.32	69.28	S87°11'04"W	6°37'11"
C4	600.00	69.32	69.28	S87°11'04"W	6°37'11"
C5	180.00	134.11	131.03	N20°49'25"W	42°41'17"
C6	180.00	133.71	130.66	N20°53'14"W	42°33'39"
C7	150.00	111.78	109.19	S69°10'35"W	42°41'17"
C8	50.00	78.65	70.79	N45°27'24"E	90°07'38"
C9	50.00	78.43	70.63	N44°32'30"W	89°52'10"
C10	50.00	78.65	70.79	S45°27'30"W	90°07'50"
C11	50.00	78.43	70.63	N44°32'30"W	89°52'10"
C12	50.00	78.63	70.77	N45°26'37"E	90°06'04"
C13	125.00	149.04	142.98	S28°57'30"W	56°55'40"
C14	150.00	103.08	101.06	S37°44'08"W	39°22'25"
C15	100.00	30.64	30.52	N80°43'43"W	17°33'16"
C16	150.00	46.22	46.04	S09°31'57"W	17°39'20"
C17	50.00	78.43	70.63	S44°32'30"E	89°52'10"
C18	50.00	78.54	70.71	S45°31'13"W	90°00'00"
C19	50.00	37.75	37.01	N70°51'45"E	39°19'20"
C20	55.00	43.14	42.05	S67°00'17"E	44°56'37"
C21	55.00	43.13	42.03	S22°04'12"E	44°55'34"
C22	55.00	37.75	37.01	S20°31'57"W	39°19'20"

Curve Table

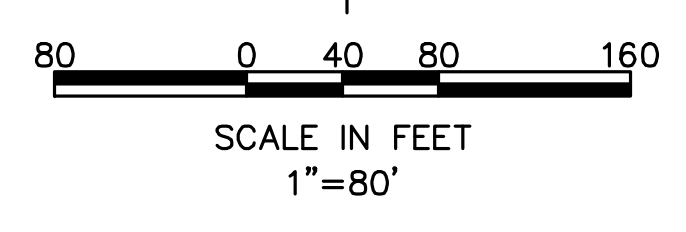
Curve #	Radius	Length	Chord	Bearing	Delta
C23	55.00	37.66	36.92	S19°13'14"E	39°13'37"
C24	55.00	36.54	35.87	S19°25'32"W	38°03'54"
C25	55.00	34.90	34.32	S56°38'19"W	36°21'41"
C26	55.00	52.70	50.71	N77°43'47"W	54°54'07"
C27	545.00	49.86	49.84	S87°52'25"W	51°42'29"
C28	545.00	13.11	13.11	S84°33'50"W	122°42'
C29	655.00	75.67	75.63	S87°11'04"W	6°37'11"
C30	635.00	73.36	73.32	N87°11'04"E	6°37'11"
C31	565.00	65.28	65.24	N87°11'04"E	6°37'11"
C32	25.00	39.31	35.39	N45°26'37"E	90°06'04"
C33	125.00	124.20	119.15	S28°57'30"W	56°55'40"
C34	175.00	84.64	83.82	S43°32'58"W	27°42'43"
C35	125.00	124.20	119.15	N80°43'43"W	17°33'16"
C36	75.00	22.98	22.89	S80°43'43"E	17°33'16"
C37	175.00	18.31	18.30	S03°23'25"W	5°59'39"
C38	55.00	11.89	11.87	S33°31'22"W	12°23'07"
C39	55.00	42.69	41.62	S05°05'43"W	44°28'11"
C40	55.00	36.91	36.22	S36°21'56"E	38°27'06"
C41	55.00	41.30	40.34	S77°06'13"E	43°01'28"
C42	55.00	28.97	28.64	N66°17'34"E	30°10'59"
C43	25.00	39.33	35.40	S45°27'30"E	90°07'50"
C44	25.00	39.21	35.32	N44°32'30"W	89°52'10"

Curve Table

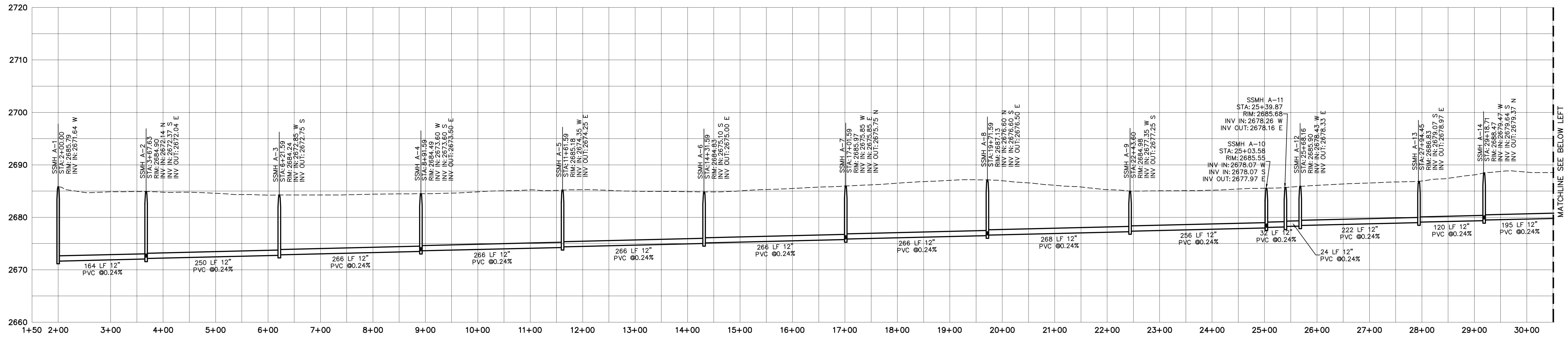
Curve #	Radius	Length	Chord	Bearing	Delta
C45	25.00	39.21	35.32	N44°32'30"W	89°52'10"
C46	125.00	124.42	119.35	N28°54'28"E	57°01'45"
C47	175.00	168.88	162.40	N29°46'37"E	55°17'26"
C48	175.00	5.00	5.00	N01°18'47"E	1°38'14"
C49	545.00	36.04	36.04	N86°55'07"W	3°47'21"
C50	545.00	36.23	36.22	N83°07'11"W	3°48'32"
C51	545.00	15.90	15.90	N80°22'46"W	1°40'19"
C52	655.00	20.55	20.55	N80°26'33"W	1°47'53"
C53	655.00	93.04	92.96	N85°24'38"W	8°08'18"
C54	565.00	97.98	97.86	S84°30'42"E	9°56'11"
C55	635.00	102.37	102.26	S84°09'42"E	9°14'12"
C56	55.00	161.81	109.45	S45°27'24"W	168°33'36"
C57	55.00	7.40	7.39	S34°53'48"E	7°42'13"
C58	55.00	42.15	41.12	S09°05'30"E	43°54'23"
C59	55.00	33.52	33.00	S30°19'09"W	34°54'55"
C60	55.00	33.52	33.00	S65°14'04"W	34°54'55"
C61	55.00	44.36	43.17	N74°12'08"W	46°12'42"
C62	55.00	0.85	0.85	N50°39'13"W	0°53'07"
C63	25.00	28.98	27.39	N33°43'52"E	66°25'19"
C64	25.00	10.29	10.22	N78°43'52"E	23°34'41"
C65	213.00	67.17	66.89	S08°30'48"E	18°04'02"
C66	40.00	16.69	16.57	S78°33'58"W	23°54'30"

Curve Table

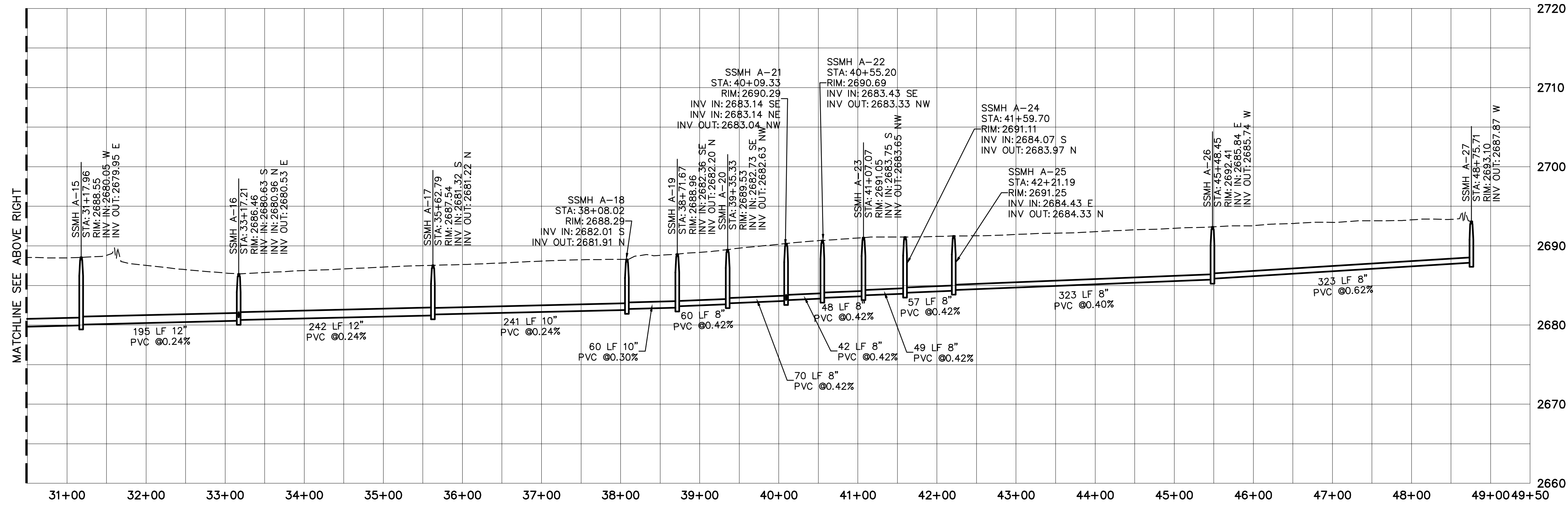
Curve #	Radius	Length	Chord	Bearing	Delta
C68	60.00	25.04	24.86	N78°33'58"E	23°54'30"
C69	213.00	48.10	48.00	S35°41'54"E	12°56'19"
C70	125.00	90.06	88.12	S68°28'19"W	41°16'46"
C71	125.00	3.07	3.07	S89°48'56"W	1°24'30"
C72	62.00	176.60	122.67	N05°53'14"W	163°12'00"
C73	213.00	158.22	154.61	N20°53'14"W	42°33'39"
C74	147.00	109.52	107.01	N20°49'25"W	42°41'17"
C75	25.00	39.33	35.39	N45°27'24"E	90°07'38"
C76	25.00	39.21	35.32	N44°32'30"W	89°52'10"
C77	55.00	37.75	37.01	N70°51'45"E	39°19'20"
C78	55.00	43.13	42.04	S67°00'32"E	44°56'05"
C79	55.00	43.27	42.17	S22°04'08"E	44°56'05"
C80	55.00	37.61	36.88	S20°37'38"W	39°10'35"
C81	13.00	8.90	8.72	N19°12'52"W	39°12'54"
C82	55.00	37.78	37.05	N19°08'29"W	39°21'39"
C83	55.00	43.12	42.02	N22°59'55"E	44°56'10"
C84	55.00	43.26	42.15	N67°59'28"E	45°03'55"
C85	55.00	37.64	36.91	S69°52'08"E	39°12'54"
C86	13.00	8.90	8.72	S69°52'08"E	39°12'54"
C87	545.00	6.34	6.34	N89°08'47"W	0°40'00"



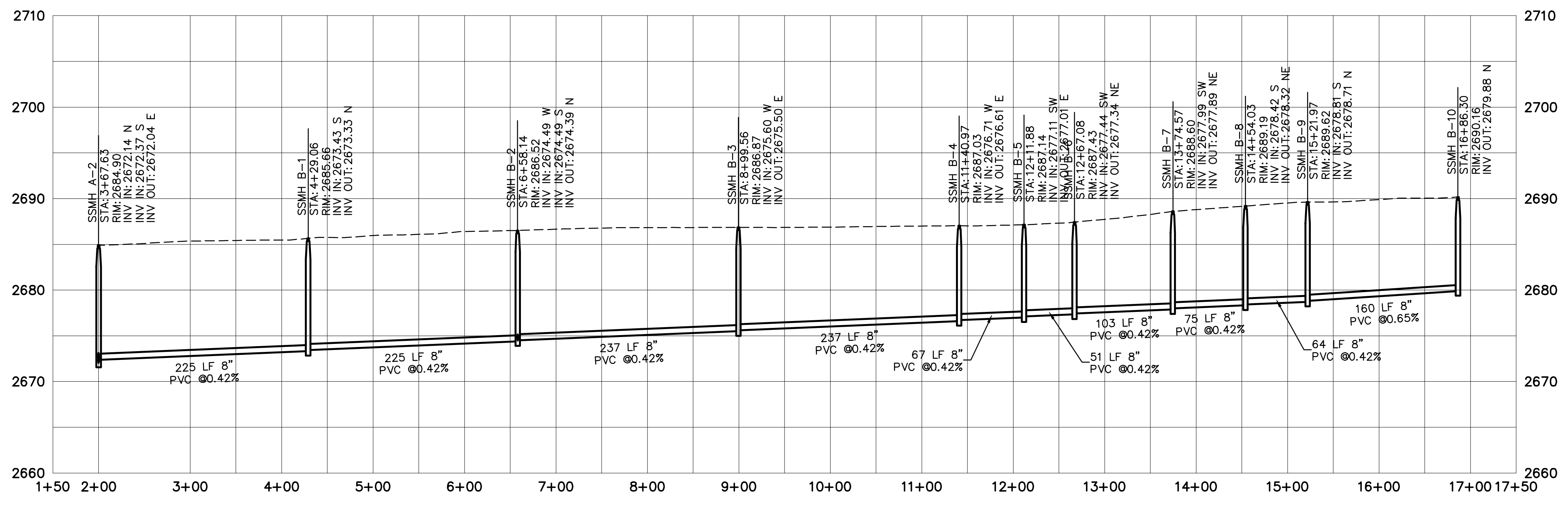
SEWER LINE-A PROFILE



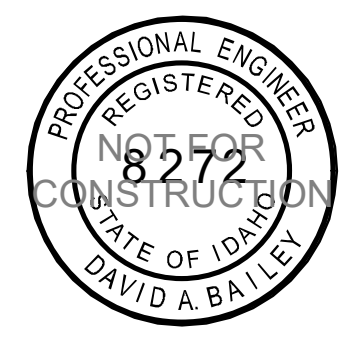
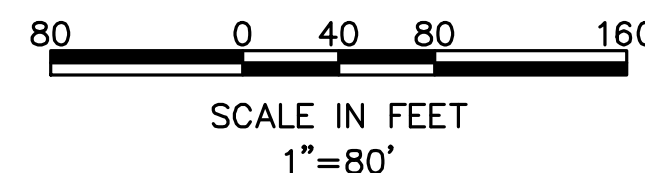
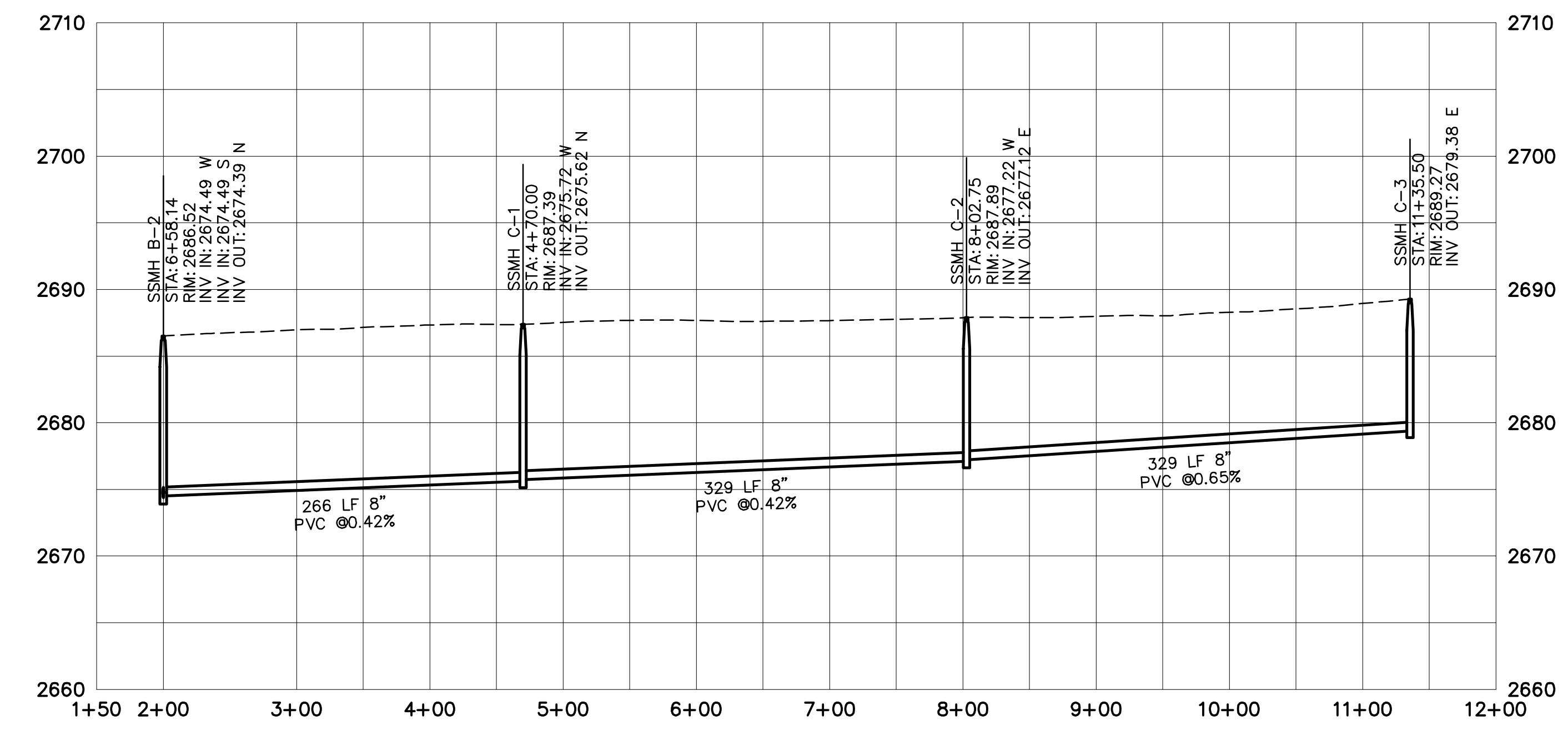
SEWER LINE-A PROFILE



SEWER LINE-B PROFILE



SEWER LINE-C PROFILE



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 DRAWN BY: BEB

REVISED	NO.	DATE	DESCRIPTION

CONCEPTUAL SEWER PROFILES
 LEDGESTONE PLAZA
 TRILOGY DEVELOPMENT, INC.

DATE: 05-04-2020
 PROJECT: C2019-036



DEVELOPMENT DATA

TOTAL AREA	76.03 ACRES
RESIDENTIAL LOTS	233
COMMON LOTS	15
APARTMENTS LOTS	1
COMMERCIAL LOTS	6
TOTAL LOTS	255
GROSS COMMON AREA	12.7 ACRES (16.7%)
USABLE OPEN SPACE	4.6 ACRES (12.6%)
EXISTING ZONING	RR
PROPOSED ZONING	R-6 / R-12 / COMMERCIAL

NOTES

- ALL LANDSCAPE SHALL BE INSTALLED IN ACCORDANCE WITH KUNA CITY ORDINANCE REQUIREMENTS. ALL LOTS WILL COMPLY WITH KUNA CITY ORDINANCE REQUIRING ONE (1) TREE PER LOT (PROVIDED BY BUILDER AND/OR DEVELOPER).
- ALL PLANTING AREAS TO BE WATERED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.
- TREES SHALL NOT BE PLANTED WITHIN THE 10'-CLEAR ZONE OF ALL ACHD STORM DRAIN PIPE, STRUCTURES, OR FACILITIES. SEEPAGE BEDS MUST BE PROTECTED FROM ANY AND ALL CONTAMINATION DURING THE CONSTRUCTION AND INSTALLATION OF THE LANDSCAPE IRRIGATION SYSTEM. ALL SHRUBS PLANTED OVER OR ADJACENT TO SEEPAGE BEDS TO HAVE A ROOT BALL THAT DOES NOT EXCEED 18" IN DIAMETER. NO LAWN SOD TO BE PLACED OVER DRAINAGE SHALE SAND WINDOWS (IF PRESENT).
- NO TREES SHALL IMPEDE THE 40' STREET AND DEPARTURE VISION TRIANGLES AT ALL INTERSECTIONS. NO CONIFEROUS TREES OR SHRUBS OVER 3' HIGH AT MATURITY WILL BE LOCATED WITHIN VISION TRIANGLE OR ACHD ROW. AS TREES MATURE, THE OWNER SHALL BE RESPONSIBLE FOR PRUNING TREE CANOPIES TO MEET ACHD REQUIREMENTS FOR MAINTAINING CLEAR VISIBILITY WITHIN 40' STREET AND DEPARTURE VISION TRIANGLE. TREES SHALL BE PLANTED NO CLOSER THAN 50' FROM STOP SIGNS.
- LANDSCAPE AND TREES IN FRONT OF BUILDING LOTS ON INTERIOR STREETS TO BE COMPLETED DURING CONSTRUCTION OF THESE LOTS. TREE LOCATIONS MAY BE ALTERED TO ACCOMMODATE DRIVEWAYS AND UTILITIES. TREES SHALL NOT BE PLANTED WITHIN 5' OF WATER METERS OR UTILITY LINES.
- PLANT LIST IS REPRESENTATIVE AND SUBJECT TO SUBSTITUTIONS OF SIMILAR SPECIES BY OWNER, SUBJECT TO CITY FORESTER'S PRE-APPROVAL. PLANTING BED DESIGN AND QUANTITIES MAY BE ALTERED DURING FINAL PLAT LANDSCAPE PLAN DESIGN. BURLAP AND WIRE BASKETS TO BE REMOVED FROM ROOT BALL AS MUCH AS POSSIBLE, AT LEAST HALFWAY DOWN THE BALL OF THE TREE. ALL NYLON ROPES TO BE COMPLETELY REMOVED FROM TREES.

PLANT PALETTE

SYM	COMMON NAME	BOTANICAL NAME	SIZE
EVERGREEN TREES			
	AUSTRIAN PINE	PINUS NIGRA	6-8' HT B&B
	BLACK HILLS SPRUCE	FICIA GLAUCA 'DENSATA'	6-8' HT B&B
	BLUE SPRUCE	FICIA PUNGENS 'GLAUCA'	6-8' HT B&B
	MOONGLOW JUNIPER	JUNIPERUS SCOPULORUM 'MOONGLOW'	6-8' HT B&B
	NORWAY SPRUCE	FICIA ABIES	6-8' HT B&B
	VANDERWOLF'S PINE	PINUS FLEXILIS 'VANDERWOLF'S'	6-8' HT B&B
STREET TREES (CLASS III)			
	LONDON PLANETREE	PLATANUS x ACERIFOLIA	2" CAL B&B
	RED OAK	QUERCUS RUBRA	2" CAL B&B
STREET TREES (CLASS II)			
	AUTUMN PURPLE ASH	FRAXINUS AMERICANA 'AUTUMN PURPLE'	2" CAL B&B
	SKYLINE HONEYLOCUST	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	2" CAL B&B
	LITTLELEAF LINDEN	TILIA CORDATA	2" CAL B&B
	AMERICAN SWEETGUM	LIQUIDAMBER STYRACIFLUA	2" CAL B&B
	TULIP TREE	LIRODENDRON TULIPIFERA	2" CAL B&B
ORNAMENTAL TREES (CLASS I)			
	AMUR MAPLE	ACER GINNALA 'FLAME'	2" CAL B&B
	CHANTICLEER PEAR	PYRUS CALLERYANA 'GLEN'S FORM'	2" CAL B&B
	ROYAL RAINDROPS CRABAPPLE	MALUS x 'JFS-KWB'	2" CAL B&B
	SPRINGSNOW CRABAPPLE	MALUS 'SPRINGSNOW'	2" CAL B&B

SYM	COMMON NAME	BOTANICAL NAME	SIZE
SHRUBS/ORNAMENTAL GRASSES/PERENNIALS			
	BLACK EYED SUSAN	RUDEBECKIA FULGIDA 'GOLDSTRUM'	1 GAL, 24" O.C.
	BLUE EYED JUNIPER	JUNIPERUS HORIZONTALIS 'WILTONI'	2 GAL
	CREEEPING MAHONIA	MAHONIA REPENS	3 GAL
	RED FLOWER CARPET ROSE	ROSA 'FLOWER CARPET-NOARE'	3 GAL
	DWARF FOUNTAIN GRASS	PENNETSETUM ALOPECUROIDES 'HAMELN'	5 GAL
	DARTS GOLD NINEBARK	PHYSCOCARPUS OPULIFOLIUS 'DARTS GOLD'	1 GAL
	STELLA D'ORO DAYLILY	HEMEROCALLIS 'STELLA D'ORO'	3 GAL
	EMERALD 'N' GOLD ELYONMUS	ELYONMUS FORTUNEI 'EMERALD 'N' GOLD'	5 GAL
	ENDLESS SUMMER HYDRANGEA	HYDRANGEA ARBORESCENS 'PIHM-I'	3 GAL
	FINE LINE BUCKTHORN	RHAMNUS FRAGULA 'RON WILLIAMS'	5 GAL
	GOLDFLAME SPIRAEA	SPIRAEA x BUMALDA 'GOLDFLAME'	3 GAL
	GRO-LOW SUMAC	RHUS AROMATICA 'GRO-LOW'	5 GAL
	IVORY HALO DOGWOOD	CORNUS ALBA 'BAILHALO'	5 GAL
	KARL FOERSTER REED GRASS	CALAMAGROSTIS ARUNDINACEA 'K.F.'	1 GAL
	LITTLE DEVIL NINEBARK	PHYSCOCARPUS OPULIFOLIUS 'DONNA MAY'	5 GAL
	HIDCOTE BLUE ENGLISH LAVENDER	LAVANDULA ANGSTIFOLIA 'HIDCOTE BLUE'	3 GAL
	OTTO LUYKEN LAUREL	PRUNUS LAUROCARASUS 'OTTO LUYKEN'	5 GAL
	P.J.M. RHODODENDRON	RHODODENDRON 'P.J.M.'	5 GAL
	MAIDEN GRASS	MISCANTHUS SINENSIS 'GRACILLIMUS'	1 GAL
	SUMMERWINE NINEBARK	PHYSCOCARPUS OPULIFOLIA 'SEWARD'	5 GAL
	LAWN		
	6' VINYL LATTICE TOP FENCE ALONG PERIMETER PROPERTY LINES, COMMON LOTS, AND SIDE LOTS (TYP).		

LANDSCAPE CALCULATIONS

RESIDENTIAL LANDSCAPE BUFFERS ARE REQUIRED TO BE PLANTED WITH THE FOLLOWING PLANTS PER 100 LINEAR FEET: TWO (2) SHADE TREES, THREE (3) EVERGREEN TREES, AND TWELVE (12) SHRUBS. COMMERCIAL LANDSCAPE BUFFERS REQUIRE ONE (1) SHADE TREE AND FIVE (5) SHRUBS PER 35 LINEAR FEET. EACH REQUIRED SHADE TREE MAY BE SUBSTITUTED FOR TWO (2) FLOWERING/ORNAMENTAL OR TWO (2) EVERGREEN TREES.

LOCATION	BUFFER WIDTH	LENGTH	REQUIRED	PROVIDED
S. STROEBEL RD.	20'	1145' / 100' =	23 TREES	24.5 TREES (19 SHADE TREES + 11 ORNAMENTAL TREES)
N. MERIDIAN RD.	30'	1235' / 35' =	35 TREES	35 EVERGREENS 137 SHRUBS
ARDELL RD.	30'	1900' / 100' =	38 TREES	43.5 TREES (32 SHADE TREES + 23 ORNAMENTAL TREES)
ARDELL RD. (COMMERCIAL)	30'	340' / 35' =	11 TREES	51 EVERGREENS 228 SHRUBS
			56 SHRUBS	11 TREES (9 SHADE TREES + 4 ORNAMENTAL TREES)
TOTAL NUMBER OF BUFFER TREES:				240 TREES
TOTAL NUMBER OF APARTMENT TREES:				263 TREES
TOTAL NUMBER OF COMMON AREA TREES:				281 TREES
TOTAL NUMBER OF TREES				740 TREES

LEDGESTONE PLAZA SUBDIVISION

KUNA, ID

PRELIMINARY PLAT LANDSCAPE PLAN

OWNER OF RECORD

HUNEMILLER, RUSSEL D.
16130 N. ELDER ST.
NAMPA, IDAHO 83687

DEVELOPER

TRILOGY DEVELOPMENT, INC.

GO FOR IT LLC
16130 N. ELDER ST.
NAMPA, IDAHO 83687

PLANNER/CONTACT

SHAWN BROWNLEE
TRILOGY DEVELOPMENT, INC.
9839 W. CABLE CAR ST.
BOISE, IDAHO 83709

9839 W. CABLE CAR ST.
BOISE, IDAHO 83709



MAY 1, 2020

Traffic Impact Study

Ledgestone Plaza Subdivision

June 2020

Prepared For:

Trilogy Development, Inc.
9839 W. Cable Car Street
Ste. 101
Boise, ID 83709

Prepared By:

WHPacific, an NV5 Company
690 S Industry Way
Ste. 10
Meridian, ID 83642

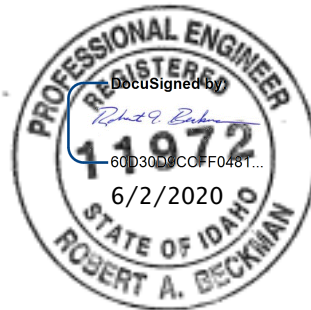


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1.0 EXECUTIVE SUMMARY

This study was prepared in accordance with the Ada County Highway District's (ACHD) requirements for a Traffic Impact Study listed in Section 7106 of the current *ACHD Policy Manual*. It evaluates the traffic impacts associated with the LedgeStone Plaza Subdivision located in Kuna, Idaho. The study area, scope and specific analysis parameters and requirements are the result of an Area of Influence review performed by the Community Planning Association of Southwest Idaho (COMPASS) and discussion with ACHD, Idaho Transportation Department (ITD) and review of the surrounding area. The study's principal findings and recommendations are summarized below.

Proposed Development

1. LedgeStone Plaza Subdivision is a proposed development consisting of 234 single-family dwelling units, 192 multi-family units, and 6 commercial lots on a 76.0-acre parcel located along the east side of S Meridian Road, south of Hubbard Road in Kuna, Idaho.
2. The proposed development is to be constructed over a two to three-year period and completed by the year 2025. Due to the short duration of buildout, an interim evaluation was not required.
3. The proposed development is estimated to generate 4003 daily trips, 308 AM peak hour trips, and 398 PM peak hour trips.
4. The primary roadway network serving this proposed development includes the following intersections and roadway segments:
 - Intersections
 - S Meridian Rd (SH-69) & Hubbard Road
 - Locust Grove Road & Deer Flat Road
 - Locust Grove Road & Hubbard Road
 - Locust Grove Road & Columbia Road
 - Locust Grove Road & Lake Hazel Road
 - All site accesses
 - Segments
 - S Meridian Road between Columbia Road and Hubbard Road
 - S Meridian Road between Hubbard Road and Ardell Road
 - Hubbard Road between S Meridian Road and Locust Grove Road
 - Hubbard Road between Locust Grove Road and Eagle Road
 - Locust Grove Road between Deer Flat Road and Hubbard Road
 - Locust Grove Road between Hubbard Road and Columbia Road
 - Locust Grove Road between Columbia Road and Lake Hazel Road
 - Locust Grove Road between Lake Hazel Road and Amity Road
 - All internal collectors
5. Primary access to the site will be provided via two new access points. One located along S Meridian Road at Ardell Road and one located along Hubbard Road at Stroebel Road.

Proposed Mitigation for Existing Traffic

6. For the existing traffic conditions analyzed with the existing roadway configuration, all study area roadway segments meet minimum operational thresholds. No roadway improvements are needed to mitigate the existing traffic.
7. For the existing traffic conditions analyzed with the existing intersection control, signal timing, and lane configuration, the intersection of S Meridian Road/Hubbard Road does not meet minimum operational thresholds. All other intersections meet minimum requirements.
8. The following mitigation measures are recommended for these intersections:
 - S Meridian Road/Hubbard Road
 - SB/NB right-turn lane, signal timing adjustment.

Proposed Mitigation for 2025 Background Traffic

9. For the 2025 Background traffic conditions analyzed with the existing roadway lane configuration, the roadway segments of S Meridian Rd between Columbia Rd to Hubbard Rd, Hubbard Rd between S Meridian Rd and Locust Grove Rd, Locust Grove Rd between Deer Flat Rd and Hubbard Rd, Hubbard Rd between Locust Grove Rd and Eagle Rd, Locust Grove Rd between Hubbard Rd and Columbia Rd, and Locust Grove Rd between Lake Hazel and Amity do not meet minimum operational thresholds.
10. The following mitigation measures are recommended for these roadway segments.
 - S. Meridian Rd between Columbia Rd and Hubbard Rd
 - Additional NB/SB through lane
 - Hubbard Rd between S Meridian Rd and Locust Grove Rd
 - Additional EB/WB through lane
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Deer Flat Rd and Hubbard Rd
 - Addition of a continuous left-turn lane
 - Hubbard Rd between Locust Grove Rd and Eagle Rd
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Hubbard Rd and Columbia Rd
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Lake Hazel Rd and Amity Rd
 - Additional NB/SB through lane
 - Addition of a continuous left-turn lane

With these improvements, the roadway segments minimum operational thresholds.

11. For the 2025 Background traffic conditions analyzed with the existing intersection controls and lane configurations, or with the proposed improvements to mitigate existing traffic the intersections of Locust Grove/Hubbard, Locust Grove/Columbia, and Locust Grove/Lake Hazel do not meet minimum operational thresholds. All other intersections meet minimum requirements.
12. The following mitigation measures are recommended for these intersections:
 - Locust Grove/Hubbard
 - Traffic Signal
 - Locust Grove/Columbia
 - Traffic Signal

- Locust Grove/Lake Hazel
 - Traffic Signal

Proposed Mitigation for 2025 Site Plus Background Traffic

13. For the 2025 Site Plus Background traffic condition analyzed with the existing lane configurations, or with the proposed improvements to mitigate background traffic, all study area roadway segments meet minimum operational thresholds. No roadway improvements are needed to mitigate the site plus background traffic.
14. For the 2025 Site Plus Background traffic conditions analyzed with the existing intersection control and lane configuration, or with the proposed improvements to mitigate existing/2025 background traffic, all intersections meet minimum requirements.
15. A turn-lane analysis was completed for the two site access locations. The intersection of S Meridian Road and Ardell Road warrants a north-bound right-turn lane. The intersection of Hubbard Road and Stroebel Road warrants a west bound left-turn lane.

2.0 PROPOSED DEVELOPMENT

2.1 PROJECT DESCRIPTION

Ledgestone Subdivision is a proposed development consisting of 234 single-family dwelling units, 192 multi-family units, and 6 commercial lots on a 76.0-acre parcel located along the east side of S Meridian Road, south of Hubbard Road in Kuna, Idaho. Primary access to the site will be provided by two new access points located along S Meridian Road at Ardell Road and Hubbard at Stroebel Road. The existing site is zoned neighborhood commercial district (C-1). The project area is shown in Figure A. The proposed site plan is illustrated in Figure B.



Figure A - Site Location

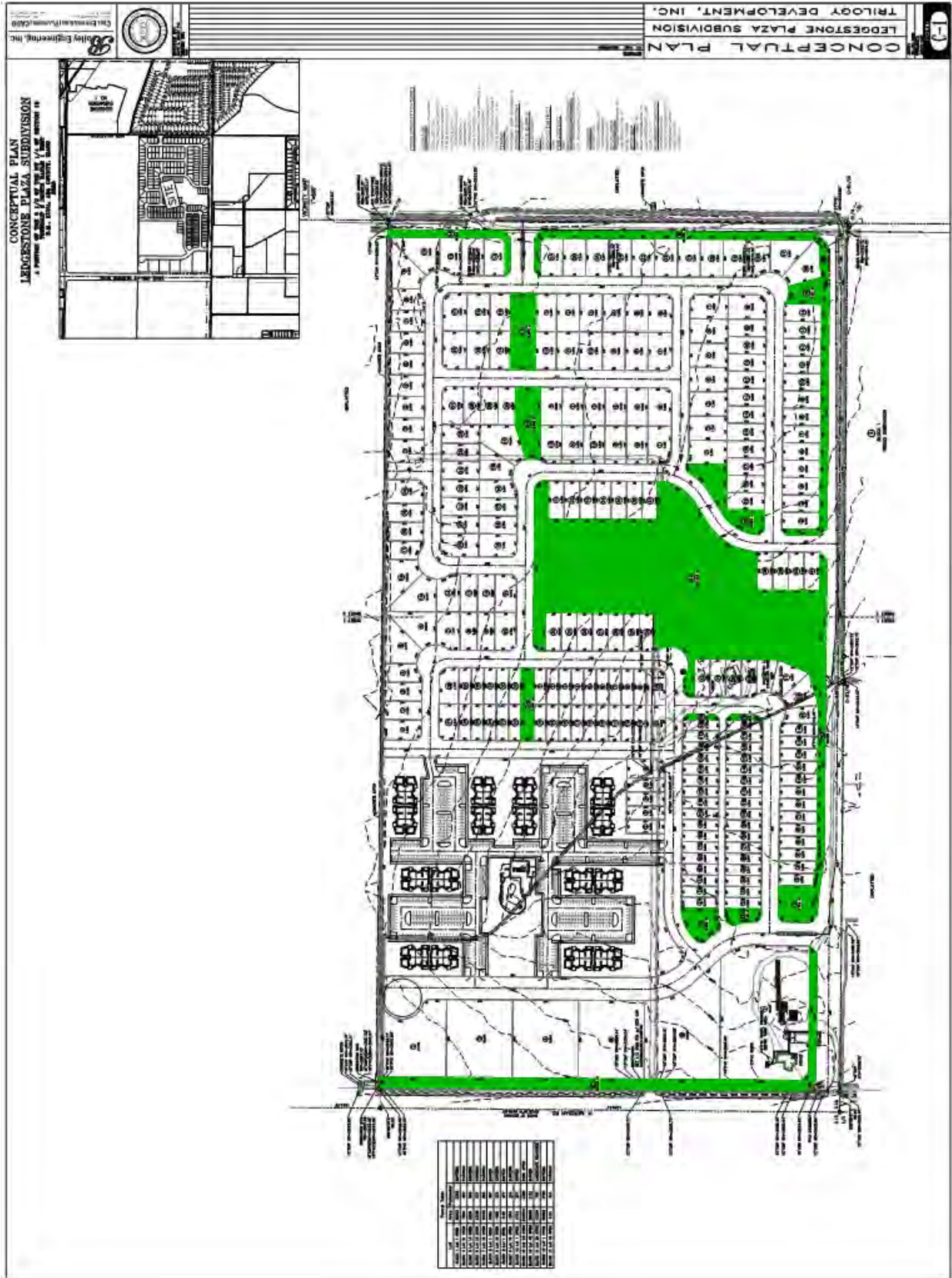


Figure B - Site Plan

2.2 STUDY APPROACH

This study was prepared in accordance with the Ada County Highway District's (ACHD) requirements for a Traffic Impact Study listed in Section 7106 of the current *ACHD Policy Manual*. It evaluates the traffic impacts associated with the Ledgestone Plaza Subdivision Development in Kuna, ID. The study area, scope and specific analysis parameters and requirements are the result of an Area of Influence Review performed by the Community Planning Association of Southwest Idaho (COMPASS) and discussion with ACHD, Idaho Transportation Department (ITD) and review of the surrounding area.

The following intersections and roadway segments were reviewed for purposes of this TIS:

- Intersections
 - SH-69 (S Meridian Rd) & Hubbard Road
 - Locust Grove Road & Deer Flat Road
 - Locust Grove Road & Hubbard Road
 - Locust Grove Road & Columbia Road
 - Locust Grove Road & Lake Hazel Road
 - All site accesses
- Segments
 - S Meridian Road between Columbia Road and Hubbard Road
 - S Meridian Road between Hubbard Road and Ardell Road
 - Hubbard Road between S Meridian Rd and Locust Grove Road
 - Hubbard Road between Locust Grove Road and Eagle Road
 - Locust Grove Road between Deer Flat Road and Hubbard Road
 - Locust Grove Road between Hubbard Road and Columbia Road
 - Locust Grove Road between Columbia Road and Lake Hazel Road
 - Locust Grove Road between Lake Hazel Road and Amity Road
 - All Internal Collectors

2.2.1 Study Period

Buildout of the Ledgestone Development is to be constructed over a two to three-year period and completed by the year 2025. Due to the short duration of buildout, an interim evaluation was not required.

The study periods will include:

- Existing (2020)
- 2025 Background
- 2025 Site Plus Background (Total)

The following time intervals will be evaluated:

- Weekday AM Peak Hour
- Weekday PM Peak Hour

3.0 ANALYSIS OF EXISTING CONDITIONS

3.1 ROADWAY NETWORKS

Table 1 summarizes the characteristics of the roadway segment within the study area.

Table 1 – Study Area Roadway

Roadway	Functional Classification	Posted Speed (mph)	Lanes (total)
Hubbard Road	Minor Arterial	50	2
S Meridian Road (SH-69)	Principal Arterial	55	5
Locust Grove Road	Minor Arterial	50	2

Functional Classification noted in accordance with the 2040 Functional Classification Map

Figure C illustrates the existing lane configurations and traffic control conditions.

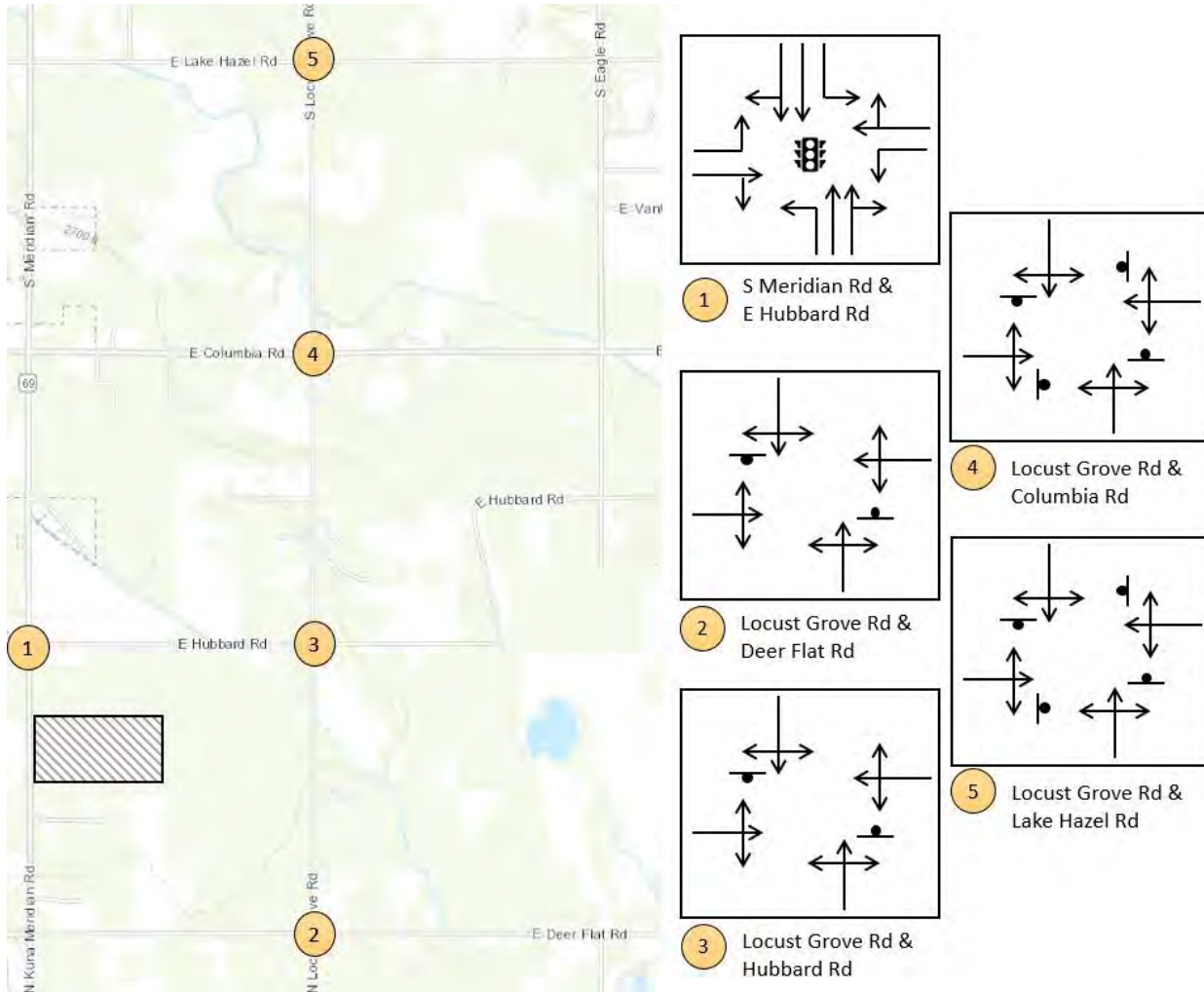


Figure C – Existing Traffic Control and Lane Configurations

3.2 TRANSIT SERVICE

Due to the rural nature of the study area, no existing transit routes in the vicinity exist.

3.3 BICYCLE AND PEDESTRIAN FACILITIES

There are no bicycle or pedestrian facilities within the study area.

3.4 TRAFFIC VOLUMES

Due to the ongoing COVID-19 pandemic, accurate current traffic volumes were not obtained. However 24-hour counts and intersection turn movement counts were previously collected on August 07, 2018 and September 10, 2019 for an adjacent development. These Intersection turn movement counts were recorded between 7:00 AM – 9:00 AM and 4:00 PM - 6:00 PM in order to isolate the AM and PM peak hour conditions. An approved growth rate was then applied to the previous traffic volumes in order to estimate 2020 volumes. Figure D illustrates (2020) 24-hour and intersection turn movement counts. Detailed count summaries are also included in the Appendix.

The COMPASS Area of Influence review was considered to estimate a growth rate between the years 2020 and 2025. After discussion with ACHD and ITD the annual rates were decided as follows for future traffic volume growth.

- Hubbard Road = 63.5%
- Deer Flat Road = 18.5%
- Columbia Road = 13%
- Lake Hazel Road = 9%
- Locust Grove Road = 19%
- S Meridian Road = 4%

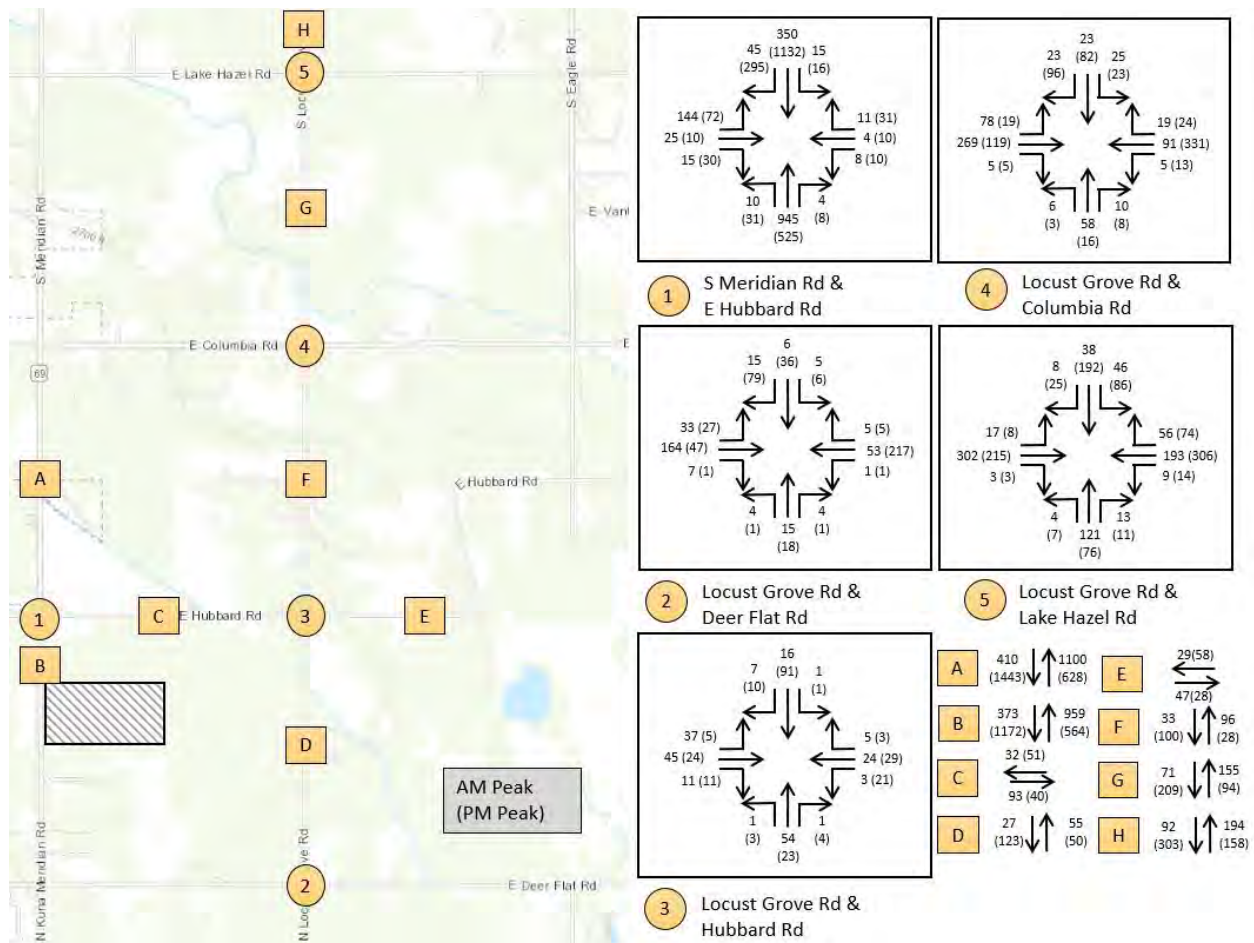


Figure D – Existing (2020) Traffic Volumes

3.5 INTERSECTION CRASH DATA

The most current crash data (2014-2018) as documented by the Local Highway Technical Assistance Council (LHTAC) website (<http://gis.lhtac.org/safety/>) was reviewed. Table 2 summarizes crash records at the study area intersections. The majority of these crashes are angle crashes caused by failure to yield.

Table 2 – Intersection Crash Data (2014-2018)

Intersection	Total Crashes	PDO/Injury/Fatal	Crash Rate (MEV)
S Meridian Rd & Hubbard Rd	16	6/10/0	0.56
Locust Grove Rd & Deer Flat Rd	6	3/3/0	1.85
Locust Grove Rd & Hubbard Rd	5	2/3/0	1.91
Locust Grove Rd & Columbia Rd	2	1/1/0	0.31
Locust Grove Rd & Lake Hazel Rd	4	2/2/0	0.67

3.6 LEVEL-OF-SERVICE ROADWAY SEGMENTS

ACHD has developed level-of-service (LOS) thresholds for roadway segments based on the directional peak hour volumes for various roadway functional classifications, number of lanes, and left-turn treatments. Based on the current ACHD Policy Manual, the minimum acceptable LOS for a roadway segment is LOS E for principal arterials and minor arterials, and LOS D for collectors. Table 3 summarizes ACHD's LOS thresholds for roadway segments.

Table 3 – ACHD LOS Thresholds for Roadway Segments

Functional Classification	Lanes	LOS	
		D	E
Principal Arterials			
No Left-Turn Lanes			
	1	600	690
Continuous Center Left-Turn Lane			
	1	770	880
	2	1680	1780
	3	2560	2720
Median-Control, Channelized Left-Turn Lanes @ Major Intersections			
	1	850	920
	2	1860	1960
	3	2800	3000
Minor Arterials			
No Left-Turn Lane			
	1	540	575
Unrestricted Median, Continuous Left-Turn Lane			
	1	675	720
	2	1395	1540
	3	2155	2370
Median-Control, Channelized Left-Turn Lanes @ Major Intersections			
	1	710	770
	2	1465	1670
	3	2270	2530
Collectors			
No Left-Turn Lanes			
	1	425	525
Unrestricted Median, Continuous Left-Turn Lane			
	1	530	660
	2	1080	1250

Table 4 summarizes the existing LOS for the roadway segments in the study area. All the roadway segments currently operate at LOS E or better under the current lane configurations and existing traffic volumes. No roadway improvements are needed to mitigate existing traffic conditions.

Table 4 – Roadway Segment LOS – Existing (2020) Traffic

Roadway Segment	Functional Class	No. of Thru Lanes	Left-Turn Treatment	Threshold Volume		AM Peak Hour Major Direction		PM Peak Hour Major Direction	
				LOS D	LOS E	Vol (vph)	LOS	Vol (vph)	LOS
A. S Meridian Rd, Columbia Rd to Hubbard Rd	Principal Arterial	2	Continuous LT Lane	1680	1780	1100	< D	1443	< D
B. S Meridian Rd, Hubbard Rd to Ardell Rd	Principal Arterial	2	Continuous LT Lane	1680	1780	959	< D	1172	< D
C. Hubbard Rd, SH-69 to Locust Grove	Minor Arterial	1	No LT Lane	540	575	93	< D	51	< D
D. Locust Grove Rd, Deer Flat Rd to Hubbard Rd	Minor Arterial	1	No LT Lane	540	575	55	< D	123	< D
E. Hubbard Rd, Locust Grove Rd to Eagle Rd	Minor Arterial	1	No LT Lane	540	575	47	< D	58	< D
F. Locust Grove Rd, Hubbard Rd to Columbia Rd	Minor Arterial	1	No LT Lane	540	575	96	< D	100	< D
G. Locust Grove Rd, Columbia Rd to Lake Hazel Rd	Minor Arterial	1	No LT Lane	540	575	155	< D	209	< D
H. Locust Grove Rd, Lake Hazel Rd to Amity Rd	Minor Arterial	1	No LT Lane	540	575	194	< D	303	< D

3.7 LEVEL-OF-SERVICE INTERSECTIONS

Intersection LOS was evaluated using the Synchro 11 software developed in accordance with the *Highway Capacity Manual* HCM 6th edition. The intersections within the study area were evaluated under existing traffic control, signal timing, lane configurations and peak hour volumes. Synchro11 Reports are included in the Appendix and results are summarized in Table 5. In accordance with ACHD Policy, the maximum overall intersection v/c ratio is 0.90 for signalized intersections while the maximum lane group v/c ratio for signalized and unsignalized intersections is 1.0, and 0.85 for roundabouts. The intersection of S Meridian Road/Hubbard does not meet these minimum operational thresholds under existing peak hour traffic conditions.

Table 5 – Intersection Traffic Operations – Existing (2020) Traffic

Intersection	Control	Approach	AM Peak			PM Peak		
			LOS	Delay	V/C	LOS	Delay	V/C
1. SH 69 & Hubbard	Signal	Overall	C	31.8		F	82.7	
		Eastbound	D	36.7	0.33	C	28.3	0.13
		Westbound	D	43.9	0.05	D	49.5	0.14
		Northbound	C	26.8	0.61	D	39.5	0.37
		Southbound	D	41.3	0.45	F	113.4	1.11
2. Locust Grove & Deer Flat	TWSC	Overall		2.5			4.2	
		Eastbound	A	7.4	0.025	A	7.8	0.023
		Westbound	A	7.6	0.001	A	7.3	0.001
		Northbound	B	11.3	0.044	B	11.8	0.041
		Southbound	B	10.0	0.039	B	11.6	0.202
3. Locust Grove & Hubbard	TWSC	Overall		5.6			6.9	
		Eastbound	A	7.4	0.029	A	7.3	0.003
		Westbound	A	7.4	0.002	A	7.3	0.014
		Northbound	B	10.9	0.100	A	9.9	0.042
		Southbound	B	10.0	0.039	B	10.5	0.142
4. Locust Grove & Columbia	AWSC	Overall	B	11.7		B	11.2	
		Eastbound	B	13.6	0.568	A	9.5	0.214
		Westbound	A	9.1	0.196	B	12.6	0.510
		Northbound	A	9.3	0.139	A	8.7	0.043
		Southbound	A	9.2	0.134	B	10.2	0.297
5. Locust Grove & Lake Hazel	AWSC	Overall	B	11.5		C	18.0	
		Eastbound	B	12.7	0.481	B	14.1	0.438
		Westbound	B	11.2	0.384	C	21.8	0.704
		Northbound	B	10.4	0.232	B	11.6	0.198
		Southbound	A	10.0	0.16	C	17.9	0.585

3.7.1 Proposed Mitigation

There are no improvement projects planned within the study area. The following mitigation measures are recommended to improve operational performance:

- S. Meridian Road/Hubbard
 - NB/SB right-turn lane.
 - Signal timing adjustments.

Table 6 below summarizes these results. This intersection meets the minimum operational threshold.

Table 6 – Intersection Traffic Operations – Existing Traffic with Mitigation

Intersection	Control	Approach	AM Peak			PM Peak		
			LOS	Delay	V/C	LOS	Delay	V/C
1. SH 69 & Hubbard	Signal	Overall	C	31.0		D	37.4	
		Eastbound	D	36.7	0.33	C	30.4	0.14
		Westbound	D	43.9	0.05	E	59.3	0.21
		Northbound	C	26.8	0.63	C	28.6	0.40
		Southbound	D	38.5	0.38	D	43.2	0.87

4.0 ANALYSIS OF 2025 BACKGROUND TRAFFIC CONDITIONS

4.1 ROADWAY NETWORKS

Both the ACHD *Integrated Five-Year Work Plan (IFYWP)* and the ACHD *Capital Improvements Plan (CIP)* were reviewed for the purposes of the study. The currently adopted *IFYWP* identifies projects programmed from 2020 to 2025 while the *CIP* is a long-range (20 year) transportation plan identifying existing transportation facilities, existing deficiencies, and future improvement needs. There are no improvements currently programmed in this project area.

4.2 OFF-SITE DEVELOPMENT

There are various developments planned in the vicinity along Hubbard Road to the north and east of the proposed site, as well as along Locust Grove. The developments of LedgeStone, LedgeStone South, and Patagonia were reviewed when developing the traffic data. The site traffic volumes for these developments were added to background traffic volumes at S Meridian Road/Hubbard Road and Hubbard Road/Stroebel Road to reflect conditions with these adjacent developments. Other developments are reflected in the COMPASS data for the 2025 Background conditions.

4.3 TRAFFIC VOLUMES

Figure E shows the resultant 2025 Background volumes based on five years of growth applied to the 2020 traffic volumes and the additional traffic mentioned above.

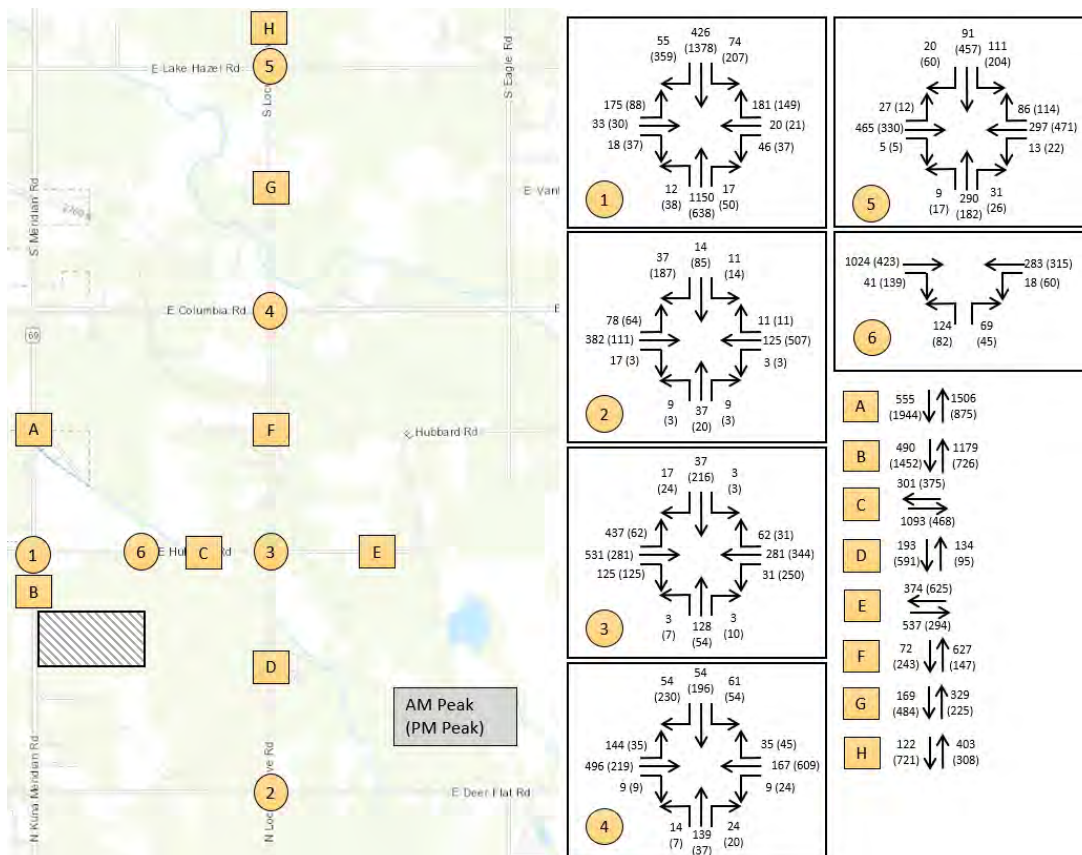


Figure E - 2025 Background Volumes

4.4 LEVEL-OF-SERVICE ROADWAY SEGMENTS 2025 BACKGROUND

Table 7 summarizes the 2025 Background LOS for the roadway segments in the study area. The roadway segments of S Meridian Rd between Columbia Rd and Hubbard Rd, Hubbard Rd between S Meridian Rd and Locust Grove Rd, Locust Grove Rd between Deer Flat Rd and Hubbard Rd, Hubbard Rd between Locust Grove Rd and Eagle Rd, Locust Grove Rd between Hubbard Rd and Columbia Rd, and Locust Grove Rd between Lake Hazel and Amity do not meet the minimum operational thresholds.

Table 7 – Roadway Segment LOS – 2025 Background Traffic

Roadway Segment	Functional Class	No. of Thru Lanes	Left-Turn Treatment	Threshold Volume		AM Peak Hour Major Direction		PM Peak Hour Major Direction	
				LOS D	LOS E	Vol (vph)	LOS	Vol (vph)	LOS
A. S Meridian Rd, Columbia Rd to Hubbard Rd	Principal Arterial	2	Continuous LT Lane	1680	1780	1506	< D	1944	> E
B. SH-69, Hubbard Rd to Ardell Rd	Principal Arterial	2	Continuous LT Lane	1680	1780	1179	< D	1452	< D
C. Hubbard Rd, S Meridian to Locust Grove	Minor Arterial	1	No LT Lane	540	575	1093	> E	468	< D
D. Locust Grove Rd, Deer Flat Rd to Hubbard Rd	Minor Arterial	1	No LT Lane	540	575	194	< D	591	> E
E. Hubbard Rd, Locust Grove Rd to Eagle Rd	Minor Arterial	1	No LT Lane	540	575	537	< D	625	> E
F. Locust Grove Rd, Hubbard Rd to Columbia Rd	Minor Arterial	1	No LT Lane	540	575	627	> E	243	< D
G. Locust Grove Rd, Columbia Rd to Lake Hazel Rd	Minor Arterial	1	No LT Lane	540	575	329	< D	484	< D
H. Locust Grove Rd, Lake Hazel Rd to Amity Rd	Minor Arterial	1	No LT Lane	540	575	403	< D	721	> E

4.4.1 Proposed Mitigation

There are no roadway improvement projects planned within the study area. The following mitigation measures are recommended to improve operational performance:

- S. Meridian Rd between Columbia Rd and Hubbard Rd
 - Additional NB/SB through lane
- Hubbard Rd between S Meridian Rd and Locust Grove Rd
 - Additional EB/WB through lane
 - Addition of a continuous left-turn lane
- Locust Grove Rd between Deer Flat Rd to Hubbard Rd

- Addition of a continuous left-turn lane
- Hubbard Rd between Locust Grove Rd and Eagle Rd
 - Addition of a continuous left-turn lane
- Locust Grove Rd between Hubbard Rd and Columbia Rd
 - Addition of a continuous left-turn lane
- Locust Grove Rd between Lake Hazel Rd and Amity Rd
 - Additional NB/SB through lane
 - Addition of a continuous left-turn lane

Table 8 below summarizes these results. The segments meet the minimum operational threshold.

Table 7 – Roadway Segment LOS – 2025 Background Traffic with Mitigation

Roadway Segment	Functional Class	No. of Thru Lanes	Left-Turn Treatment	Threshold Volume		AM Peak Hour Major Direction		PM Peak Hour Major Direction	
				LOS D	LOS E	Vol (vph)	LOS	Vol (vph)	LOS
A. S Meridian Rd, Columbia Rd to Hubbard Rd	Principal Arterial	3	Continuous LT Lane	2560	2720	1506	< D	1944	< D
C. Hubbard Rd, S Meridian to Locust Grove	Minor Arterial	2	Continuous LT Lane	1395	1540	1093	< D	468	< D
D. Locust Grove Rd, Deer Flat Rd to Hubbard Rd	Minor Arterial	1	Continuous LT Lane	675	720	193	< D	591	< D
E. Hubbard Rd, Locust Grove Rd to Eagle Rd	Minor Arterial	1	Continuous LT Lane	675	720	537	< D	625	< D
F. Locust Grove Rd, Hubbard Rd to Columbia Rd	Minor Arterial	1	Continuous LT Lane	675	720	627	< D	243	< D
H. Locust Grove Rd, Lake Hazel Rd to Amity Rd	Minor Arterial	2	Continuous LT Lane	1395	1540	463	< D	721	< D

4.5 LEVEL-OF-SERVICE INTERSECTIONS 2025 BACKGROUND

Each intersection in the study area was evaluated under the 2025 background traffic volumes, existing traffic controls and lane configurations, or with previously proposed mitigations. Table 8 summarizes these results. Synchro 11 Reports are included in the Appendix. The intersections of Locust Grove/Hubbard, Locust Grove/Columbia, and Locust Grove/Lake Hazel do not meet the minimum operational thresholds for 2025 Background peak hour traffic conditions.

Table 8 – Intersection Traffic Operations – 2025 Background Traffic

Intersection	Control	Approach	AM Peak			PM Peak		
			LOS	Delay	V/C	LOS	Delay	V/C
1. SH 69 & Hubbard	Signal	Overall	D	38.0		D	41.2	
		Eastbound	D	40.9	0.62	D	38.8	0.28
		Westbound	E	62.0	0.69	F	101.8	0.89
		Northbound	D	37.9	0.84	D	37.0	0.39
		Southbound	C	31.8	0.48	D	45.2	0.93
2. Locust Grove & Deer Flat	TWSC	Overall		3.5			13.2	
		Eastbound	A	7.7	0.061	A	8.9	0.072
		Westbound	A	8.2	0.003	A	7.5	0.002
		Northbound	C	18.7	0.189	C	22.1	0.121
		Southbound	B	13.8	0.145	E	42.8	0.807
3. Locust Grove & Hubbard	TWSC	Overall		2.9			187.7	
		Eastbound	B	10.2	0.414	A	8.3	0.058
		Westbound	A	9.3	0.04	A	9.2	0.240
		Northbound	X	X	X	X	X	X
		Southbound	X	X	X	F	1074.9	3.148
4. Locust Grove & Columbia	AWSC	Overall	F	67.1		F	101.8	
		Eastbound	F	112.3	1.15	C	20.0	0.60
		Westbound	B	14.3	0.432	F	149.9	1.298
		Northbound	B	14.7	0.399	B	13.7	0.169
		Southbound	B	14.3	0.381	E	48.0	1.0
5. Locust Grove & Lake Hazel	AWSC	Overall	F	74.1		F	84.1	
		Eastbound	F	130.7	1.178	F	77.6	1.374
		Westbound	F	57.6	0.979	F	304.5	2.0
		Northbound	E	41.0	0.862	E	40.5	0.969
		Southbound	D	25.7	0.628	F	442.3	2.171
6. Hubbard & Stroebel	TWSC	Overall		5.1			3.4	
		Eastbound	A	0	0	A	0	0
		Westbound	A	7.5	0.014	A	8.1	0.054
		Northbound	B	11.3	0.275	B	12.4	0.225

X – Calculation out of range.

4.5.1 Signal Warrant Analysis

The intersections of Locust Grove/Hubbard, Locust Grove/Columbia, and Locust Grove/Lake Hazel were analyzed in accordance with the Manual on Uniform Traffic Control (MUTCD) guidelines to determine if this location warrants a traffic signal under 2025 Background traffic volumes. This analysis confirmed that all three intersections meet one of more warrants for a traffic signal. No traffic signals are currently planned for these intersections, so a roundabout was also analyzed as a possible mitigation alternative. For further review, a detailed signal warrant analysis is provided in the appendix.

4.5.2 Proposed Intersection Mitigation

As previously noted, there are no improvement projects planned within the study area. The following mitigation measures are recommended to improve operational performance:

- Locust Grove/Hubbard

- Traffic Signal
- Locust Grove/Columbia
 - Traffic Signal/Roundabout
- Locust Grove/Lake Hazel
 - Traffic Signal

Table 9 below summarizes these results. The intersections meet minimum operational thresholds

Table 9 – Intersection Traffic Operations – 2025 Background Traffic with Mitigation

Intersection	Control	Approach	AM Peak			PM Peak		
			LOS	Delay	V/C	LOS	Delay	V/C
3. Locust Grove & Hubbard	Signal	Overall	B	18.1		B	19.6	
		Eastbound	B	15.5	0.75	C	23.3	0.74
		Westbound	C	25.4	0.78	B	17.6	0.64
		Northbound	C	29.6	0.68	C	20.1	0.18
		Southbound	C	24.7	0.20	C	25.8	0.73
3. Locust Grove & Hubbard	RA	Overall	C	15.0		A	8.6	
		Eastbound	C	19.6	0.84	A	9.9	0.450
		Westbound	B	10.8	0.453	A	9.2	0.544
		Northbound	B	11.5	0.289	A	4.4	0.071
		Southbound	A	4.0	0.044	A	8.9	0.329
4. Locust Grove & Columbia	Signal	Overall	B	18.6		C	25.2	
		Eastbound	B	18.5	0.81	B	14.5	0.31
		Westbound	B	16.1	0.35	C	26.1	0.88
		Northbound	C	27.3	0.67	C	27.8	0.13
		Southbound	C	21.3	.024	C	29.6	0.57
4. Locust Grove & Columbia	RA	Overall	A	8.0		A	8.5	
		Eastbound	B	10.0	0.587	A	6.1	0.272
		Westbound	A	5.4	0.194	A	9.1	0.554
		Northbound	A	8.5	0.256	A	4.0	0.049
		Southbound	A	4.2	0.113	B	10.3	0.394
5. Locust Grove & Lake Hazel	Signal	Overall	C	24.1		C	27.1	
		Eastbound	C	26.8	0.85	C	24.9	0.62
		Westbound	C	20.7	0.57	C	30.8	0.86
		Northbound	C	30.1	0.81	C	29.1	0.49
		Southbound	C	20.7	0.43	C	30.2	0.86
5. Locust Grove & Lake Hazel	RA	Overall	A	8.2		C	18.6	
		Eastbound	A	8.9	0.496	B	14.7	0.561
		Westbound	A	7.4	0.350	A	8.9	0.495
		Northbound	B	11.1	0.452	A	7.9	0.284
		Southbound	A	5.8	0.227	E	35.5	0.907

5.0 ANALYSIS OF 2025 SITE PLUS BACKGROUND (TOTAL) TRAFFIC CONDITIONS

5.1 TRIP GENERATION

The number of trips generated by the proposed development was estimated using rates provided in the *ITE Trip Generation Manual, 10th Edition*. Table 10 provides a summary of these results for Daily, AM Peak Hour and PM Peak hour conditions.

Table 10 – Trip Generation Summary

Land Use Category	ITE Code	Size	Period	Trip Rate	Total Trips	Enter		Exit	
Single-Family Housing	220	234 Units	Weekday (vpd)	9.44	2209	50%	1105	50%	1104
			AM Peak (vph)	0.74	173	25%	43	75%	130
			PM Peak (vph)	0.99	232	63%	146	37%	86
Multi-Family Housing	220	192 Units	Weekday (vpd)	7.32	1405	50%	702	50%	703
			AM Peak (vph)	0.46	88	23%	20	77%	68
			PM Peak (vph)	0.56	108	63%	68	37%	40
Small Office	712	24,000 Sq. Ft.	Weekday (vpd)	16.19	389	50%	195	50%	194
			AM Peak (vph)	1.92	47	83%	38	18%	8
			PM Peak (vph)	2.45	59	32%	19	68%	40
Total Trips			Weekday (vpd)	4003		2002		2001	
			AM Peak (vph)	308		102		206	
			PM Peak (vph)	398		233		165	

5.2 TRIP DISTRIBUTION AND ASSIGNMENT

Site traffic was distributed in consideration of existing travel patterns. The following preliminary assumptions were made.

- North (Locust Grove) 25%
- North (Meridian) 50%
- South (Locust Grove) 5%
- South (Meridian) 10%
- East (Hubbard) 10%

Figure F illustrates the resultant site traffic distribution.

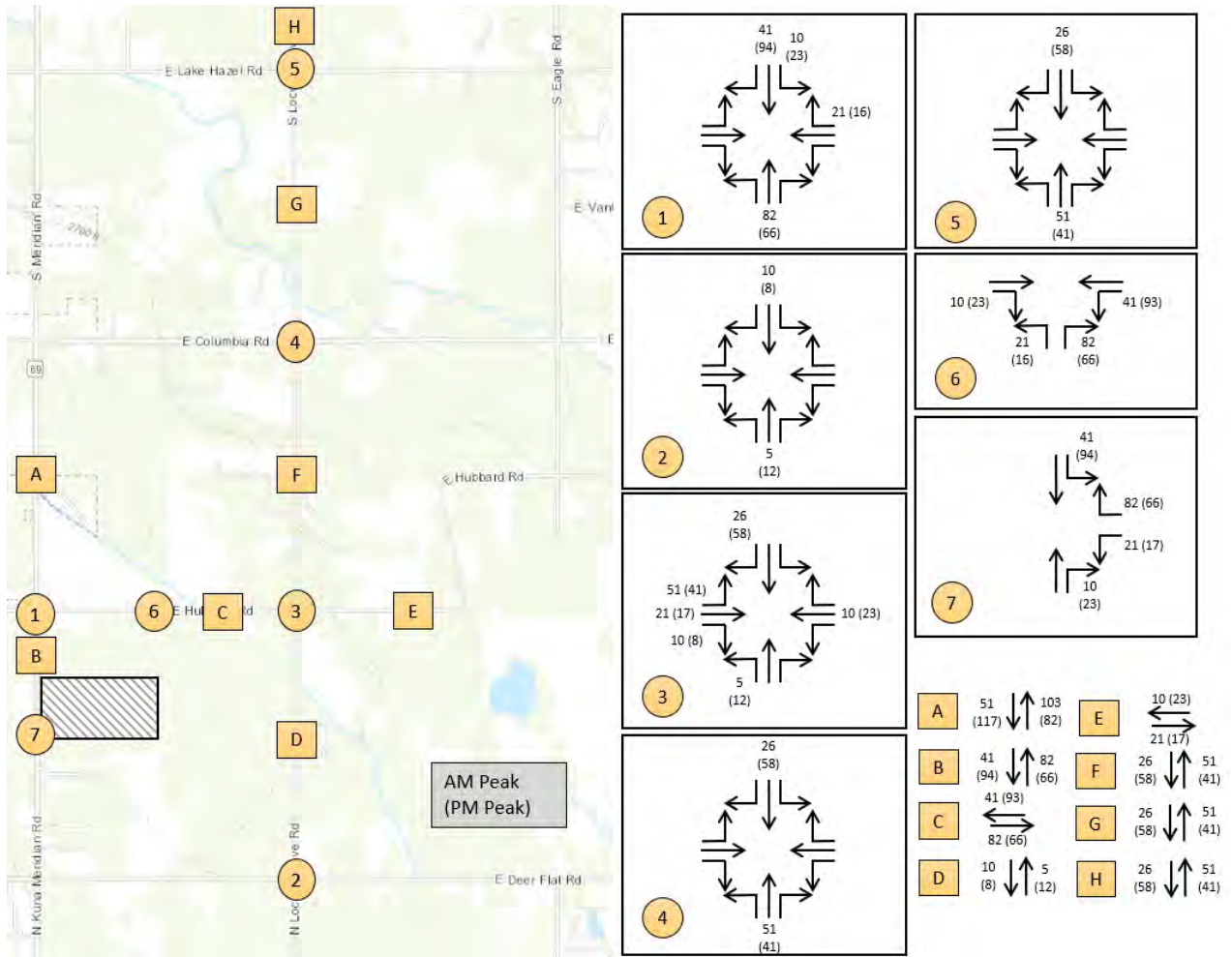


Figure F – Site Trip Distribution

5.3 SITE PLUS BACKGROUND TRAFFIC

Site traffic was added to the 2025 Background traffic in order to produce the 2025 Site Plus Background (Total) traffic conditions with the proposed development. Figure G illustrates the 2025 resultant traffic volumes for AM and PM peak hour conditions. Figure H depicts the percent increase by site generated traffic at each intersection (as compared to background volumes).

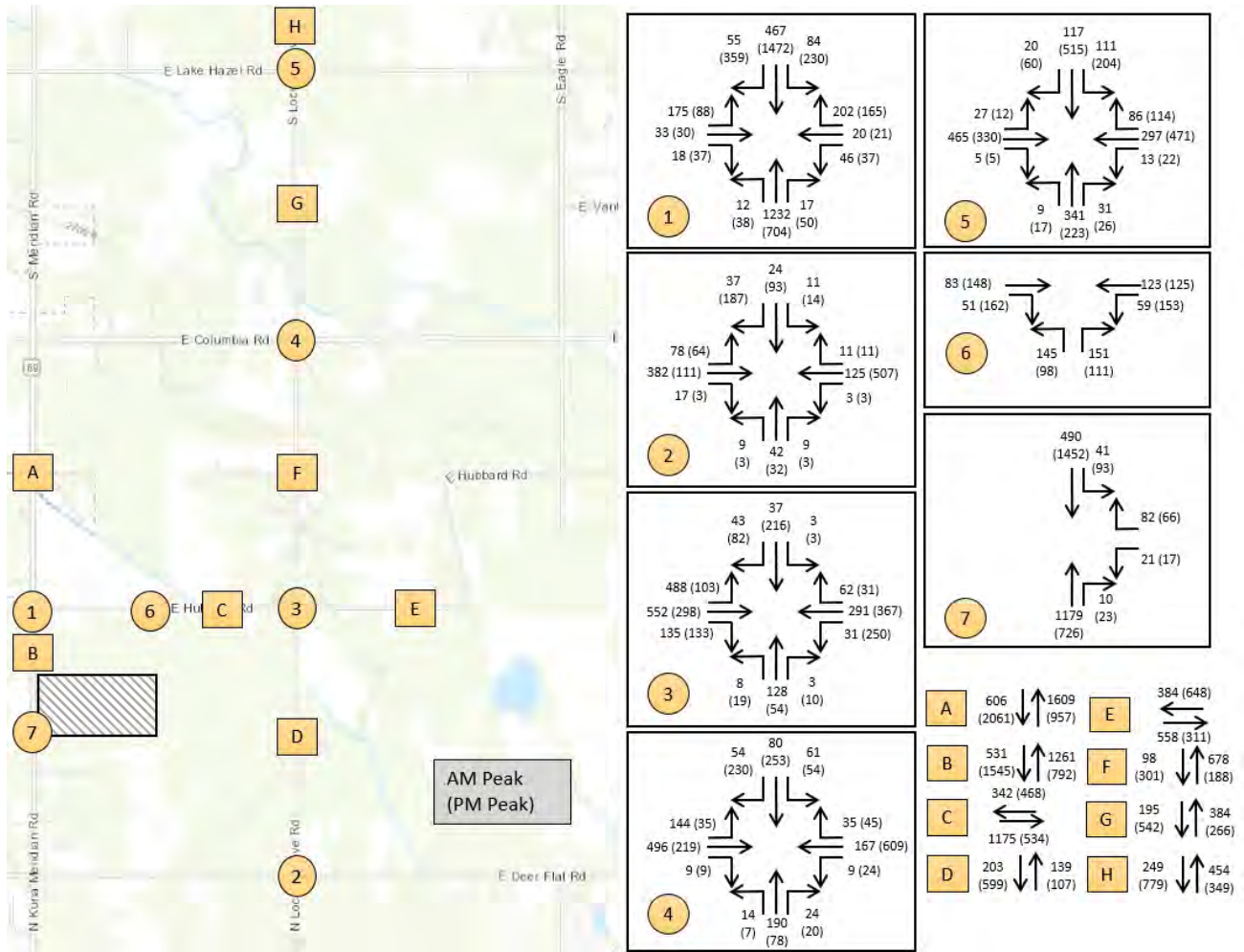


Figure G - 2025 Site Plus Background (Total) Traffic Volumes

5.4 TURN-LANE ANALYSIS

As indicated by the proposed site plan, two full access approaches are planned for the LedgeStone Plaza Subdivision. One is located at S Meridian Rd and Ardell Road, and the other is located at Hubbard Road and Stroebel Road. S Meridian Rd has a continuous left-turn lane, therefore a left-turn analysis was not completed. In a previous TIS for the LedgeStone South Subdivision, it was determined a right-turn lane would be required at Hubbard Road and Stroebel for traffic heading east on Hubbard Road.

A turn lane analysis was conducted for each access point using the turn lane thresholds provided by the ACHD policy. The intersection of Hubbard Rd/Stroebel Rd meets the requirement for a left-turn lane for the PM Peak traffic heading west on Hubbard. S Meridian Rd/Ardell Rd meets the requirement for a north bound right turn lane during the PM peak hour.

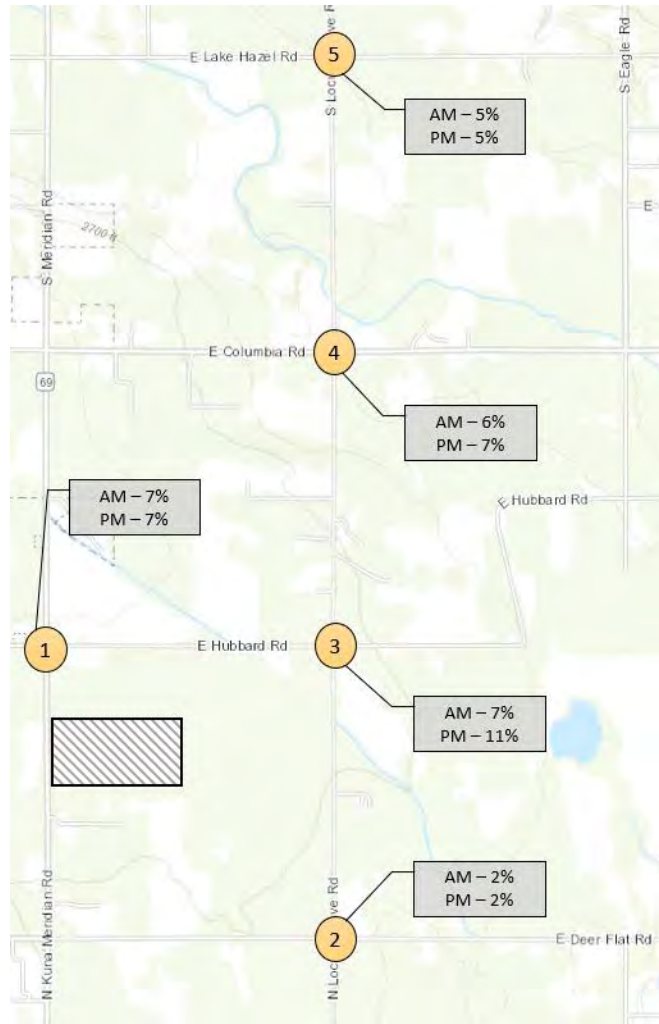


Figure H - Percent Change in Traffic

5.5 LEVEL-OF-SERVICE ROADWAY SEGMENTS 2025 SITE PLUS BACKGROUND

Table 11 summarizes the 2025 site plus background LOS for the roadway segments in the study area. All the roadway segments currently operate at LOS E or better under the current lane configurations and existing traffic volumes, or with the proposed improvements to mitigate for the 2025 background traffic. No roadway improvements are needed to mitigate site plus background conditions.

Table 11 - Roadway Segment LOS - 2025 Site Plus Background Traffic

Roadway Segment	Functional Class	No. of Thru Lanes	Left-Turn Treatment	Threshold Volume		AM Peak Hour Major Direction		PM Peak Hour Major Direction	
				LOS D	LOS E	Vol (vph)	LOS	Vol (vph)	LOS
A. S Meridian Rd, Columbia Rd to Hubbard Rd	Principal Arterial	3	Continuous LT Lane	2560	2720	1609	< D	2061	< D

B. S Meridian Rd, Hubbard Rd to Ardell Rd	Principal Arterial	2	Continuous LT Lane	1680	1780	1261	< D	1545	< D
C. Hubbard Rd, S Meridian to Locust Grove	Minor Arterial	2	Continuous LT Lane	1395	1540	1175	< D	534	< D
D. Locust Grove Rd, Deer Flat Rd to Hubbard Rd	Minor Arterial	1	Continuous LT Lane	675	720	203	< D	599	< D
E. Hubbard Rd, Locust Grove Rd to Eagle Rd	Minor Arterial	1	Continuous LT Lane	675	720	558	< D	648	< D
F. Locust Grove Rd, Hubbard Rd to Columbia Rd	Minor Arterial	1	Continuous LT Lane	675	720	678	< E	301	< D
G. Locust Grove Rd, Columbia Rd to Lake Hazel Rd	Minor Arterial	1	No LT Lane	540	575	384	< D	542	< E
H. Locust Grove Rd, Lake Hazel Rd to Amity Rd	Minor Arterial	2	Continuous LT Lane	1395	1540	454	< D	779	< D

5.6 LEVEL OF SERVICE INTERSECTIONS 2025 SITE PLUS BACKGROUND

Each intersection in the study area was evaluated under the 2025 Site Plus Background traffic conditions with existing traffic controls and lane configurations, or with the proposed improvements to mitigate existing/2025 background traffic. Table 12 summarizes these results. Synchro 11 Reports are included in the Appendix. All intersections meet the minimum required thresholds.

Table 12 – Intersection LOS – 2025 Site Plus Background Traffic

Intersection	Control	Approach	AM Peak			PM Peak		
			LOS	Delay	V/C	LOS	Delay	V/C
1. SH 69 & Hubbard	Signal	Overall	D	41.7		D	45.2	
		Eastbound	D	42.1	0.67	D	40.5	0.31
		Westbound	E	67.0	0.76	F	118.9	0.97
		Northbound	D	43.8	0.91	D	38.7	0.42
		Southbound	D	35.7	0.60	D	51.5	0.97
2. Locust Grove & Deer Flat	TWSC	Overall		3.9			15.0	
		Eastbound	A	7.7	0.061	A	8.9	0.072
		Westbound	A	8.2	0.003	A	7.5	0.002
		Northbound	C	19.2	0.209	C	22.6	0.172
		Southbound	C	15.0	0.182	E	47.9	0.842
3. Locust Grove & Hubbard	Signal	Overall	B	18.9		C	20.9	
		Eastbound	B	15.8	0.86	C	24.5	0.76
		Westbound	C	27.0	0.79	B	19.7	0.70
		Northbound	C	31.7	0.69	C	20.4	0.17
		Southbound	C	27.6	0.29	C	27.0	0.73

3. Locust Grove & Hubbard	RA	Overall	C	18.7		A	9.6	
		Eastbound	D	25.4	0.900	B	11.5	0.525
		Westbound	B	12.3	0.496	B	10.6	0.597
		Northbound	B	13.0	0.323	A	4.8	0.090
		Southbound	A	4.1	0.049	A	9.4	0.341
4. Locust Grove & Columbia	Signal	Overall	C	20.0		C	26.1	
		Eastbound	B	20.0	0.83	B	17.2	0.18
		Westbound	B	17.3	0.35	C	26.6	0.88
		Northbound	C	28.2	0.73	C	28.8	0.27
		Southbound	C	21.2	0.25	C	33.9	0.78
4. Locust Grove & Columbia	RA	Overall	A	8.5		A	9.2	
		Eastbound	B	10.6	0.604	A	6.6	0.288
		Westbound	A	5.7	0.204	A	9.8	0.579
		Northbound	B	9.9	0.341	A	4.4	0.095
		Southbound	A	4.4	0.139	B	12.1	0.482
5. Locust Grove & Lake Hazel	Signal	Overall	C	26.2		C	30.3	
		Eastbound	C	30.2	0.87	C	27.8	0.63
		Westbound	C	22.4	0.58	D	36.1	0.87
		Northbound	C	31.8	0.84	C	29.7	0.51
		Southbound	C	21.2	0.46	C	34.4	0.88
5. Locust Grove & Lake Hazel	RA	Overall	A	9.0		C	25.0	
		Eastbound	A	9.3	0.510	C	16.6	0.596
		Westbound	A	7.9	0.369	A	9.5	0.516
		Northbound	B	12.9	0.528	A	8.7	0.342
		Southbound	A	6.2	0.256	F	50.8	0.986
6. Hubbard & Stroebel	TWSC	Overall		7.3			6.0	
		Eastbound	A	0	0	A	0	0
		Westbound	A	7.6	0.046	A	8.5	0.141
		Northbound	B	13.6	0.441	C	16.8	0.435
7. SH-69 & Ardell	TWSC	Overall		2.5			1.7	
		Westbound	E	39.0	0.53	E	36.4	0.452
		Northbound	A	0	0	A	0	0
		Southbound	B	12.7	0.089	B	10.2	0.131

6.0 SUMMARY OF RESULTS

The study's key findings are summarized below.

6.1 EXISTING TRAFFIC CONDITIONS

1. For the existing traffic conditions analyzed with the existing roadway configurations, all study area roadway segments meet minimum operational thresholds. No roadway improvements are needed to mitigate the existing traffic.

2. For the existing traffic conditions analyzed with the existing intersection controls and lane configurations, the intersection of S Meridian Road/Hubbard Road does not meet minimum operational thresholds. All other intersections meet these requirements.
3. The following mitigation measures are recommended for this intersection:
 - S. Meridian Road/Hubbard Road
 - NB/SB right-turn lane
 - Signal timing adjustments

With these improvements, the intersection of S Meridian Road/Hubbard Road meets minimum operational thresholds.

6.2 2025 BACKGROUND TRAFFIC CONDITIONS

4. For the 2025 Background traffic conditions analyzed with the existing roadway lane configuration, the roadway segments of S Meridian Rd between Columbia Rd and Hubbard Rd, Hubbard Rd between S Meridian Rd and Locust Grove Rd, Locust Grove Rd between Deer Flat Rd and Hubbard Rd, Hubbard Rd between Locust Grove Rd and Eagle Rd, Locust Grove Rd between Hubbard Rd and Columbia Rd, and Locust Grove Rd between Lake Hazel and Amity do not meet minimum operational thresholds.
5. The following mitigation measures are recommended for these roadway segments.
 - S. Meridian Rd between Columbia Rd and Hubbard Rd
 - Additional NB/SB through lane
 - Hubbard Rd between S Meridian Rd and Locust Grove Rd
 - Additional EB/WB through lane
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Deer Flat Rd to Hubbard Rd
 - Addition of a continuous left-turn lane
 - Hubbard Rd between Locust Grove Rd and Eagle Rd
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Hubbard Rd and Columbia Rd
 - Addition of a continuous left-turn lane
 - Locust Grove Rd between Lake Hazel Rd and Amity Rd
 - Additional NB/SB through lane
 - Addition of a continuous left-turn lane

With these improvements, the roadway segments minimum operational thresholds.

6. For the 2025 Background traffic conditions analyzed with the existing intersection controls and lane configurations, or with the proposed improvements to mitigate existing traffic the intersections of Locust Grove/Hubbard, Locust Grove/Columbia, and Locust Grove/Lake Hazel do not meet minimum operational thresholds. All other intersections meet minimum requirements.
7. A Signal Warrant Analysis was conducted for all three intersections. All three meet one of more warrants for a traffic signal.
8. The following mitigation measures are recommended for these intersections:
 - Locust Grove/Hubbard
 - Traffic Signal

- Locust Grove/Columbia
 - Traffic Signal/Roundabout
- Locust Grove/Lake Hazel
 - Traffic Signal

With these improvements, all intersections meets minimum operational thresholds.

6.3 2025 SITE PLUS BACKGROUND CONDITIONS

9. This scenario reflects a full buildout of the 234 single-family units, 192 multi-family units, and 6 commercial lots, and is expected to generate 4003 daily trips, 308 AM peak hour trips, and 398 PM peak hour trips.

10. Traffic distribution is estimated as follows:

North (Locust Grove)	25%	South (Meridian)	10%
North (Meridian)	50%	East (Hubbard)	10%
South (Locust Grove)	5%		

11. For the 2025 Site Plus Background traffic condition analyzed with the existing lane configurations, or with the proposed improvements to mitigate background traffic, all study area roadway segments meet minimum operational thresholds. No roadway improvements are needed to mitigate the site plus background traffic.

12. For the 2025 Site Plus Background traffic conditions analyzed with the existing intersection control and lane configuration, or with the proposed improvements to mitigate existing/2025 background traffic, all intersections meet the minimum requirements. No roadway improvements are needed to mitigate the site plus background traffic.

13. A turn lane analysis was completed for both the S Meridian Rd/Ardell Rd and Hubbard Rd/Stroebel Rd access locations. Hubbard Rd/Stroebel Rd warrants a west bound left-turn lane for the 2025 Site Plus Background PM peak hour volumes. S Meridian Rd/Ardell Rd warrants a north bound right-turn lane for the 2025 Site Plus Background PM Peak hour volumes.

7.0 APPENDIX

L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Meridian Rd / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 1

Groups Printed- General Traffic

Start Time	Meridian Raod From North					Hubbard Road From East					SH-69 (Meridian Road) From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	8	52	0	0	60	1	0	3	0	4	0	229	3	0	232	1	6	36	0	43	339
07:15 AM	5	72	5	0	82	2	1	2	0	5	1	254	2	0	257	2	8	46	0	56	400
07:30 AM	10	75	5	0	90	4	1	0	0	5	1	226	2	0	229	5	7	39	0	51	375
07:45 AM	19	125	4	0	148	3	2	2	0	7	2	165	2	0	169	6	2	12	1	21	345
Total	42	324	14	0	380	10	4	7	0	21	4	874	9	0	887	14	23	133	1	171	1459
08:00 AM	7	89	5	0	101	2	0	1	0	3	1	184	4	0	189	5	0	28	0	33	326
08:15 AM	10	70	3	0	83	1	0	2	0	3	2	176	3	0	181	4	1	26	1	32	299
08:30 AM	17	85	5	1	108	8	2	4	0	14	1	193	4	0	198	5	4	29	0	38	358
08:45 AM	13	81	2	0	96	3	0	0	0	3	2	143	4	0	149	4	1	30	0	35	283
Total	47	325	15	1	388	14	2	7	0	23	6	696	15	0	717	18	6	113	1	138	1266

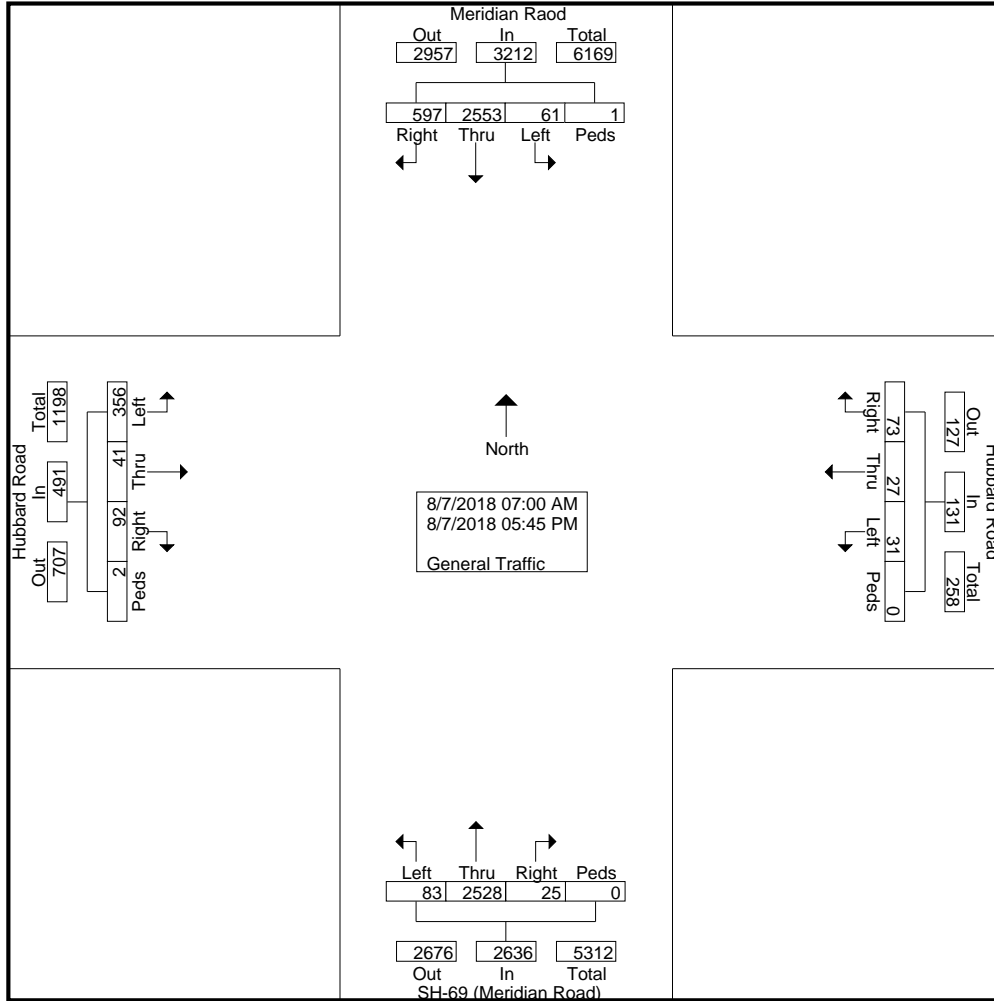
04:00 PM	46	182	6	0	234	3	4	1	0	8	4	115	6	0	125	8	1	13	0	22	389
04:15 PM	70	239	3	0	312	1	1	1	0	3	1	122	6	0	129	8	0	10	0	18	462
04:30 PM	60	209	4	0	273	8	4	2	0	14	1	117	10	0	128	9	1	8	0	18	433
04:45 PM	59	227	4	0	290	8	3	4	0	15	1	119	8	0	128	7	1	12	0	20	453
Total	235	857	17	0	1109	20	12	8	0	40	7	473	30	0	510	32	3	43	0	78	1737
05:00 PM	70	251	4	0	325	9	2	3	0	14	4	117	6	0	127	9	4	18	0	31	497
05:15 PM	71	266	4	0	341	12	3	2	0	17	3	134	9	0	146	7	2	17	0	26	530
05:30 PM	65	249	2	0	316	6	3	2	0	11	0	126	9	0	135	7	1	14	0	22	484
05:45 PM	67	281	5	0	353	2	1	2	0	5	1	108	5	0	114	5	2	18	0	25	497
Total	273	1047	15	0	1335	29	9	9	0	47	8	485	29	0	522	28	9	67	0	104	2008
Grand Total	597	2553	61	1	3212	73	27	31	0	131	25	2528	83	0	2636	92	41	356	2	491	6470
Apprch %	18.6	79.5	1.9	0		55.7	20.6	23.7	0		0.9	95.9	3.1	0		18.7	8.4	72.5	0.4		
Total %	9.2	39.5	0.9	0	49.6	1.1	0.4	0.5	0	2	0.4	39.1	1.3	0	40.7	1.4	0.6	5.5	0	7.6	

L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002
 Intersection: Meridian Rd / Hubbard Rd
 City, State: Ada County, Idaho
 Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
 Site Code : 00000000
 Start Date : 8/7/2018
 Page No : 2



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Idaho (208) 860-7554 Utah (801) 431-2993

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Intersection: Meridian Rd / Hubbard Rd

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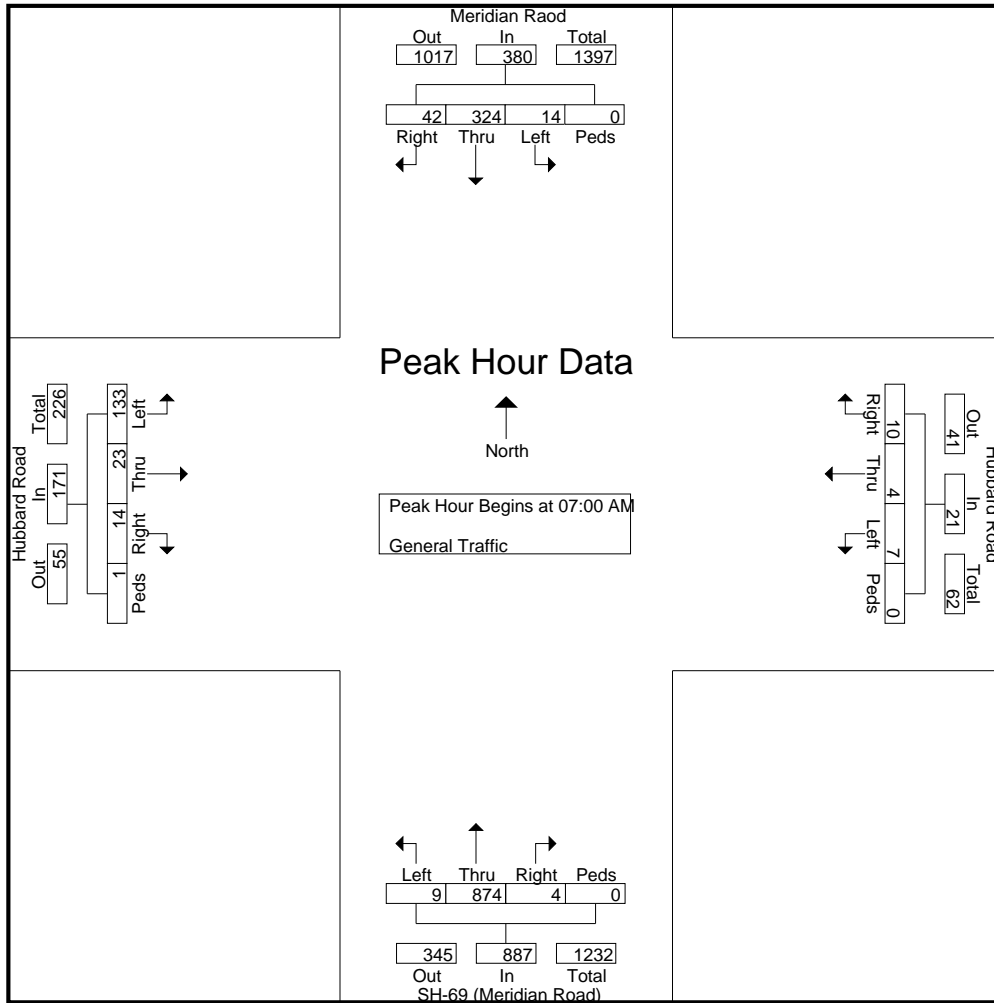
File Name : Meridian Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 3

Start Time	Meridian Raod From North					Hubbard Road From East					SH-69 (Meridian Road) From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	8	52	0	0	60	1	0	3	0	4	0	229	3	0	232	1	6	36	0	43	339
07:15 AM	5	72	5	0	82	2	1	2	0	5	1	254	2	0	257	2	8	46	0	56	400
07:30 AM	10	75	5	0	90	4	1	0	0	5	1	226	2	0	229	5	7	39	0	51	375
07:45 AM	19	125	4	0	148	3	2	2	0	7	2	165	2	0	169	6	2	12	1	21	345
Total Volume	42	324	14	0	380	10	4	7	0	21	4	874	9	0	887	14	23	133	1	171	1459
% App. Total	11.1	85.3	3.7	0		47.6	19	33.3	0		0.5	98.5	1	0		8.2	13.5	77.8	0.6		
PHF	.553	.648	.700	.000	.642	.625	.500	.583	.000	.750	.500	.860	.750	.000	.863	.583	.719	.723	.250	.763	.912



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Study: WHPA0002
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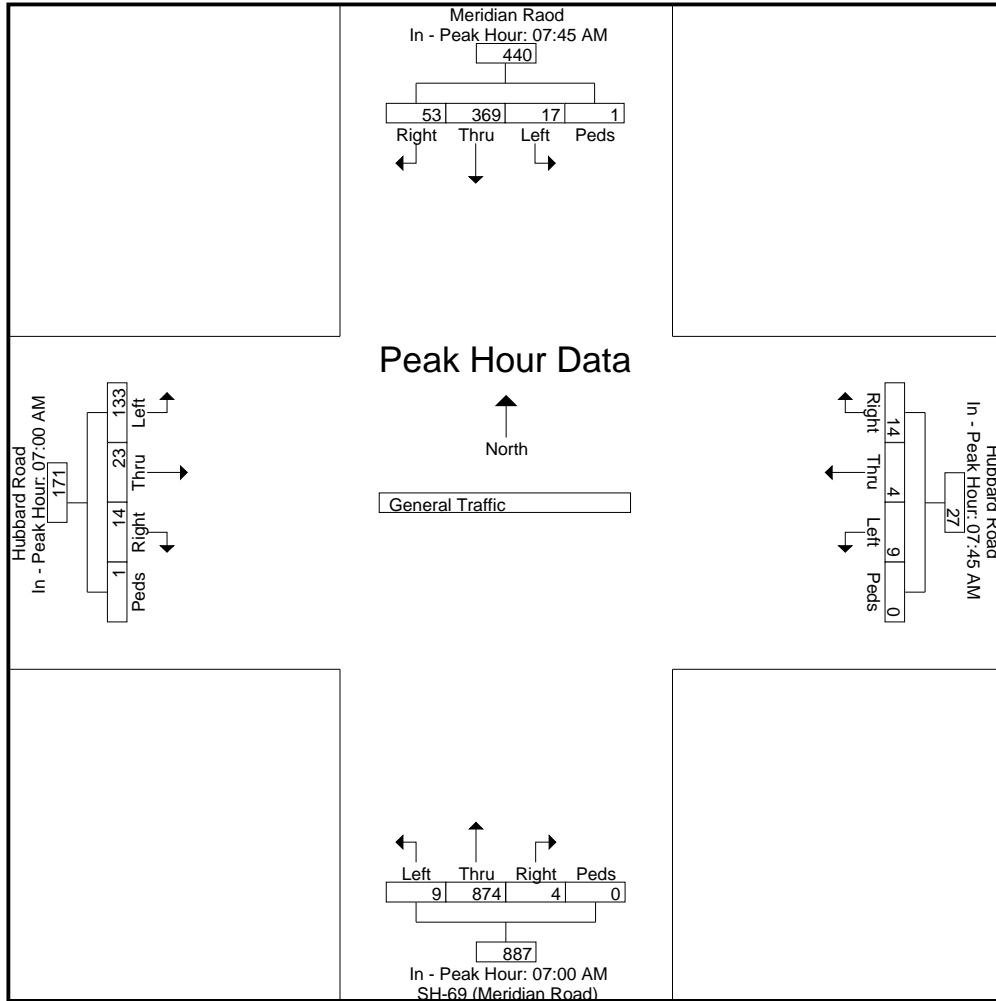
File Name : Meridian Rd & Hubbard Rd
 Site Code : 00000000
 Start Date : 8/7/2018
 Page No : 4

Start Time	Meridian Raod From North					Hubbard Road From East					SH-69 (Meridian Road) From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM					07:45 AM					07:00 AM					07:00 AM				
+0 mins.	19	125	4	0	148	3	2	2	0	7	0	229	3	0	232	1	6	36	0	43
+15 mins.	7	89	5	0	101	2	0	1	0	3	1	254	2	0	257	2	8	46	0	56
+30 mins.	10	70	3	0	83	1	0	2	0	3	1	226	2	0	229	5	7	39	0	51
+45 mins.	17	85	5	1	108	8	2	4	0	14	2	165	2	0	169	6	2	12	1	21
Total Volume	53	369	17	1	440	14	4	9	0	27	4	874	9	0	887	14	23	133	1	171
% App. Total	12	83.9	3.9	0.2		51.9	14.8	33.3	0		0.5	98.5	1	0		8.2	13.5	77.8	0.6	
PHF	.697	.738	.850	.250	.743	.438	.500	.563	.000	.482	.500	.860	.750	.000	.863	.583	.719	.723	.250	.763



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Study: WHPA0002

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City, State: Ada County, Idaho

Control: Stop Sign

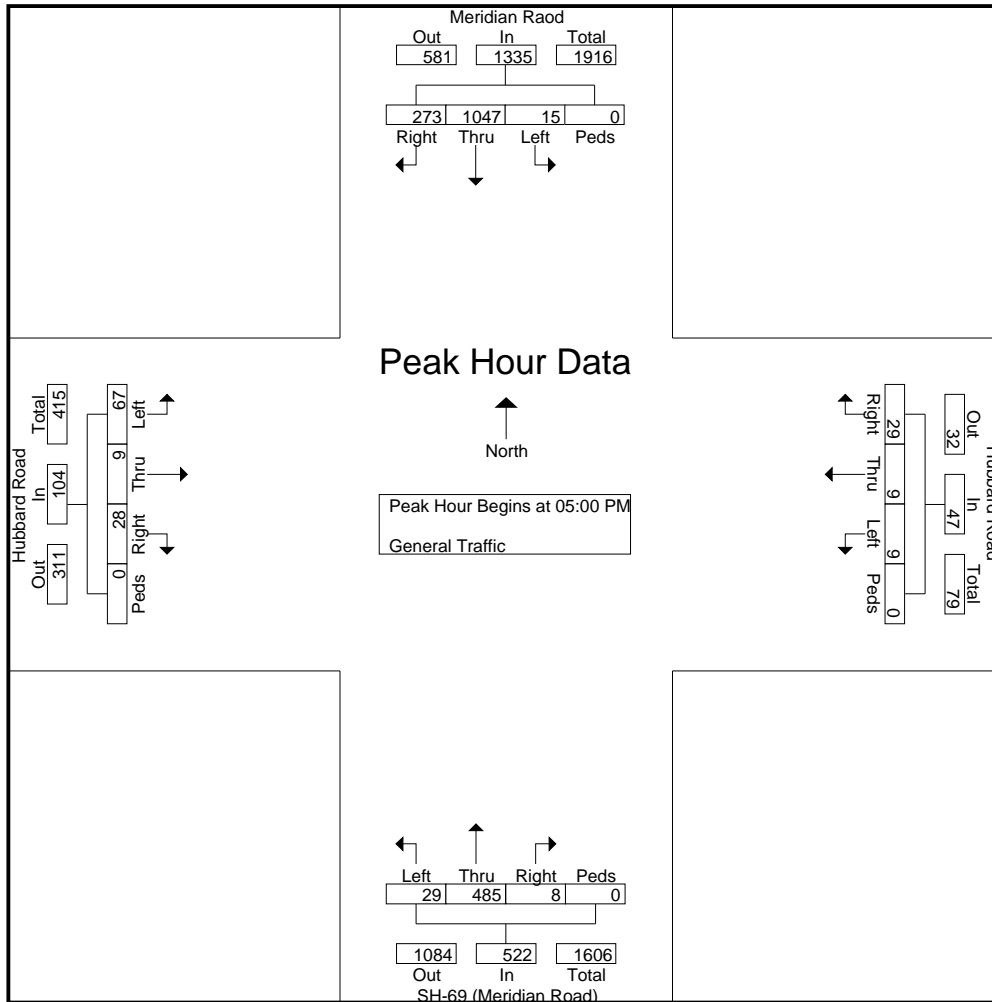
File Name : Meridian Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 5

Start Time	Meridian Raod From North					Hubbard Road From East					SH-69 (Meridian Road) From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	70	251	4	0	325	9	2	3	0	14	4	117	6	0	127	9	4	18	0	31	497
05:15 PM	71	266	4	0	341	12	3	2	0	17	3	134	9	0	146	7	2	17	0	26	530
05:30 PM	65	249	2	0	316	6	3	2	0	11	0	126	9	0	135	7	1	14	0	22	484
05:45 PM	67	281	5	0	353	2	1	2	0	5	1	108	5	0	114	5	2	18	0	25	497
Total Volume	273	1047	15	0	1335	29	9	9	0	47	8	485	29	0	522	28	9	67	0	104	2008
% App. Total	20.4	78.4	1.1	0		61.7	19.1	19.1	0		1.5	92.9	5.6	0		26.9	8.7	64.4	0		
PHF	.961	.931	.750	.000	.945	.604	.750	.750	.000	.691	.500	.905	.806	.000	.894	.778	.563	.931	.000	.839	.947



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002
 Intersection: Meridian Rd / Hubbard Rd
 City, State: Ada County, Idaho
 Control: Stop Sign

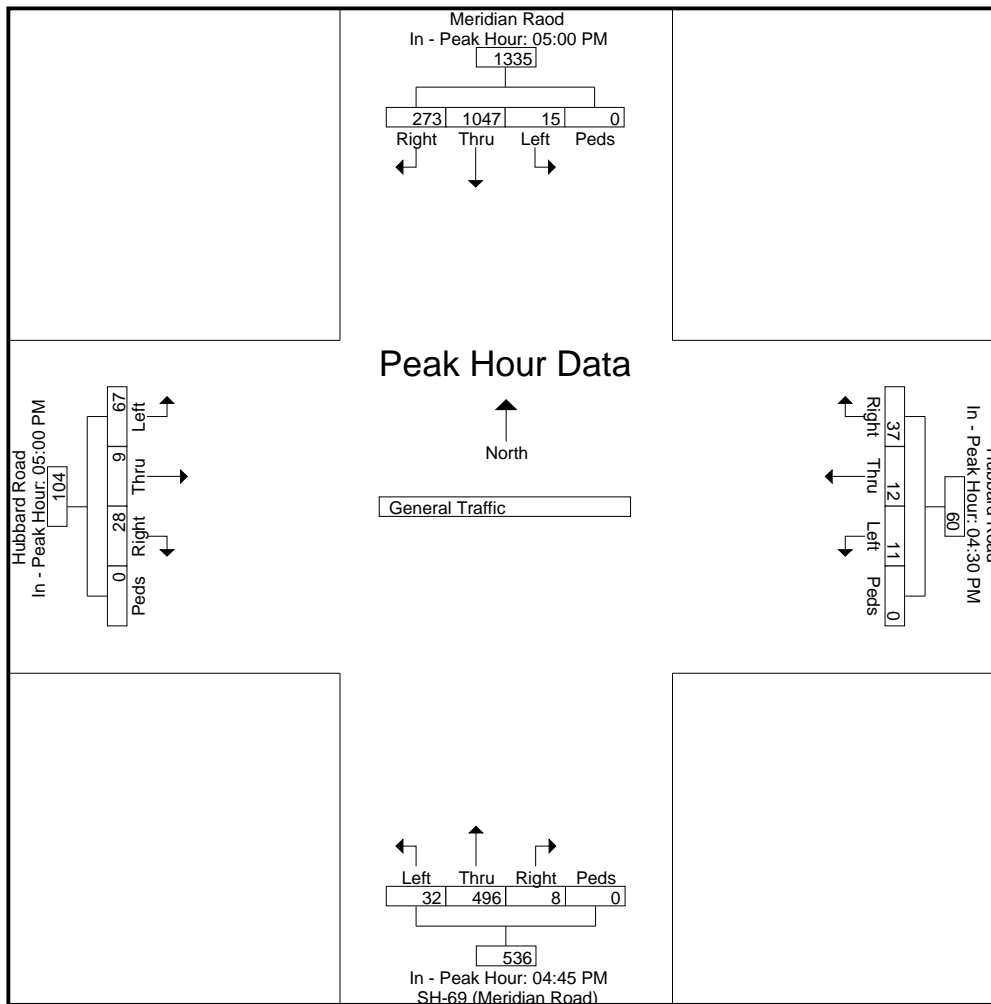
File Name : Meridian Rd & Hubbard Rd
 Site Code : 00000000
 Start Date : 8/7/2018
 Page No : 6

Start Time	Meridian Raod From North					Hubbard Road From East					SH-69 (Meridian Road) From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM					04:30 PM					04:45 PM					05:00 PM				
+0 mins.	70	251	4	0	325	8	4	2	0	14	1	119	8	0	128	9	4	18	0	31
+15 mins.	71	266	4	0	341	8	3	4	0	15	4	117	6	0	127	7	2	17	0	26
+30 mins.	65	249	2	0	316	9	2	3	0	14	3	134	9	0	146	7	1	14	0	22
+45 mins.	67	281	5	0	353	12	3	2	0	17	0	126	9	0	135	5	2	18	0	25
Total Volume	273	1047	15	0	1335	37	12	11	0	60	8	496	32	0	536	28	9	67	0	104
% App. Total	20.4	78.4	1.1	0		61.7	20	18.3	0		1.5	92.5	6	0		26.9	8.7	64.4	0	
PHF	.961	.931	.750	.000	.945	.771	.750	.688	.000	.882	.500	.925	.889	.000	.918	.778	.563	.931	.000	.839



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002
Intersection: Meridian Rd / Hubbard Rd
City, State: Ada County, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code : 00000000
Start Date : 8/7/2018
Page No : 7

Image 1



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 1

Groups Printed- General Traffic

Start Time	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	3	1	1	0	5	2	7	0	0	9	2	4	1	0	7	0	39	8	0	47	68
07:15 AM	5	2	1	0	8	1	19	0	0	20	0	4	1	0	5	1	38	3	0	42	75
07:30 AM	4	1	1	0	6	1	15	0	0	16	1	4	0	0	5	4	32	8	0	44	71
07:45 AM	1	1	1	0	3	0	4	0	0	4	0	1	1	0	2	1	29	9	0	39	48
Total	13	5	4	0	22	4	45	0	0	49	3	13	3	0	19	6	138	28	0	172	262
08:00 AM	2	2	0	0	4	1	9	0	0	10	1	7	1	0	9	0	24	6	0	30	53
08:15 AM	3	2	1	0	6	0	7	2	0	9	0	4	1	0	5	0	12	2	0	14	34
08:30 AM	5	1	2	0	8	3	9	0	0	12	1	1	0	0	2	1	14	4	0	19	41
08:45 AM	3	2	0	0	5	0	11	1	0	12	1	1	0	0	2	0	15	7	0	22	41
Total	13	7	3	0	23	4	36	3	0	43	3	13	2	0	18	1	65	19	0	85	169

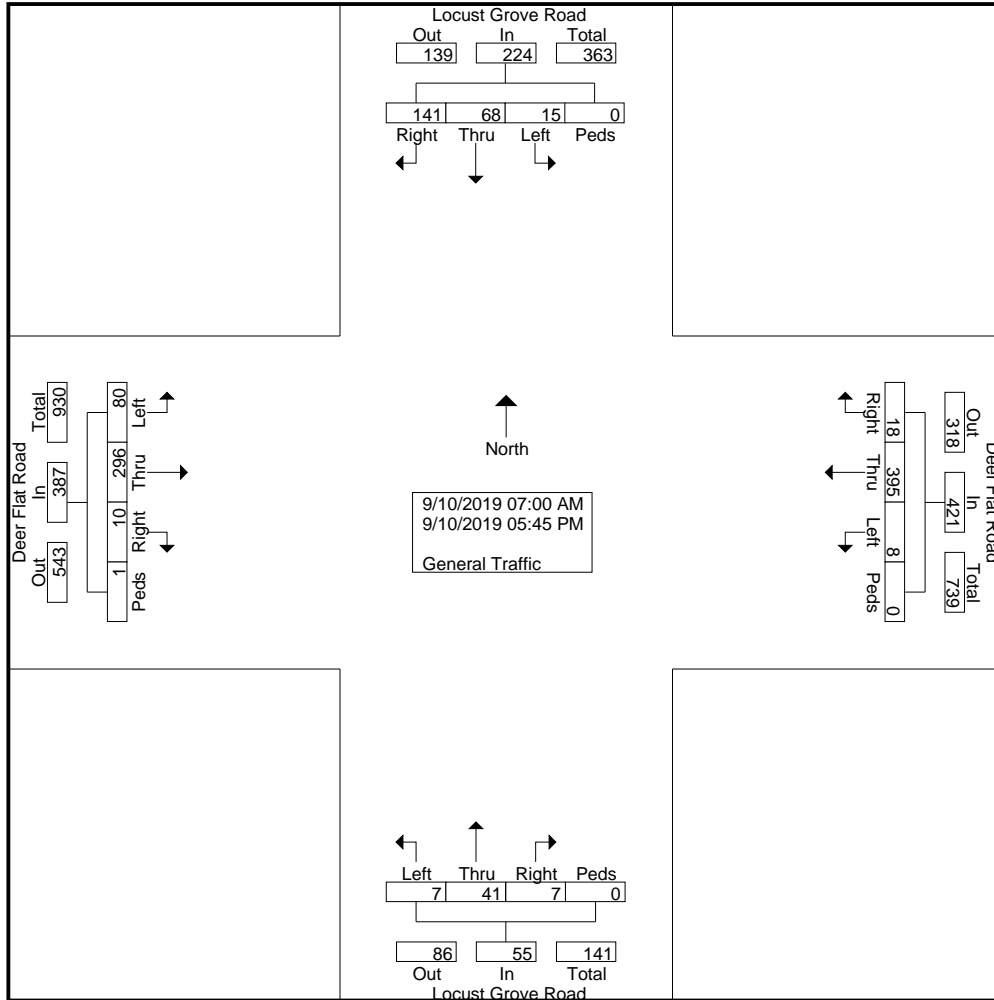
04:00 PM	9	3	0	0	12	2	26	2	0	30	0	4	1	0	5	2	18	2	0	22	69
04:15 PM	12	9	3	0	24	1	29	1	0	31	0	3	1	0	4	0	12	4	0	16	75
04:30 PM	16	6	0	0	22	1	34	0	0	35	0	0	0	0	0	0	16	2	0	18	75
04:45 PM	12	8	0	0	20	2	42	1	0	45	0	1	0	0	1	0	7	2	0	9	75
Total	49	26	3	0	78	6	131	4	0	141	0	8	2	0	10	2	53	10	0	65	294
05:00 PM	15	6	1	0	22	2	49	0	0	51	0	1	0	0	1	1	13	5	0	19	93
05:15 PM	15	12	1	0	28	1	41	0	0	42	0	3	0	0	3	0	11	3	0	14	87
05:30 PM	23	7	1	0	31	1	52	0	0	53	0	1	0	0	1	0	8	9	1	18	103
05:45 PM	13	5	2	0	20	0	41	1	0	42	1	2	0	0	3	0	8	6	0	14	79
Total	66	30	5	0	101	4	183	1	0	188	1	7	0	0	8	1	40	23	1	65	362
Grand Total	141	68	15	0	224	18	395	8	0	421	7	41	7	0	55	10	296	80	1	387	1087
Apprch %	62.9	30.4	6.7	0		4.3	93.8	1.9	0		12.7	74.5	12.7	0		2.6	76.5	20.7	0.3		
Total %	13	6.3	1.4	0	20.6	1.7	36.3	0.7	0	38.7	0.6	3.8	0.6	0	5.1	0.9	27.2	7.4	0.1	35.6	

L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 2



L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

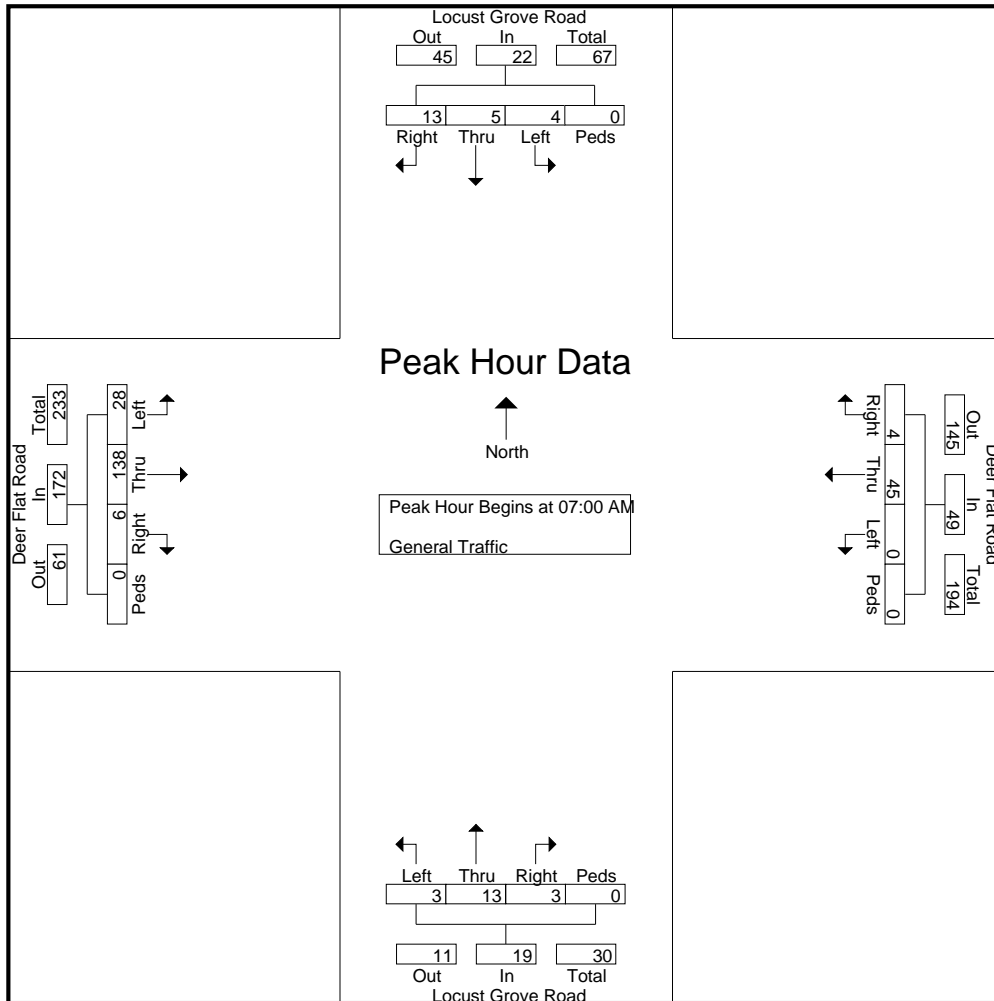
File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 3

Start Time	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

07:00 AM	3	1	1	0	5	2	7	0	0	9	2	4	1	0	7	0	39	8	0	47	68
07:15 AM	5	2	1	0	8	1	19	0	0	20	0	4	1	0	5	1	38	3	0	42	75
07:30 AM	4	1	1	0	6	1	15	0	0	16	1	4	0	0	5	4	32	8	0	44	71
07:45 AM	1	1	1	0	3	0	4	0	0	4	0	1	1	0	2	1	29	9	0	39	48
Total Volume	13	5	4	0	22	4	45	0	0	49	3	13	3	0	19	6	138	28	0	172	262
% App. Total	59.1	22.7	18.2	0		8.2	91.8	0	0		15.8	68.4	15.8	0		3.5	80.2	16.3	0		
PHF	.650	.625	1.00	.000	.688	.500	.592	.000	.000	.613	.375	.813	.750	.000	.679	.375	.885	.778	.000	.915	.873



L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

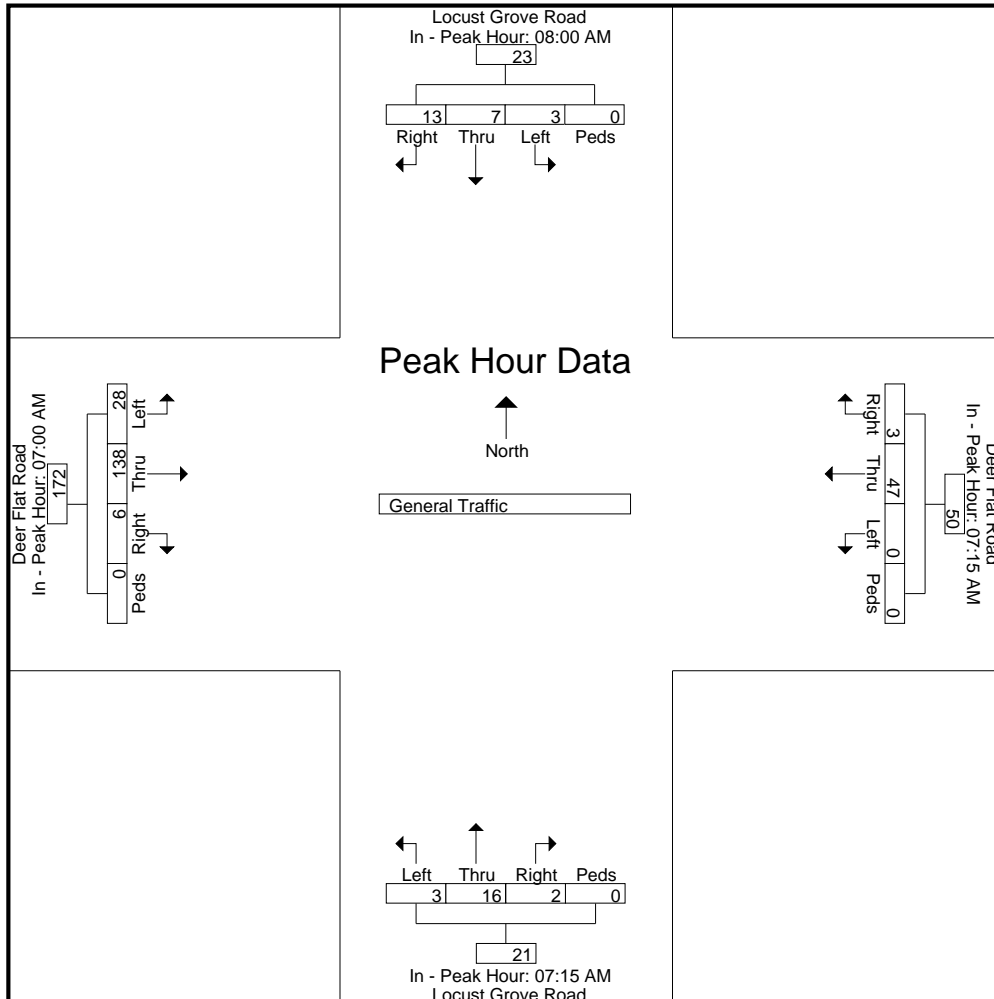
Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 4

Start Time	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	08:00 AM					07:15 AM					07:00 AM									
+0 mins.	2	2	0	0	4	1	19	0	0	20	0	4	1	0	5	0	39	8	0	47
+15 mins.	3	2	1	0	6	1	15	0	0	16	1	4	0	0	5	1	38	3	0	42
+30 mins.	5	1	2	0	8	0	4	0	0	4	0	1	1	0	2	4	32	8	0	44
+45 mins.	3	2	0	0	5	1	9	0	0	10	1	7	1	0	9	1	29	9	0	39
Total Volume	13	7	3	0	23	3	47	0	0	50	2	16	3	0	21	6	138	28	0	172
% App. Total	56.5	30.4	13	0		6	94	0	0		9.5	76.2	14.3	0		3.5	80.2	16.3	0	
PHF	.650	.875	.375	.000	.719	.750	.618	.000	.000	.625	.500	.571	.750	.000	.583	.375	.885	.778	.000	.915



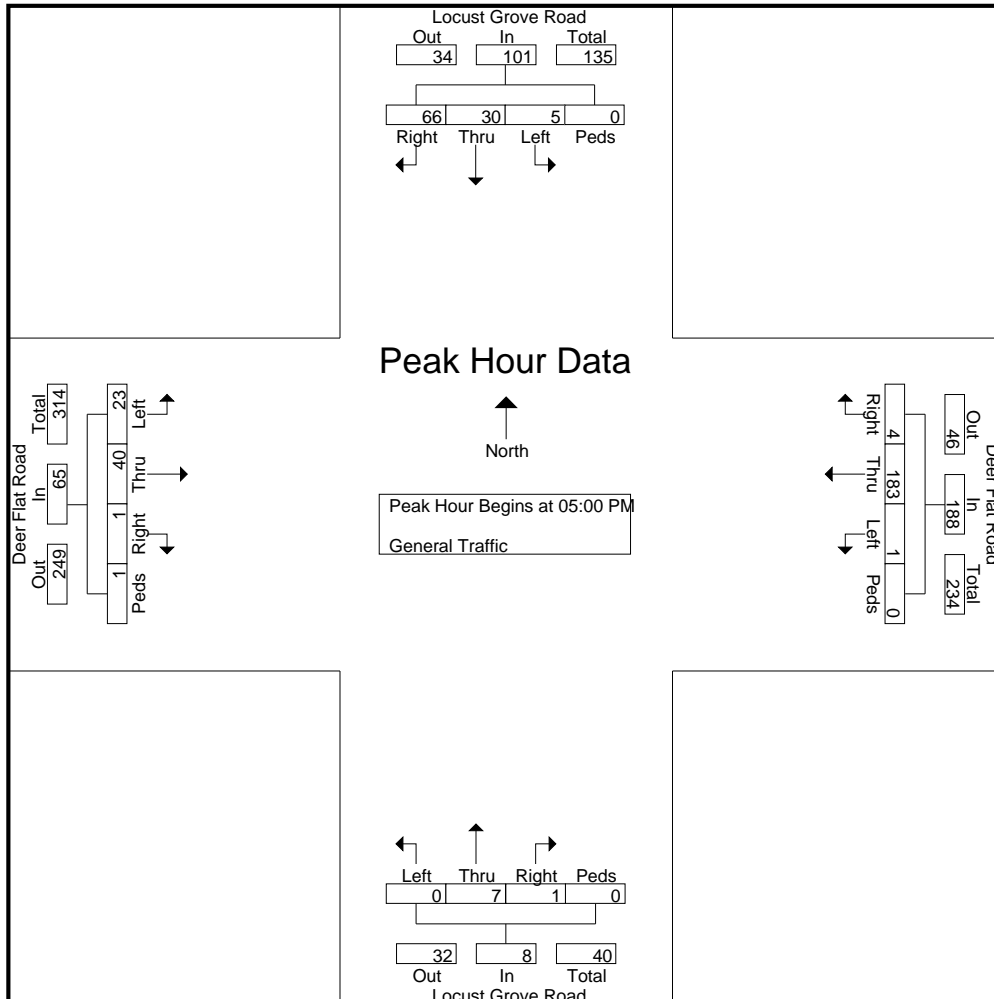
L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 5

Start Time	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	15	6	1	0	22	2	49	0	0	51	0	1	0	0	1	1	13	5	0	19	93
05:15 PM	15	12	1	0	28	1	41	0	0	42	0	3	0	0	3	0	11	3	0	14	87
05:30 PM	23	7	1	0	31	1	52	0	0	53	0	1	0	0	1	0	8	9	1	18	103
05:45 PM	13	5	2	0	20	0	41	1	0	42	1	2	0	0	3	0	8	6	0	14	79
Total Volume	66	30	5	0	101	4	183	1	0	188	1	7	0	0	8	1	40	23	1	65	362
% App. Total	65.3	29.7	5	0		2.1	97.3	0.5	0		12.5	87.5	0	0		1.5	61.5	35.4	1.5		
PHF	.717	.625	.625	.000	.815	.500	.880	.250	.000	.887	.250	.583	.000	.000	.667	.250	.769	.639	.250	.855	.879



L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Deer Flat
 City, State: Kuna, Idaho
 Control: Stop Sign

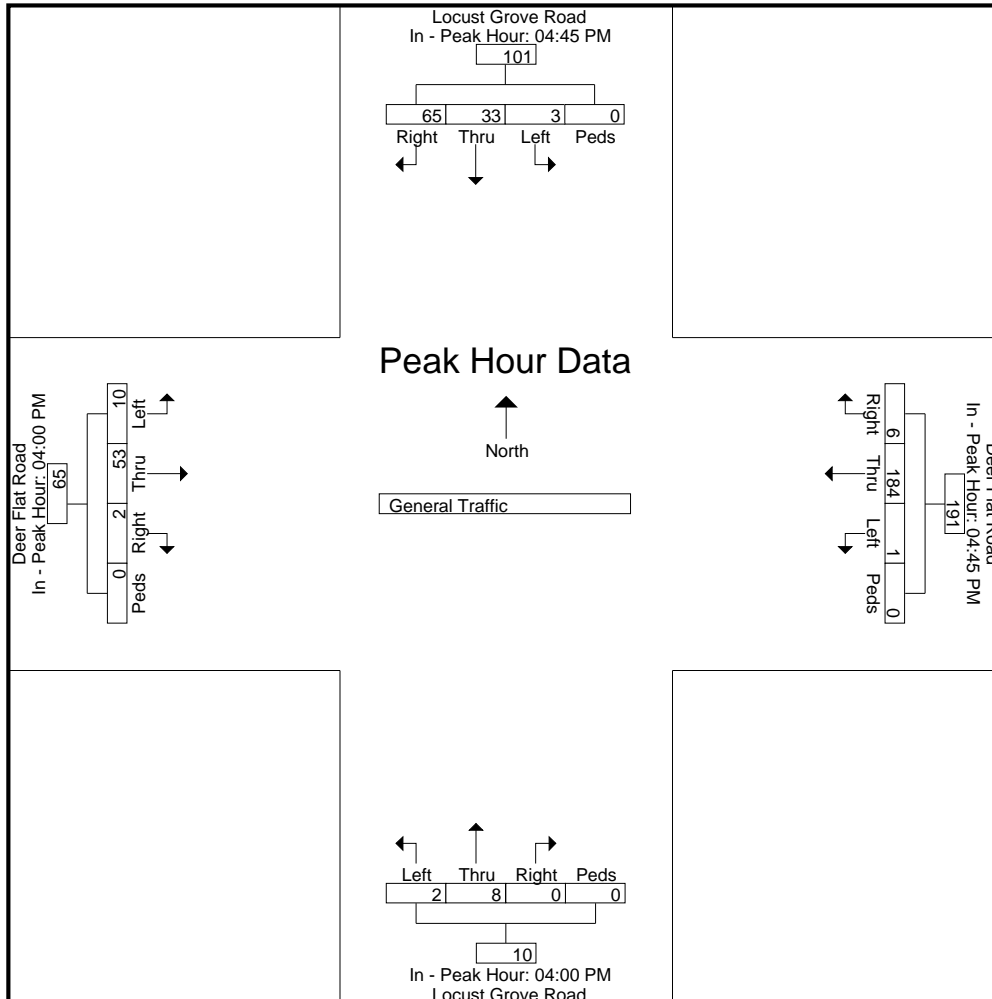
File Name : Locust Grove Rd & Deer Flat Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 6

Start Time	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:00 PM					04:00 PM				
+0 mins.	12	8	0	0	20	2	42	1	0	45	0	4	1	0	5	2	18	2	0	22
+15 mins.	15	6	1	0	22	2	49	0	0	51	0	3	1	0	4	0	12	4	0	16
+30 mins.	15	12	1	0	28	1	41	0	0	42	0	0	0	0	0	0	16	2	0	18
+45 mins.	23	7	1	0	31	1	52	0	0	53	0	1	0	0	1	0	7	2	0	9
Total Volume	65	33	3	0	101	6	184	1	0	191	0	8	2	0	10	2	53	10	0	65
% App. Total	64.4	32.7	3	0		3.1	96.3	0.5	0		0	80	20	0		3.1	81.5	15.4	0	
PHF	.707	.688	.750	.000	.815	.750	.885	.250	.000	.901	.000	.500	.500	.000	.500	.250	.736	.625	.000	.739



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code : 00000000
Start Date : 9/10/2019
Page No : 7

Image 1



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 1

Groups Printed- General Traffic

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	1	0	0	1	0	3	0	0	3	0	10	0	0	10	0	3	4	0	7	21
07:15 AM	0	1	1	0	2	0	3	0	0	3	1	14	0	0	15	1	6	4	0	11	31
07:30 AM	4	5	0	0	9	0	2	0	0	2	0	8	0	0	8	1	5	3	0	9	28
07:45 AM	1	4	0	0	5	2	1	0	0	3	0	6	0	0	6	2	3	3	0	8	22
Total	5	11	1	0	17	2	9	0	0	11	1	38	0	0	39	4	17	14	0	35	102
08:00 AM	0	4	0	0	4	1	3	0	0	4	1	4	0	0	5	2	1	3	0	6	19
08:15 AM	0	6	1	0	7	0	2	0	0	2	0	10	0	0	10	0	1	1	0	2	21
08:30 AM	3	4	0	0	7	0	3	1	0	4	0	7	2	0	9	0	5	1	0	6	26
08:45 AM	1	4	0	0	5	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	9
Total	4	18	1	0	23	1	8	1	0	10	2	23	2	0	27	2	8	5	0	15	75

04:00 PM	2	16	0	0	18	0	3	4	0	7	1	2	0	0	3	0	2	0	0	2	30
04:15 PM	2	16	0	0	18	0	1	1	0	2	1	9	0	0	10	0	2	5	0	7	37
04:30 PM	0	12	0	0	12	0	5	1	0	6	1	3	0	0	4	1	0	1	0	2	24
04:45 PM	5	15	0	0	20	0	6	0	0	6	0	2	1	0	3	0	1	2	0	3	32
Total	9	59	0	0	68	0	15	6	0	21	3	16	1	0	20	1	5	8	0	14	123
05:00 PM	1	16	0	0	17	0	1	1	0	2	1	7	2	0	10	0	1	1	0	2	31
05:15 PM	1	14	0	0	15	0	2	3	0	5	0	2	0	0	2	1	3	1	0	5	27
05:30 PM	2	19	0	0	21	0	5	1	0	6	1	4	0	0	5	1	1	0	0	2	34
05:45 PM	3	15	0	0	18	0	3	3	0	6	1	3	0	0	4	2	4	0	0	6	34
Total	7	64	0	0	71	0	11	8	0	19	3	16	2	0	21	4	9	2	0	15	126
Grand Total	25	152	2	0	179	3	43	15	0	61	9	93	5	0	107	11	39	29	0	79	426
Apprch %	14	84.9	1.1	0		4.9	70.5	24.6	0		8.4	86.9	4.7	0		13.9	49.4	36.7	0		
Total %	5.9	35.7	0.5	0	42	0.7	10.1	3.5	0	14.3	2.1	21.8	1.2	0	25.1	2.6	9.2	6.8	0	18.5	

L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

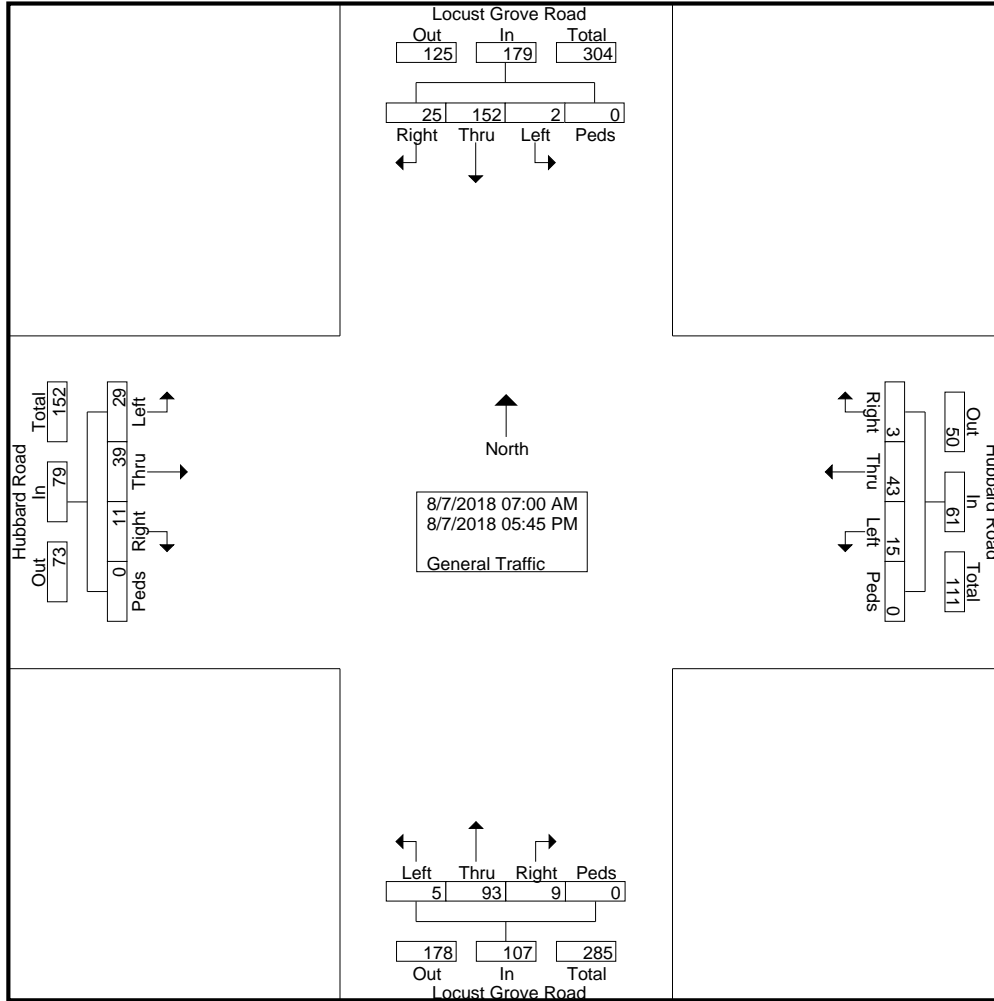
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 2



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

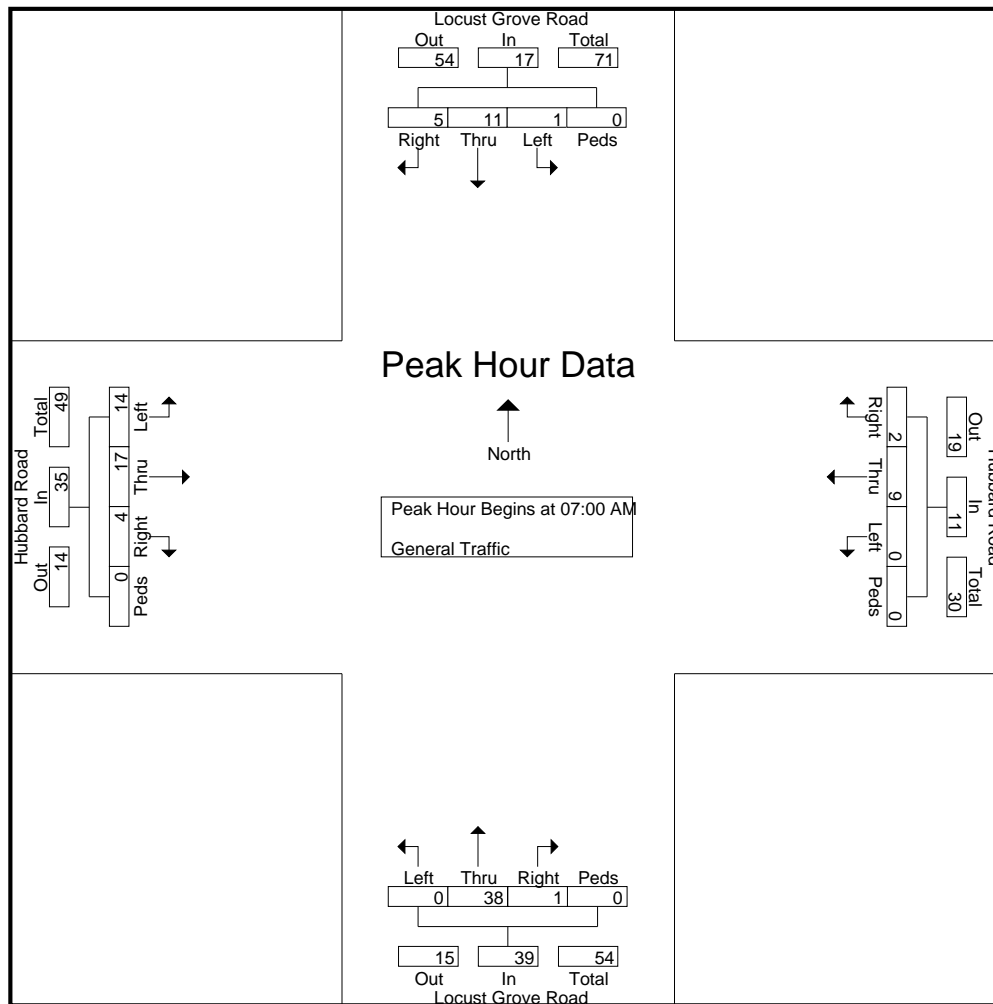
File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 3

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	1	0	0	1	0	3	0	0	3	0	10	0	0	10	0	3	4	0	7	21
07:15 AM	0	1	1	0	2	0	3	0	0	3	1	14	0	0	15	1	6	4	0	11	31
07:30 AM	4	5	0	0	9	0	2	0	0	2	0	8	0	0	8	1	5	3	0	9	28
07:45 AM	1	4	0	0	5	2	1	0	0	3	0	6	0	0	6	2	3	3	0	8	22
Total Volume	5	11	1	0	17	2	9	0	0	11	1	38	0	0	39	4	17	14	0	35	102
% App. Total	29.4	64.7	5.9	0		18.2	81.8	0	0		2.6	97.4	0	0		11.4	48.6	40	0		
PHF	.313	.550	.250	.000	.472	.250	.750	.000	.000	.917	.250	.679	.000	.000	.650	.500	.708	.875	.000	.795	.823



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

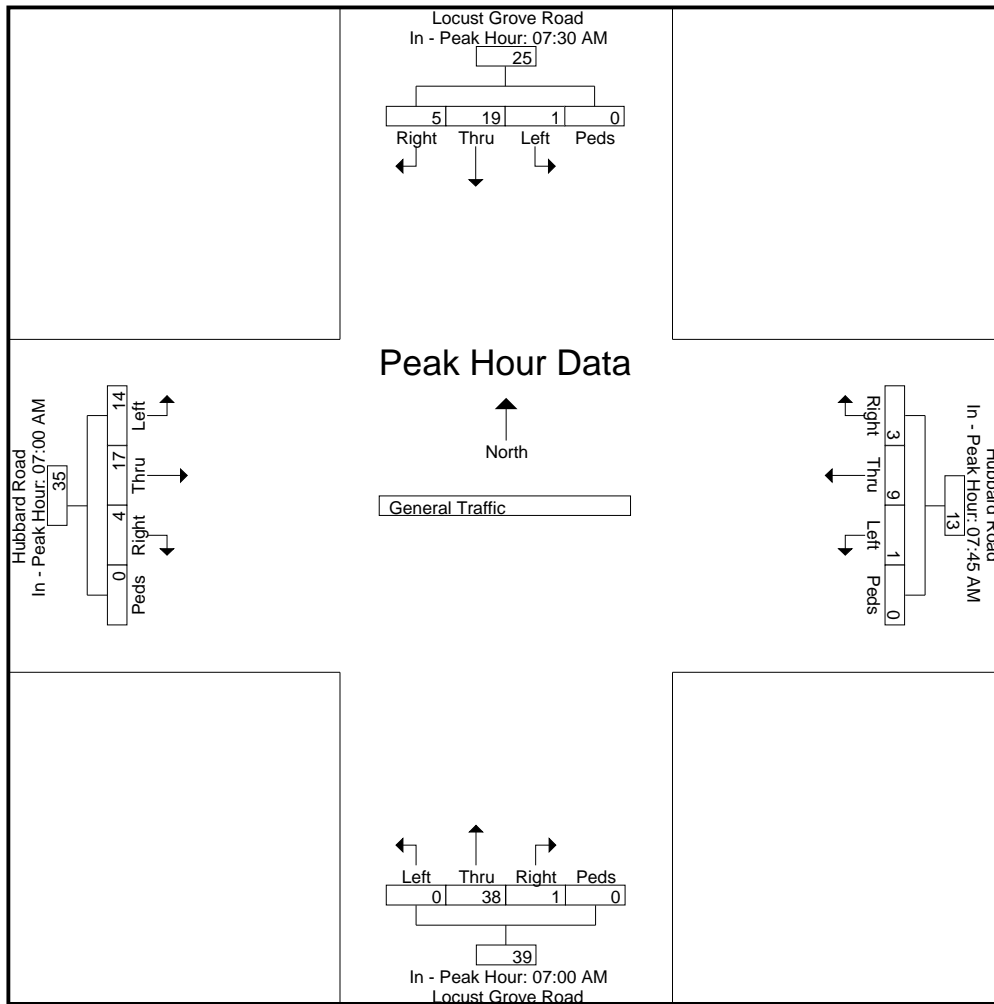
Page No : 4

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM					07:45 AM					07:00 AM					07:00 AM				
+0 mins.	4	5	0	0	9	2	1	0	0	3	0	10	0	0	10	0	3	4	0	7
+15 mins.	1	4	0	0	5	1	3	0	0	4	1	14	0	0	15	1	6	4	0	11
+30 mins.	0	4	0	0	4	0	2	0	0	2	0	8	0	0	8	1	5	3	0	9
+45 mins.	0	6	1	0	7	0	3	1	0	4	0	6	0	0	6	2	3	3	0	8
Total Volume	5	19	1	0	25	3	9	1	0	13	1	38	0	0	39	4	17	14	0	35
% App. Total	20	76	4	0		23.1	69.2	7.7	0		2.6	97.4	0	0		11.4	48.6	40	0	
PHF	.313	.792	.250	.000	.694	.375	.750	.250	.000	.813	.250	.679	.000	.000	.650	.500	.708	.875	.000	.795



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

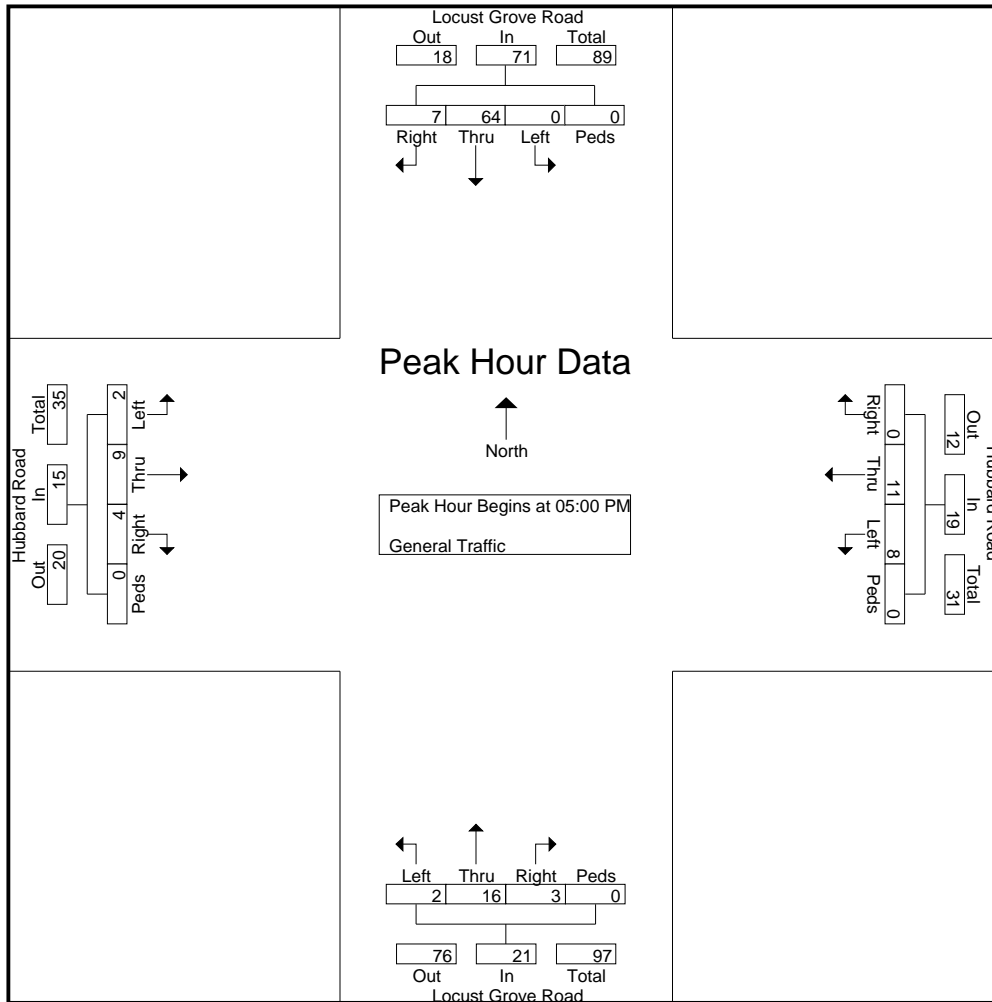
File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 5

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	16	0	0	17	0	1	1	0	2	1	7	2	0	10	0	1	1	0	2	31
05:15 PM	1	14	0	0	15	0	2	3	0	5	0	2	0	0	2	1	3	1	0	5	27
05:30 PM	2	19	0	0	21	0	5	1	0	6	1	4	0	0	5	1	1	0	0	2	34
05:45 PM	3	15	0	0	18	0	3	3	0	6	1	3	0	0	4	2	4	0	0	6	34
Total Volume	7	64	0	0	71	0	11	8	0	19	3	16	2	0	21	4	9	2	0	15	126
% App. Total	9.9	90.1	0	0		0	57.9	42.1	0		14.3	76.2	9.5	0		26.7	60	13.3	0		
PHF	.583	.842	.000	.000	.845	.000	.550	.667	.000	.792	.750	.571	.250	.000	.525	.500	.563	.500	.000	.625	.926



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002
 Intersection: Locust Grove / Hubbard Rd
 City, State: Ada County, Idaho
 Control: Stop Sign

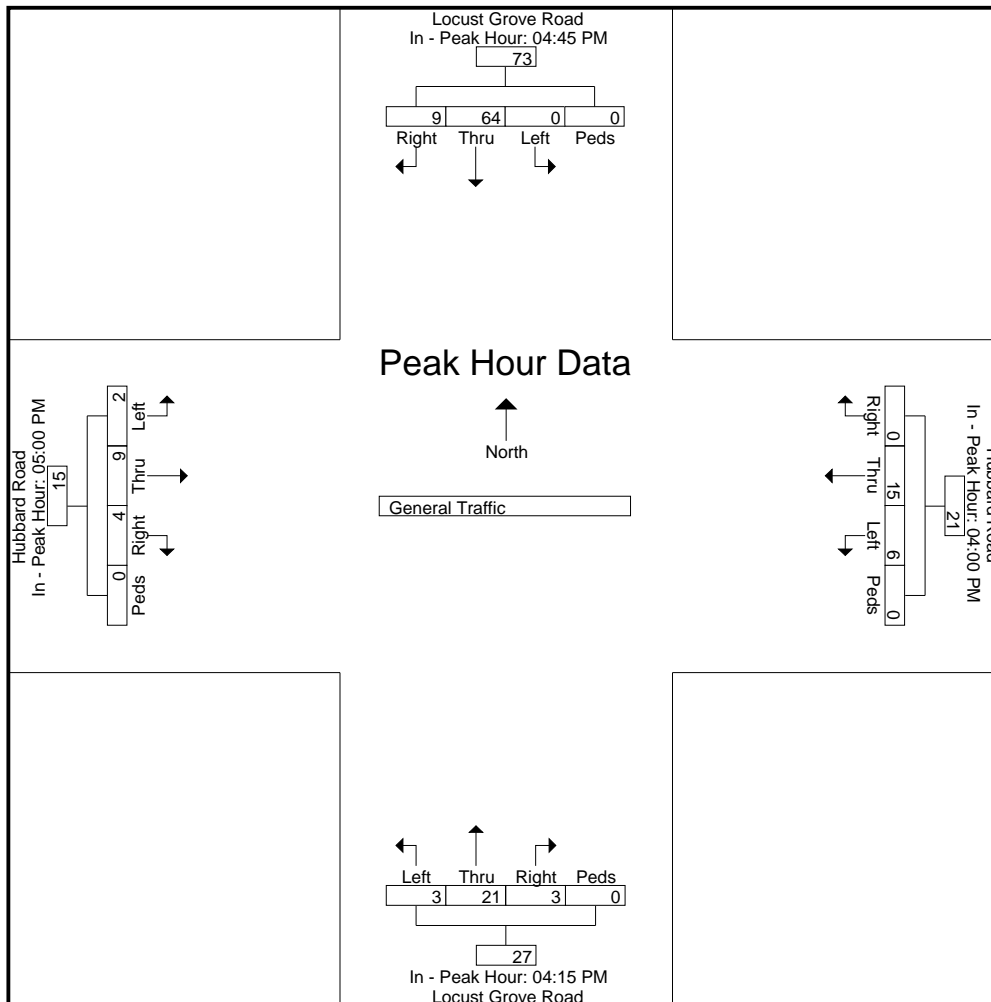
File Name : Locust Grove Rd & Hubbard Rd
 Site Code : 00000000
 Start Date : 8/7/2018
 Page No : 6

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM					04:00 PM					04:15 PM					05:00 PM				
+0 mins.	5	15	0	0	20	0	3	4	0	7	1	9	0	0	10	0	1	1	0	2
+15 mins.	1	16	0	0	17	0	1	1	0	2	1	3	0	0	4	1	3	1	0	5
+30 mins.	1	14	0	0	15	0	5	1	0	6	0	2	1	0	3	1	1	0	0	2
+45 mins.	2	19	0	0	21	0	6	0	0	6	1	7	2	0	10	2	4	0	0	6
Total Volume	9	64	0	0	73	0	15	6	0	21	3	21	3	0	27	4	9	2	0	15
% App. Total	12.3	87.7	0	0		0	71.4	28.6	0		11.1	77.8	11.1	0		26.7	60	13.3	0	
PHF	.450	.842	.000	.000	.869	.000	.625	.375	.000	.750	.750	.583	.375	.000	.675	.500	.563	.500	.000	.625



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Hubbard Rd

City, State: Ada County, Idaho

Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 7

Image 1



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 1

Groups Printed- General Traffic

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Columbia Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	1	1	2	0	4	1	12	0	0	13	2	11	0	0	13	0	41	15	0	56	86
07:15 AM	4	1	6	0	11	3	19	1	0	23	0	17	2	0	19	1	51	20	0	72	125
07:30 AM	8	7	7	0	22	4	21	2	0	27	3	9	0	0	12	3	69	14	0	86	147
07:45 AM	3	7	3	0	13	7	19	1	0	27	2	4	2	0	8	0	50	12	0	62	110
Total	16	16	18	0	50	15	71	4	0	90	7	41	4	0	52	4	211	61	0	276	468
08:00 AM	4	2	2	0	8	1	12	1	0	14	0	11	1	0	12	0	33	6	0	39	73
08:15 AM	1	3	1	0	5	5	10	0	0	15	4	10	1	0	15	2	19	8	0	29	64
08:30 AM	1	1	4	0	6	3	20	5	0	28	1	7	0	0	8	2	29	4	0	35	77
08:45 AM	0	2	3	0	5	5	11	1	0	17	1	5	1	0	7	2	25	4	0	31	60
Total	6	8	10	0	24	14	53	7	0	74	6	33	3	0	42	6	106	22	0	134	274

04:00 PM	6	14	6	0	26	7	41	2	0	50	1	0	1	0	2	2	13	0	0	15	93
04:15 PM	4	15	2	0	21	4	39	2	0	45	1	6	4	0	11	1	21	1	0	23	100
04:30 PM	12	12	5	0	29	1	44	2	0	47	0	8	0	0	8	1	18	2	0	21	105
04:45 PM	20	15	4	0	39	6	64	4	0	74	1	2	0	0	3	0	14	5	0	19	135
Total	42	56	17	0	115	18	188	10	0	216	3	16	5	0	24	4	66	8	0	78	433
05:00 PM	18	15	1	0	34	4	66	0	0	70	3	5	2	0	10	1	22	3	0	26	140
05:15 PM	16	12	6	0	34	7	68	3	0	78	1	2	0	0	3	1	29	3	0	33	148
05:30 PM	14	16	5	0	35	2	61	3	0	66	1	2	0	0	3	2	28	4	0	34	138
05:45 PM	16	13	4	0	33	5	43	6	0	54	0	4	1	0	5	2	28	2	0	32	124
Total	64	56	16	0	136	18	238	12	0	268	5	13	3	0	21	6	107	12	0	125	550
Grand Total	128	136	61	0	325	65	550	33	0	648	21	103	15	0	139	20	490	103	0	613	1725
Apprch %	39.4	41.8	18.8	0		10	84.9	5.1	0		15.1	74.1	10.8	0		3.3	79.9	16.8	0		
Total %	7.4	7.9	3.5	0	18.8	3.8	31.9	1.9	0	37.6	1.2	6	0.9	0	8.1	1.2	28.4	6	0	35.5	

L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

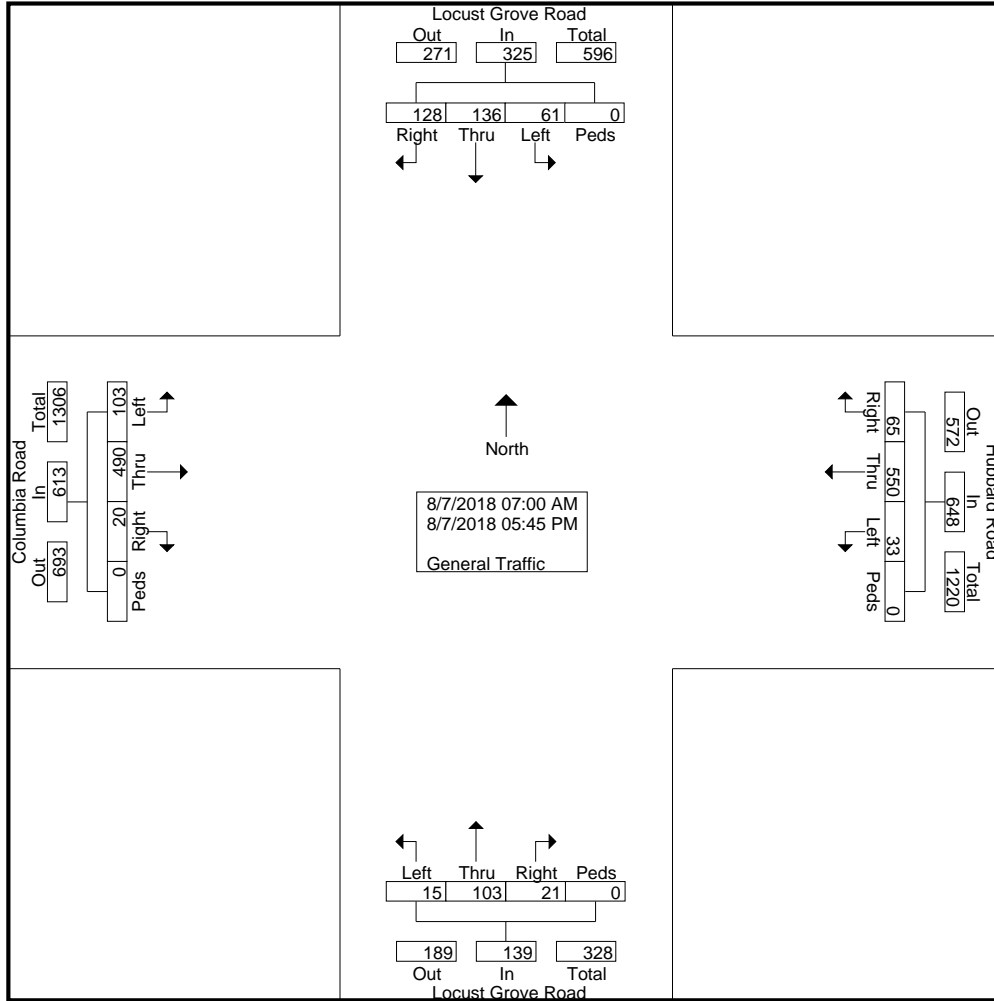
Control: All Stop

File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 2



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

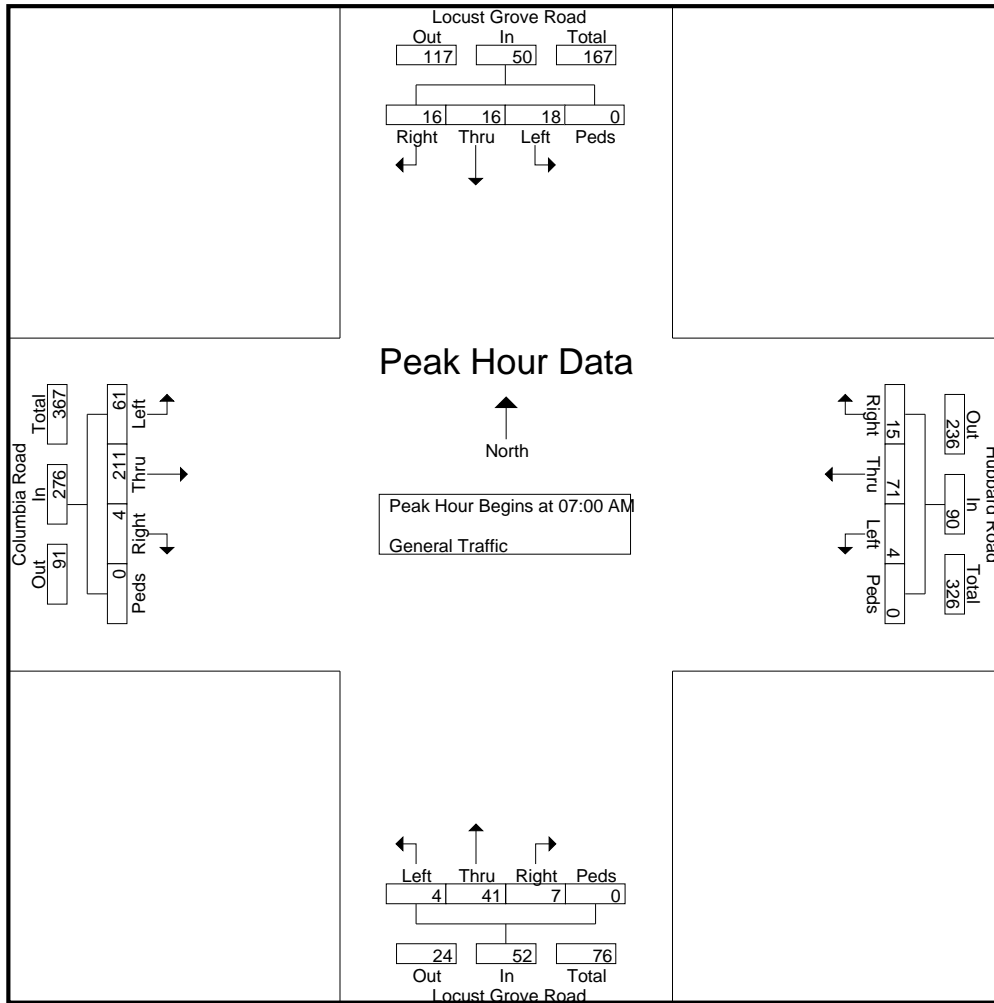
File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 3

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Columbia Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	1	1	2	0	4	1	12	0	0	13	2	11	0	0	13	0	41	15	0	56	86
07:15 AM	4	1	6	0	11	3	19	1	0	23	0	17	2	0	19	1	51	20	0	72	125
07:30 AM	8	7	7	0	22	4	21	2	0	27	3	9	0	0	12	3	69	14	0	86	147
07:45 AM	3	7	3	0	13	7	19	1	0	27	2	4	2	0	8	0	50	12	0	62	110
Total Volume	16	16	18	0	50	15	71	4	0	90	7	41	4	0	52	4	211	61	0	276	468
% App. Total	32	32	36	0		16.7	78.9	4.4	0		13.5	78.8	7.7	0		1.4	76.4	22.1	0		
PHF	.500	.571	.643	.000	.568	.536	.845	.500	.000	.833	.583	.603	.500	.000	.684	.333	.764	.763	.000	.802	.796



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

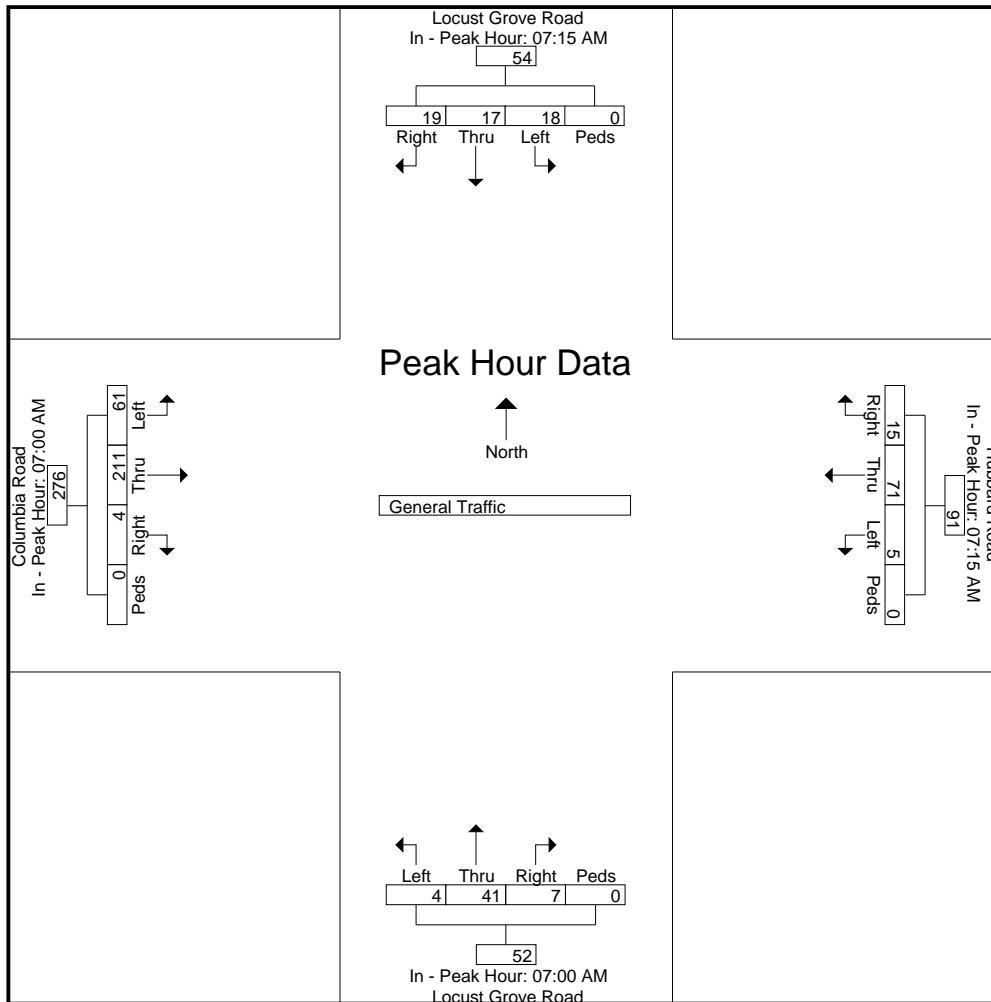
Page No : 4

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Columbia Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM					07:15 AM					07:00 AM					07:00 AM				
+0 mins.	4	1	6	0	11	3	19	1	0	23	2	11	0	0	13	0	41	15	0	56
+15 mins.	8	7	7	0	22	4	21	2	0	27	0	17	2	0	19	1	51	20	0	72
+30 mins.	3	7	3	0	13	7	19	1	0	27	3	9	0	0	12	3	69	14	0	86
+45 mins.	4	2	2	0	8	1	12	1	0	14	2	4	2	0	8	0	50	12	0	62
Total Volume	19	17	18	0	54	15	71	5	0	91	7	41	4	0	52	4	211	61	0	276
% App. Total	35.2	31.5	33.3	0		16.5	78	5.5	0		13.5	78.8	7.7	0		1.4	76.4	22.1	0	
PHF	.594	.607	.643	.000	.614	.536	.845	.625	.000	.843	.583	.603	.500	.000	.684	.333	.764	.763	.000	.802



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

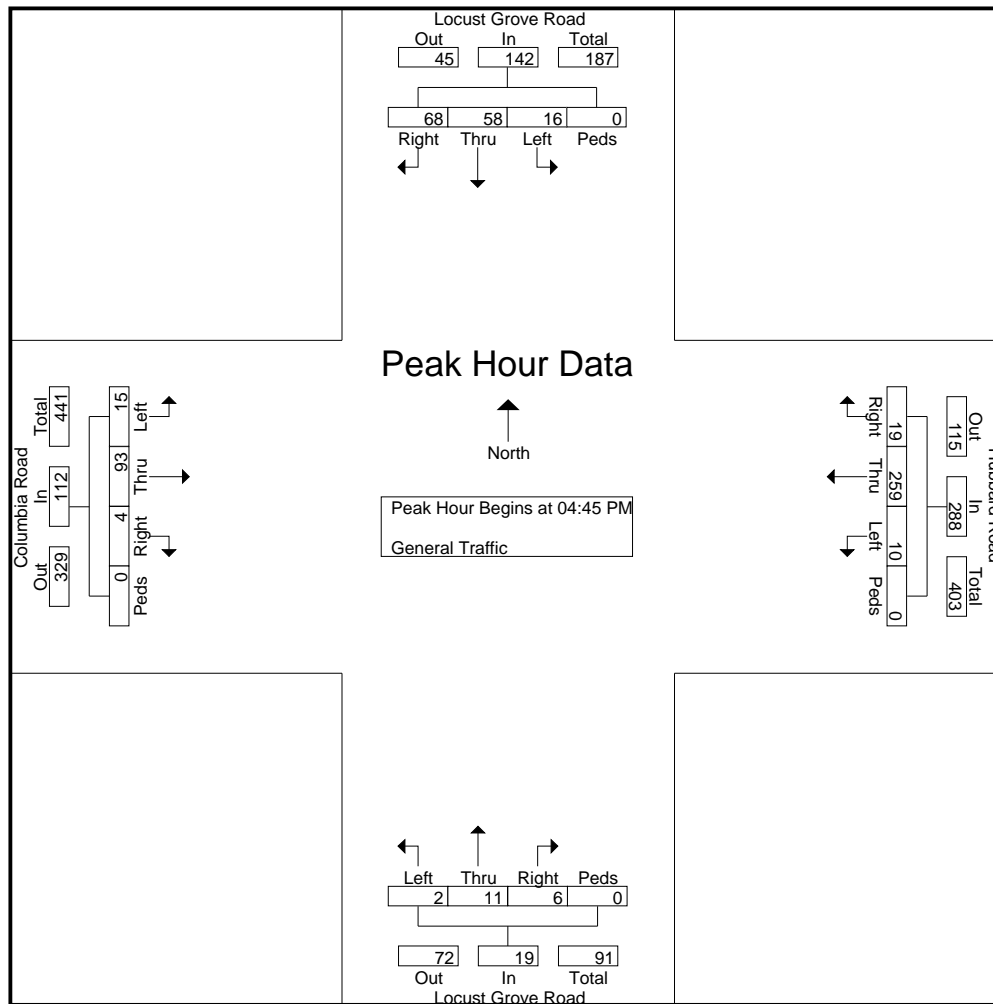
File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

Page No : 5

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Columbia Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	20	15	4	0	39	6	64	4	0	74	1	2	0	0	3	0	14	5	0	19	135
05:00 PM	18	15	1	0	34	4	66	0	0	70	3	5	2	0	10	1	22	3	0	26	140
05:15 PM	16	12	6	0	34	7	68	3	0	78	1	2	0	0	3	1	29	3	0	33	148
05:30 PM	14	16	5	0	35	2	61	3	0	66	1	2	0	0	3	2	28	4	0	34	138
Total Volume	68	58	16	0	142	19	259	10	0	288	6	11	2	0	19	4	93	15	0	112	561
% App. Total	47.9	40.8	11.3	0		6.6	89.9	3.5	0		31.6	57.9	10.5	0		3.6	83	13.4	0		
PHF	.850	.906	.667	.000	.910	.679	.952	.625	.000	.923	.500	.550	.250	.000	.475	.500	.802	.750	.000	.824	.948



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

File Name : Locust Grove Rd & Columbia Rd

Site Code : 00000000

Start Date : 8/7/2018

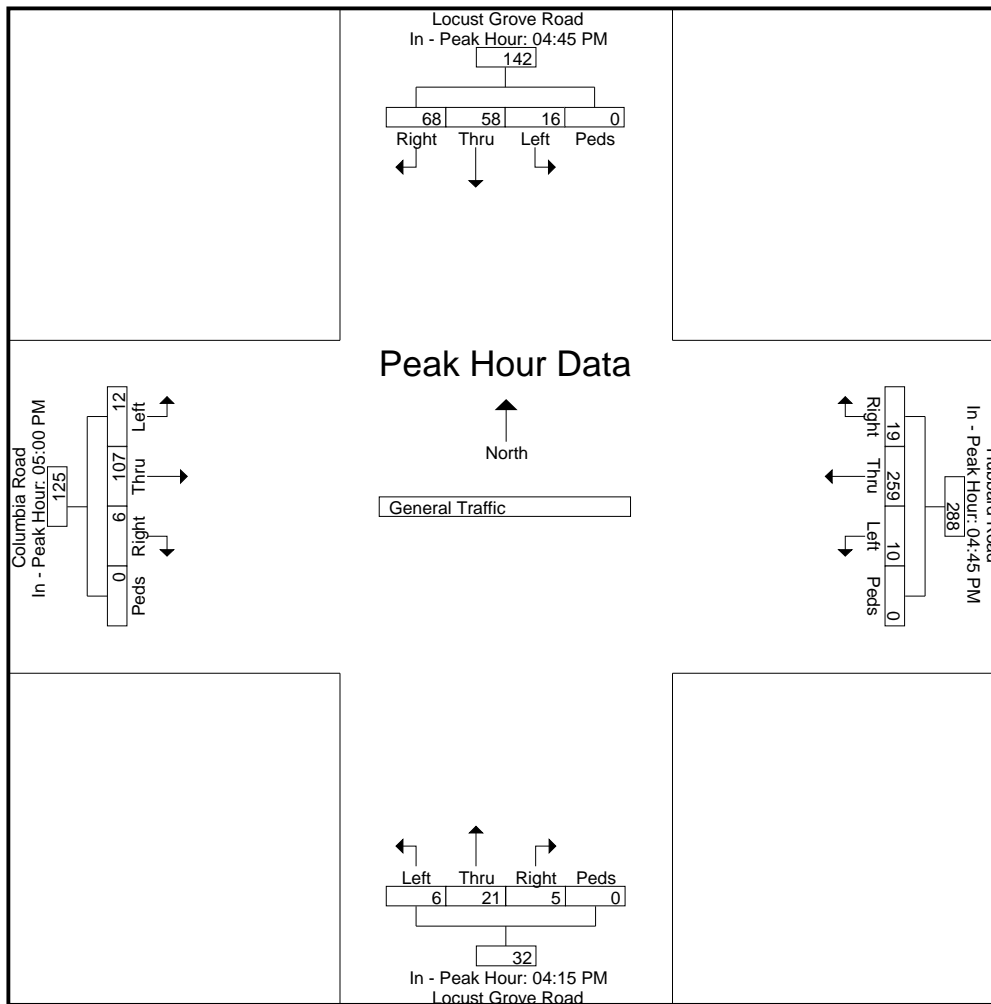
Page No : 6

Start Time	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Columbia Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					04:15 PM					05:00 PM				
+0 mins.	20	15	4	0	39	6	64	4	0	74	1	6	4	0	11	1	22	3	0	26
+15 mins.	18	15	1	0	34	4	66	0	0	70	0	8	0	0	8	1	29	3	0	33
+30 mins.	16	12	6	0	34	7	68	3	0	78	1	2	0	0	3	2	28	4	0	34
+45 mins.	14	16	5	0	35	2	61	3	0	66	3	5	2	0	10	2	28	2	0	32
Total Volume	68	58	16	0	142	19	259	10	0	288	5	21	6	0	32	6	107	12	0	125
% App. Total	47.9	40.8	11.3	0		6.6	89.9	3.5	0		15.6	65.6	18.8	0		4.8	85.6	9.6	0	
PHF	.850	.906	.667	.000	.910	.679	.952	.625	.000	.923	.417	.656	.375	.000	.727	.750	.922	.750	.000	.919



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 431-2993

Study: WHPA0002

Intersection: Locust Grove / Columbia Rd

City, State: Ada County, Idaho

Control: All Stop

File Name : Locust Grove Rd & Columbia Rd

Site Code : 0000000

Start Date : 8/7/2018

Page No : 7

Image 1



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 1

Groups Printed- General Traffic

Start Time	Locust Grove Road From North					Lake Hazel Road From East					Locust Grove Road From South					Lake Hazel Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	4	5	6	0	15	21	41	1	0	63	3	30	0	0	33	0	39	6	0	45	156
07:15 AM	0	10	7	0	17	20	56	4	0	80	4	23	1	0	28	2	65	2	1	70	195
07:30 AM	2	5	8	0	15	11	53	1	0	65	3	18	2	0	23	0	73	6	0	79	182
07:45 AM	2	9	10	0	21	12	34	2	0	48	1	35	0	0	36	0	71	6	0	77	182
Total	8	29	31	0	68	64	184	8	0	256	11	106	3	0	120	2	248	20	1	271	715
08:00 AM	3	8	14	0	25	8	34	1	1	44	3	26	0	0	29	1	68	2	1	72	170
08:15 AM	1	5	6	0	12	12	39	1	0	52	3	20	1	0	24	1	50	7	0	58	146
08:30 AM	3	8	8	0	19	16	28	3	0	47	2	23	0	0	25	0	36	1	0	37	128
08:45 AM	1	13	8	0	22	10	36	0	0	46	3	28	0	0	31	1	38	6	0	45	144
Total	8	34	36	0	78	46	137	5	1	189	11	97	1	0	109	3	192	16	1	212	588

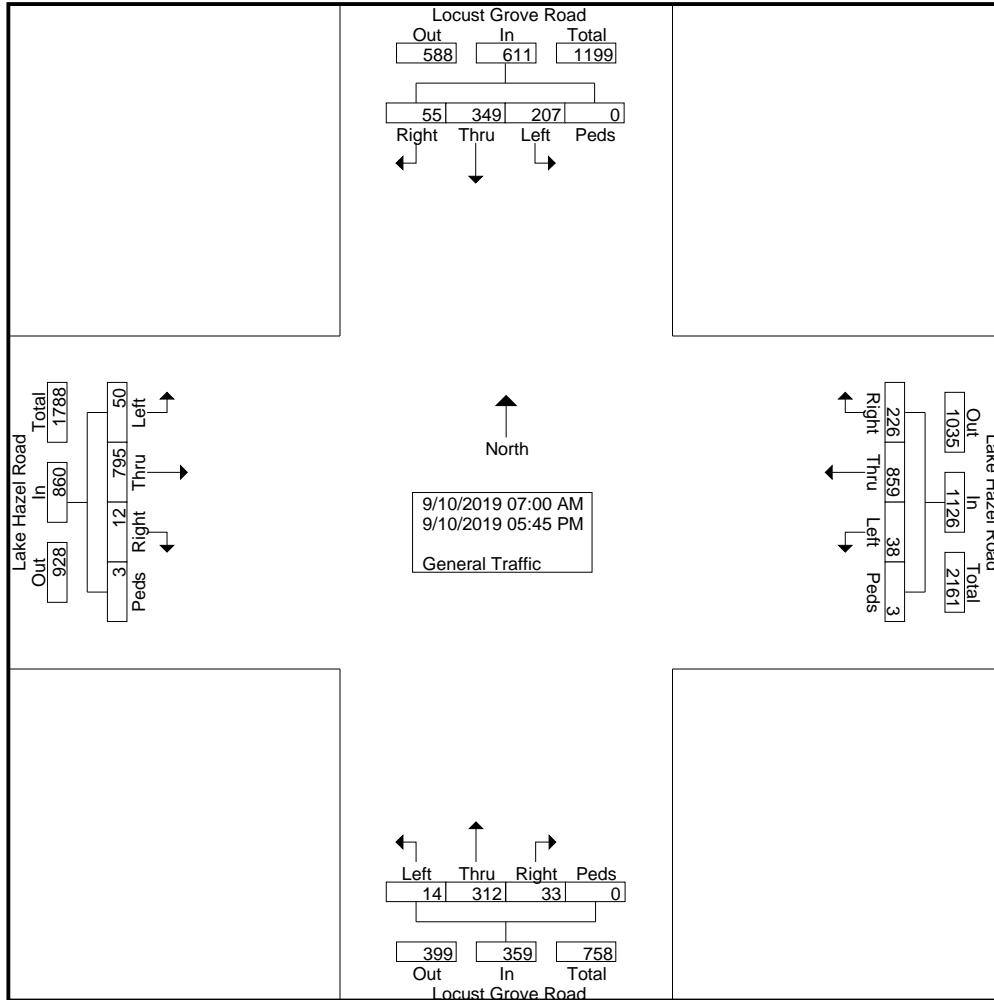
04:00 PM	4	28	13	0	45	14	45	4	0	63	0	10	1	0	11	1	36	2	0	39	158
04:15 PM	4	22	17	0	43	11	74	4	0	89	0	13	2	0	15	0	37	3	1	41	188
04:30 PM	3	33	18	0	54	12	70	3	0	85	1	13	0	0	14	2	46	2	0	50	203
04:45 PM	7	42	20	0	69	11	68	1	2	82	1	9	1	0	11	1	39	0	0	40	202
Total	18	125	68	0	211	48	257	12	2	319	2	45	4	0	51	4	158	7	1	170	751
05:00 PM	6	37	19	0	62	18	78	1	0	97	2	14	4	0	20	0	57	1	0	58	237
05:15 PM	3	47	26	0	76	22	70	4	0	96	3	15	1	0	19	2	56	1	0	59	250
05:30 PM	8	31	18	0	57	16	73	5	0	94	2	19	0	0	21	0	37	3	0	40	212
05:45 PM	4	46	9	0	59	12	60	3	0	75	2	16	1	0	19	1	47	2	0	50	203
Total	21	161	72	0	254	68	281	13	0	362	9	64	6	0	79	3	197	7	0	207	902
Grand Total	55	349	207	0	611	226	859	38	3	1126	33	312	14	0	359	12	795	50	3	860	2956
Apprch %	9	57.1	33.9	0		20.1	76.3	3.4	0.3		9.2	86.9	3.9	0		1.4	92.4	5.8	0.3		
Total %	1.9	11.8	7	0	20.7	7.6	29.1	1.3	0.1	38.1	1.1	10.6	0.5	0	12.1	0.4	26.9	1.7	0.1	29.1	

L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 2



L2 Data Collection

L2DataCollection.com
 Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

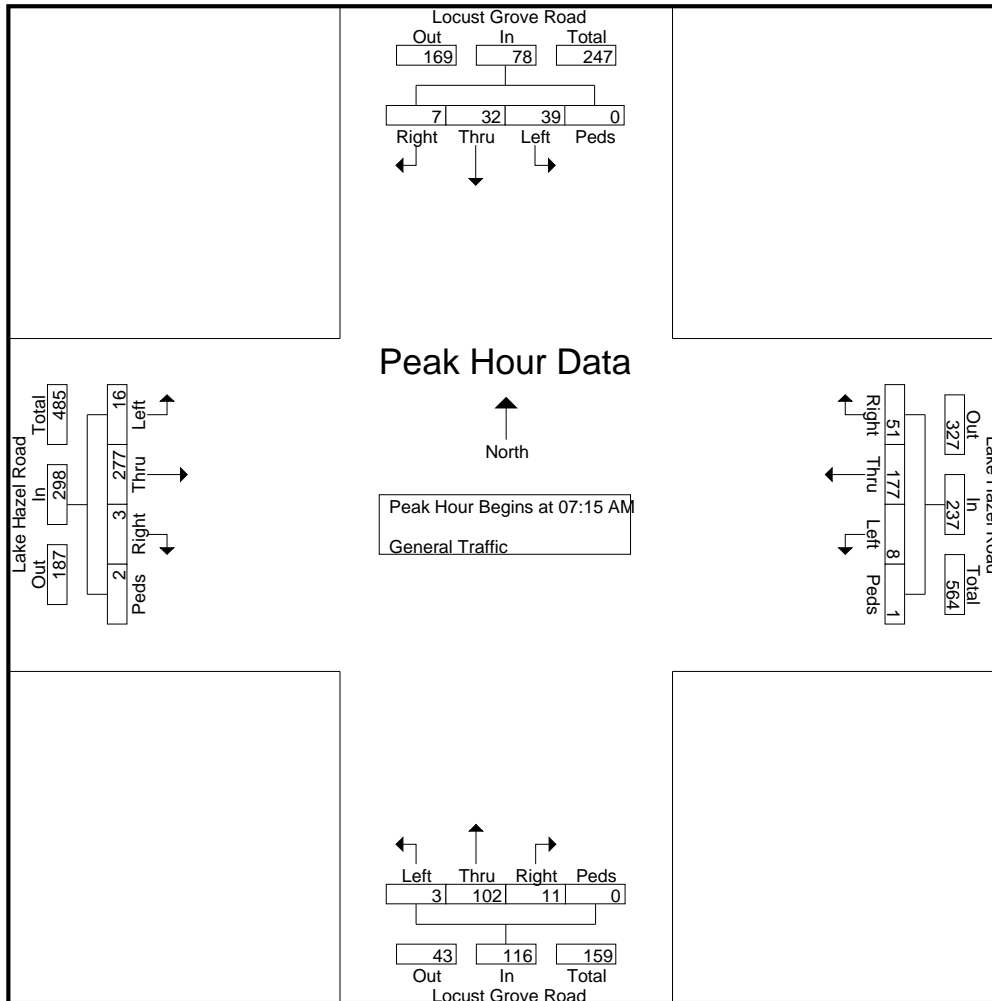
File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 3

Start Time	Locust Grove Road From North					Lake Hazel Road From East					Locust Grove Road From South					Lake Hazel Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

07:15 AM	0	10	7	0	17	20	56	4	0	80	4	23	1	0	28	2	65	2	1	70	195
07:30 AM	2	5	8	0	15	11	53	1	0	65	3	18	2	0	23	0	73	6	0	79	182
07:45 AM	2	9	10	0	21	12	34	2	0	48	1	35	0	0	36	0	71	6	0	77	182
08:00 AM	3	8	14	0	25	8	34	1	1	44	3	26	0	0	29	1	68	2	1	72	170
Total Volume	7	32	39	0	78	51	177	8	1	237	11	102	3	0	116	3	277	16	2	298	729
% App. Total	9	41	50	0		21.5	74.7	3.4	0.4		9.5	87.9	2.6	0		1	93	5.4	0.7		
PHF	.583	.800	.696	.000	.780	.638	.790	.500	.250	.741	.688	.729	.375	.000	.806	.375	.949	.667	.500	.943	.935



L2 Data Collection

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 Idaho (208) 860-7554 Utah (801) 413-2993

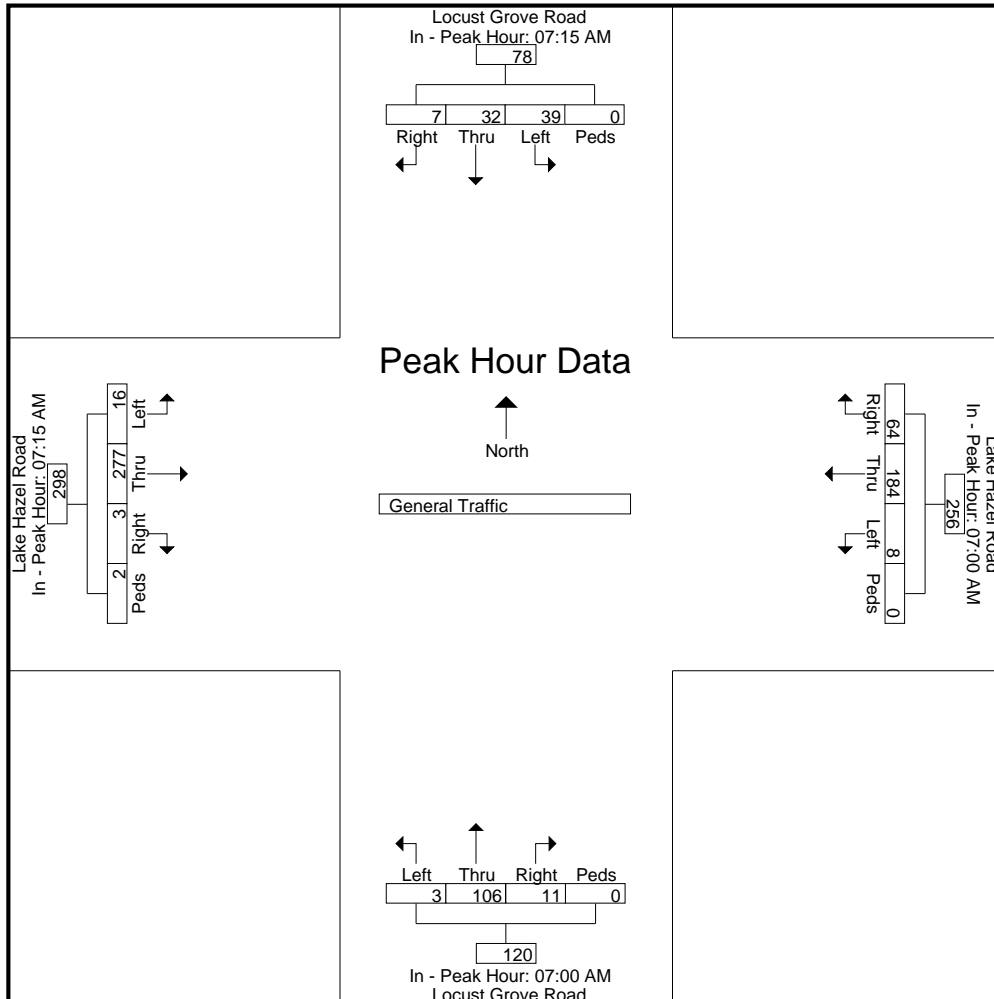
Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 4

Start Time	Locust Grove Road From North					Lake Hazel Road From East					Locust Grove Road From South					Lake Hazel Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:15 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	0	10	7	0	17	21	41	1	0	63	3	30	0	0	33	2	65	2	1	70
+15 mins.	2	5	8	0	15	20	56	4	0	80	4	23	1	0	28	0	73	6	0	79
+30 mins.	2	9	10	0	21	11	53	1	0	65	3	18	2	0	23	0	71	6	0	77
+45 mins.	3	8	14	0	25	12	34	2	0	48	1	35	0	0	36	1	68	2	1	72
Total Volume	7	32	39	0	78	64	184	8	0	256	11	106	3	0	120	3	277	16	2	298
% App. Total	9	41	50	0		25	71.9	3.1	0		9.2	88.3	2.5	0		1	93	5.4	0.7	
PHF	.583	.800	.696	.000	.780	.762	.821	.500	.000	.800	.688	.757	.375	.000	.833	.375	.949	.667	.500	.943



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Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

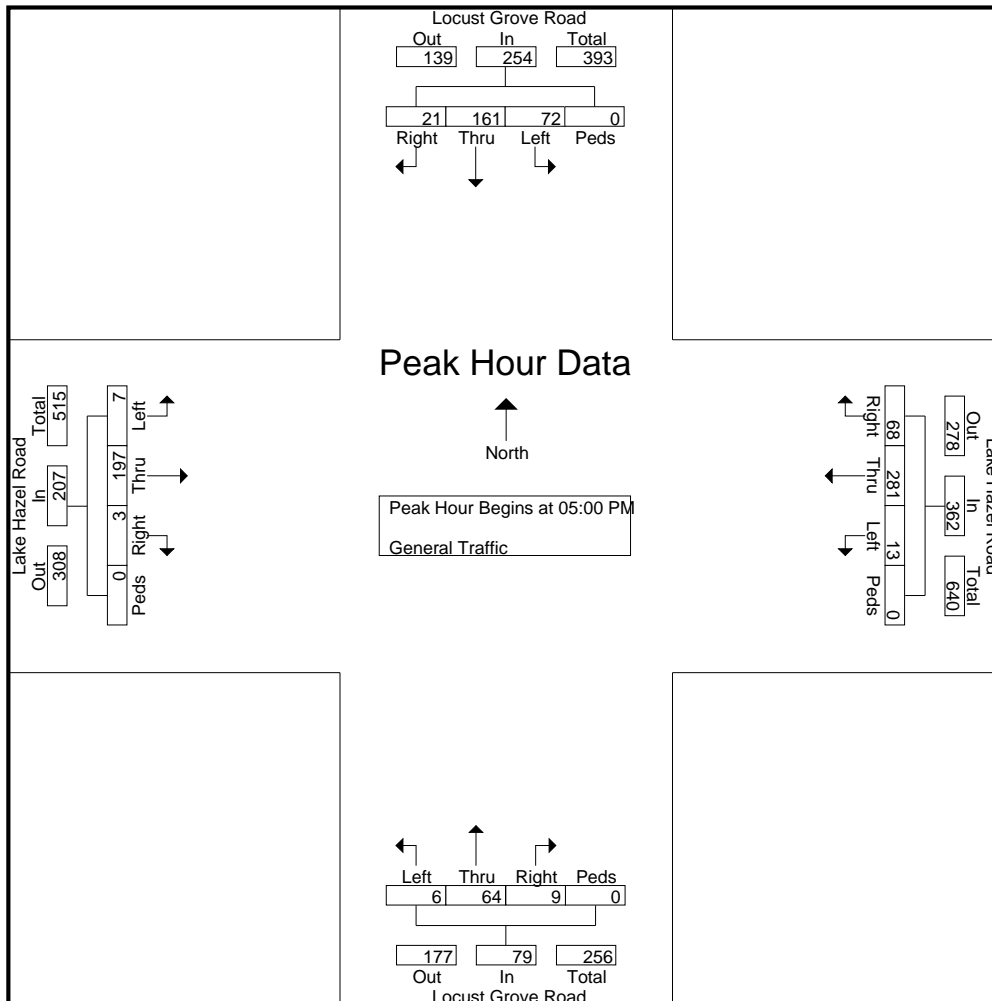
File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 5

Start Time	Locust Grove Road From North					Lake Hazel Road From East					Locust Grove Road From South					Lake Hazel Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	6	37	19	0	62	18	78	1	0	97	2	14	4	0	20	0	57	1	0	58	237
05:15 PM	3	47	26	0	76	22	70	4	0	96	3	15	1	0	19	2	56	1	0	59	250
05:30 PM	8	31	18	0	57	16	73	5	0	94	2	19	0	0	21	0	37	3	0	40	212
05:45 PM	4	46	9	0	59	12	60	3	0	75	2	16	1	0	19	1	47	2	0	50	203
Total Volume	21	161	72	0	254	68	281	13	0	362	9	64	6	0	79	3	197	7	0	207	902
% App. Total	8.3	63.4	28.3	0		18.8	77.6	3.6	0		11.4	81	7.6	0		1.4	95.2	3.4	0		
PHF	.656	.856	.692	.000	.836	.773	.901	.650	.000	.933	.750	.842	.375	.000	.940	.375	.864	.583	.000	.877	.902



L2 Data Collection

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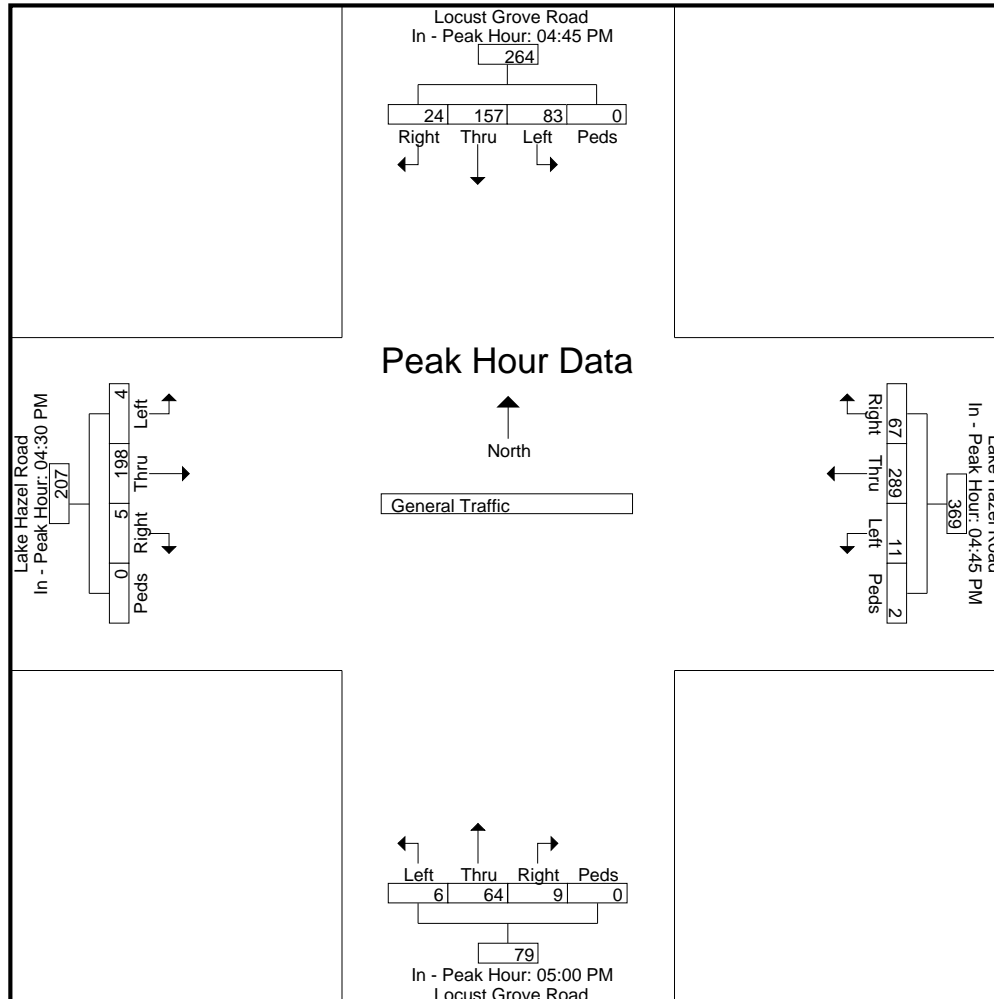
Study: WHPA0005
 Intersection: Locust Grove / Lake Hazel
 City, State: Kuna, Idaho
 Control: Stop Sign

File Name : Locust Grove Rd & Lake Hazel Rd
 Site Code : 00000000
 Start Date : 9/10/2019
 Page No : 6

Start Time	Locust Grove Road From North					Lake Hazel Road From East					Locust Grove Road From South					Lake Hazel Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:45 PM					04:45 PM					05:00 PM					04:30 PM				
+0 mins.	7	42	20	0	69	11	68	1	2	82	2	14	4	0	20	2	46	2	0	50
+15 mins.	6	37	19	0	62	18	78	1	0	97	3	15	1	0	19	1	39	0	0	40
+30 mins.	3	47	26	0	76	22	70	4	0	96	2	19	0	0	21	0	57	1	0	58
+45 mins.	8	31	18	0	57	16	73	5	0	94	2	16	1	0	19	2	56	1	0	59
Total Volume	24	157	83	0	264	67	289	11	2	369	9	64	6	0	79	5	198	4	0	207
% App. Total	9.1	59.5	31.4	0		18.2	78.3	3	0.5		11.4	81	7.6	0		2.4	95.7	1.9	0	
PHF	.750	.835	.798	.000	.868	.761	.926	.550	.250	.951	.750	.842	.375	.000	.940	.625	.868	.500	.000	.877



L2 Data Collection

L2DataCollection.com

Idaho (208) 860-7554 Utah (801) 413-2993

Study: WHPA0005
Intersection: Locust Grove / Lake Hazel
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Lake Hazel Rd
Site Code : 00000000
Start Date : 9/10/2019
Page No : 7

Image 1



TRAFFIC SIGNAL WARRANTS

City/Town:	Kuna, ID	Analysis Performed By:	Kbaker
County:	ADA County	Date Analysis Performed:	5/4/2020
Division:		Project Number if Applicable:	
Data Date:	2025 Background	Weather Conditions:	
Major Route:	Columbia	Apr. Lanes: 1	Critical Approach Speed (mph): 50
Minor Route:	Locust Grove	Apr. Lanes: 1	

Volume Level Criteria

- 1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
- 2. Is the intersection in a built-up area or isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied. Satisfied: Yes No

Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied, given adequate trials of other remedial measures have been tried.

Adequate trial(s) of other remedial measures tried: Yes No

List Remedial Measures Tried (Required for 80% Combination of A & B)

Condition A - Minimum Vehicular Volume & Condition B - Interruption of Continuous Traffic

100% Satisfied: Yes No

(Used if neither Condition A or B is satisfied) 80% Satisfied: Yes No

		(volumes in veh/hr)		Minimum Requirements		Eight Highest Hours								
						12 PM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	
		Approach Lanes	1		2 or more									
		Volume Level	100%	70%	100%	70%								
W - 1A	100%	Both Approaches on Major Street	500	350	600	420	364	371	331	596	921	1,199	755	464
		Highest Approach on Minor Street	150	105	200	140	186	189	169	304	470	612	385	237
W - 1B	100%	Both Approaches on Major Street	750	525	900	630	364	371	331	596	921	1,199	755	464
		Highest Approach on Minor Street	75	53	100	70	186	189	169	304	470	612	385	237
W - 1A	80%	Both Approaches on Major Street	400	280	480	336	364	371	331	596	921	1,199	755	464
		Highest Approach on Minor Street	120	84	160	112	186	189	169	304	470	612	385	237
W - 1B	80%	Both Approaches on Major Street	600	420	720	504	364	371	331	596	921	1,199	755	464
		Highest Approach on Minor Street	60	42	80	56	186	189	169	304	470	612	385	237

TRAFFIC SIGNAL WARRANTS

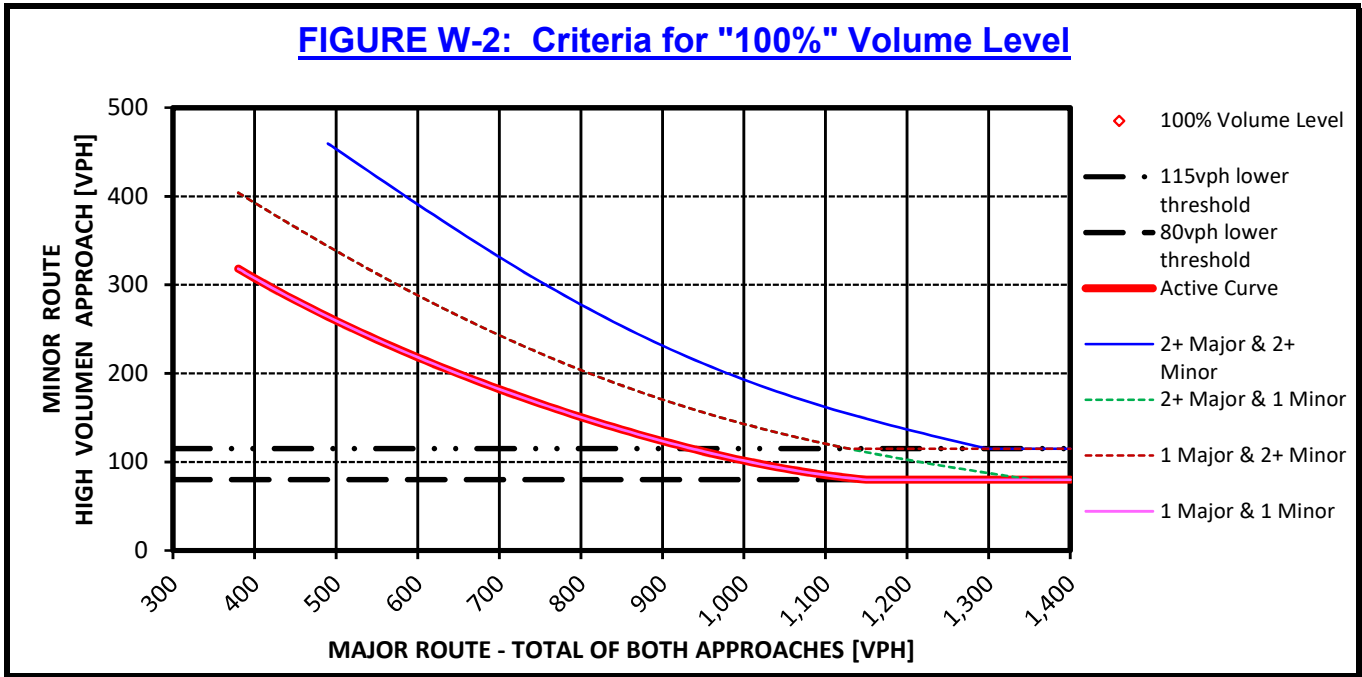
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

Satisfied: Yes No

If all four points lie above the appropriate line, then this warrant is satisfied.

(Volumes in veh/hr)	Four Highest Hours			
	3 PM	4 PM	5 PM	6 PM
SUM of Both Approaches on Major Street	596	921	1,199	755
Highest Minor Street Approach	304	470	612	385

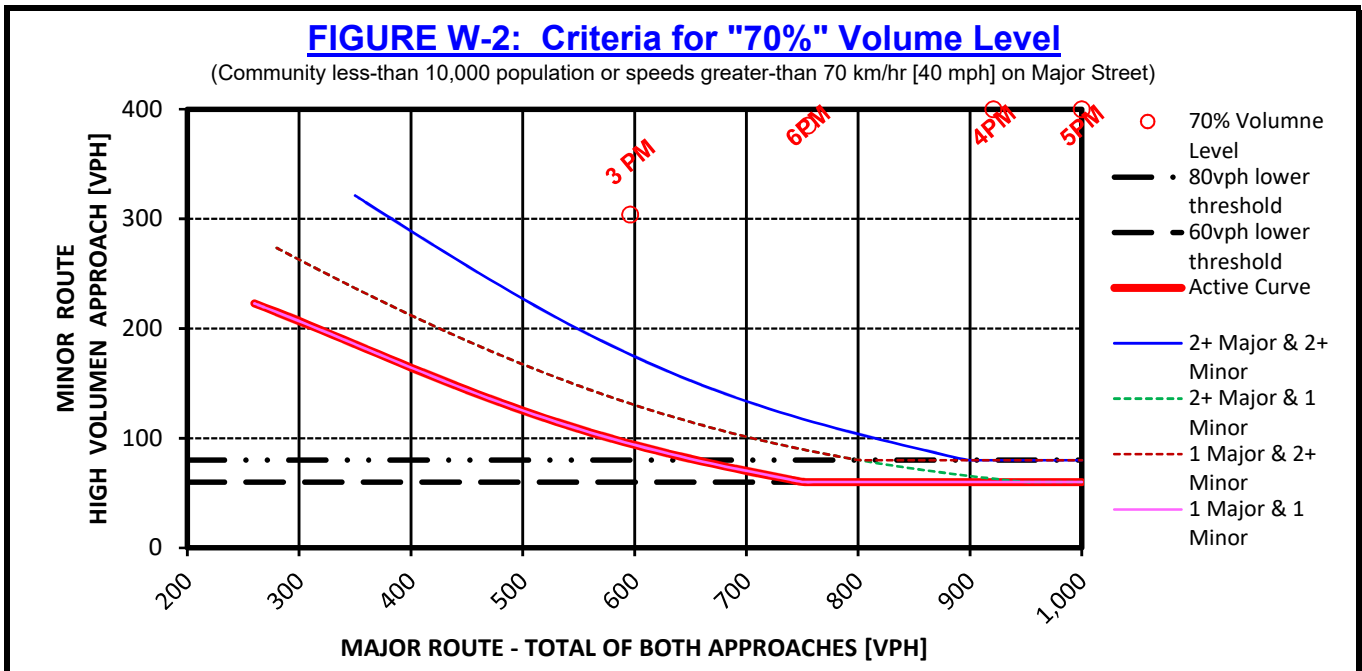
FIGURE W-2: Criteria for "100%" Volume Level



* Note: 115 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-2: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: 80 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

TRAFFIC SIGNAL WARRANTS

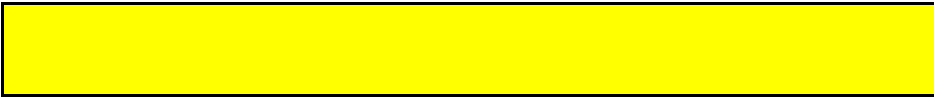
WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

Applicable: Yes No
 Satisfied: Yes No

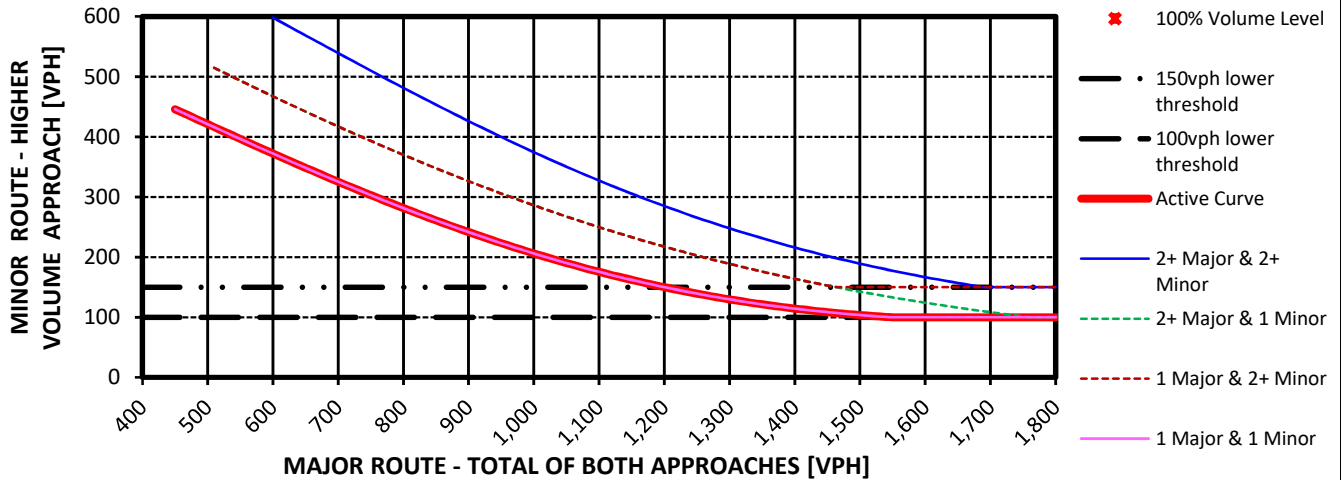
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:



Peak Hour Data		
Peak Hour	Major Route	Minor Route
5PM	1,199	612

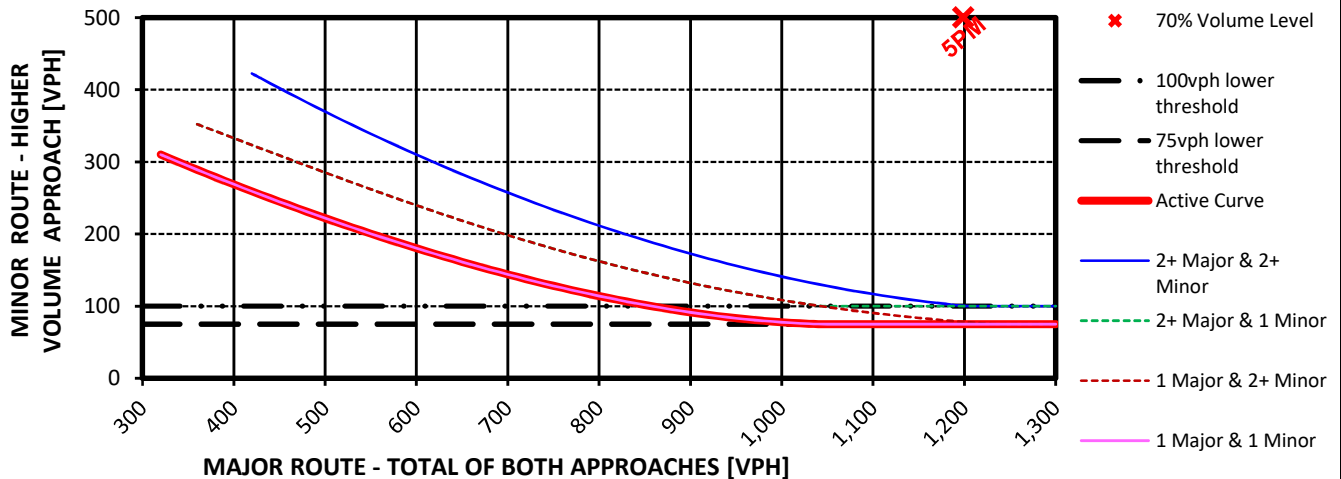
FIGURE W-3: Criteria for "100%" Volume Level



* Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

DELAY CRITERIA	1. Delay on Minor Approach (vehicle-hours)				2. Volume on Minor Approach (veh/hr)				3. Total Entering Volume (veh/hr)						
	Approaches		Lanes		Approaches		Lanes		Number of Approaches		Volume Criteria				
	Approaches	1	2	Approaches	1	2	3	4	No. of Approaches	3	4	Volume Criteria	650	800	
	Delay Criteria:	4.0	5.0	Volume Criteria	100	150	4 or more		Volume Criteria	650	800	Volume :			
Delay:			Volume :			Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO		
Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO

TRAFFIC SIGNAL WARRANTS

WARRANT 4 - PEDESTRIAN VOLUME

Satisfied: Yes No

Pedestrian Signal Location Criteria		Fulfilled?	
		Yes	No
The nearest traffic control device (signal or STOP sign) controlling traffic on the major route is more than 90m (300 ft) away:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	
If no above, will this proposed signal restrict the progressive movement of traffic?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

Vehicle volumes in veh/hr and Pedestrian volumes in ped/hr	Four Greatest Hours				Peak Hour
SUM of Both Approaches on Major Route					
Pedestrians crossing the Major Route					

FIGURE W-4a: Criteria for 70% Volume Level, Four-Hour Volumes

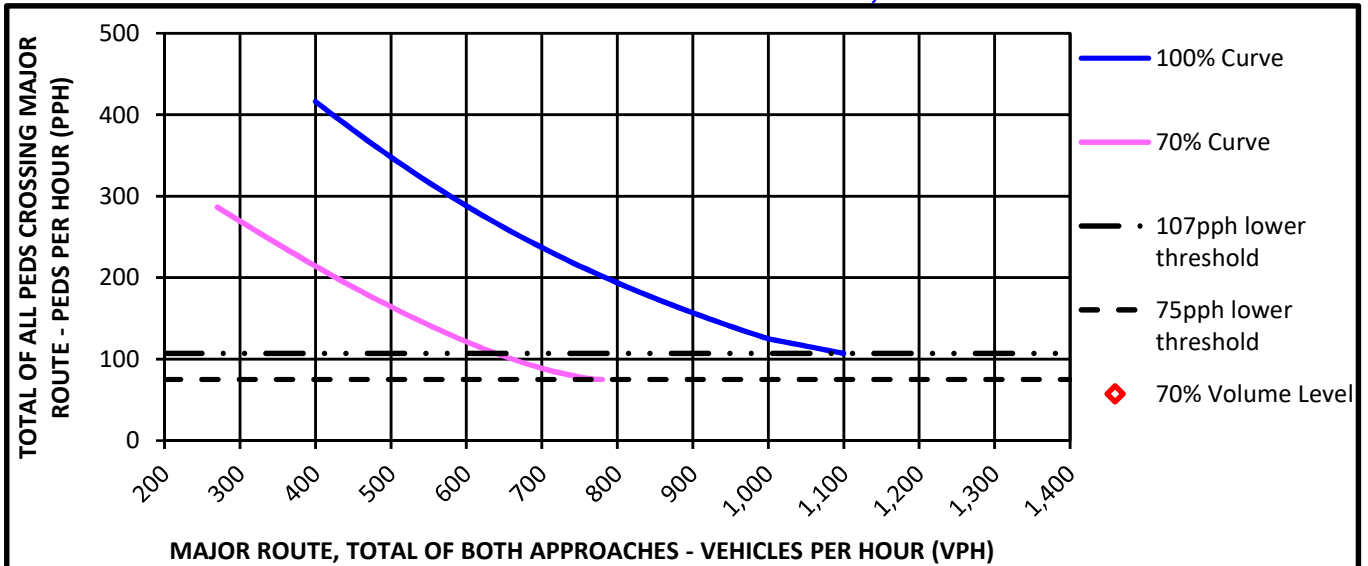
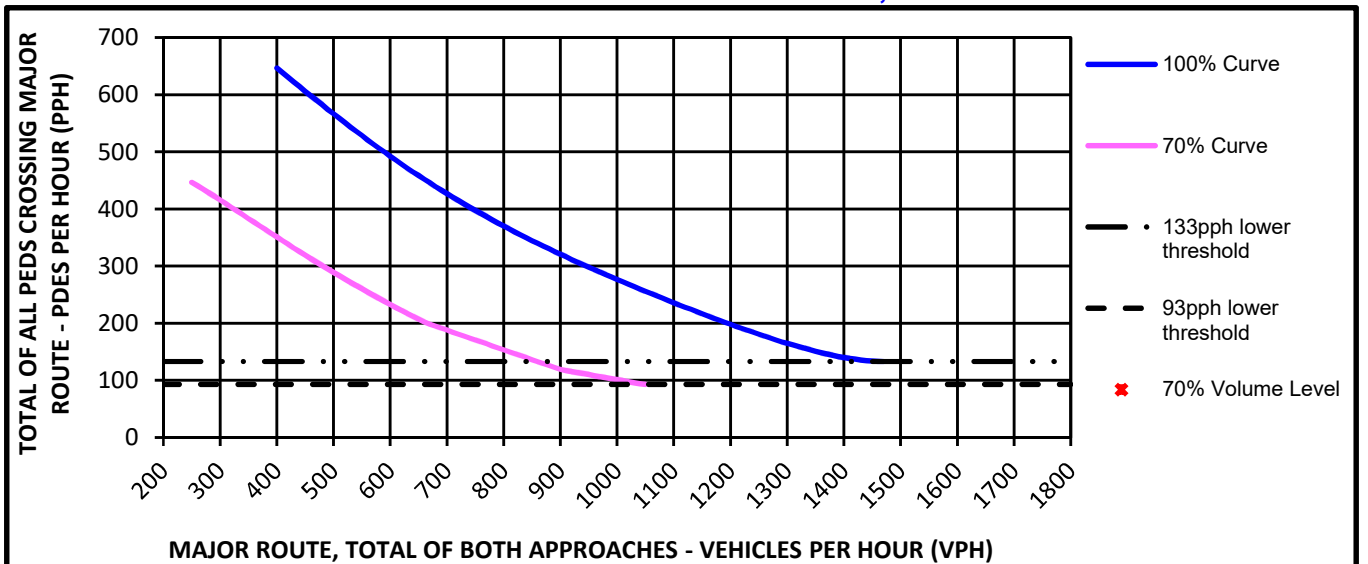


FIGURE W-4b: Criteria for 70% Volume Level, Peak Hour Volume



TRAFFIC SIGNAL WARRANTS

WARRANT 5 - SCHOOL CROSSING

Satisfied: Yes No

This warrant is intended for application where the fact that schoolchildren crossing the major route is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word "schoolchildren" includes elementary through high school students. This warrant is satisfied if all three of the criteria below are fulfilled after remedial measures have been considered.

Any remedial measures implemented in or around the intersection to improve the safety of the students as noted in Section **4C.06 Warrant 5, School Crossing** in the MUTCD:

Criteria			Fulfilled?	
			Yes	No
1. Enter the number of schoolchildren crossing the major route along with the hour this occurs. The hour can be any 60 minute interval (ex 2:15 PM - 3:15 PM enter 2:15 - 3:15). Requires a minimum of 20 schoolchildren during the any hour.	Num. of Students	Highest Crossing Hour Period		X
2. For both the morning (AM) and afternoon (PM) periods of operation, enter the number of adequate gaps observed for each period and the number of minutes each period lasted. Requires one period to operate with fewer gaps than the number of minutes in the period.	AM PM	Period Minutes Gaps		X
3. Is the nearest traffic signal along the major route more than 90m (300 ft) from this crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If the signal is within 90m (300 ft) of an existing signalize intersection, will it restrict progressive movement of traffic? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				X

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Satisfied: Yes No

Progressive movement in a coordinated signal system sometimes necessitates the installation of traffic control signals at intersections that would not otherwise be considered in order to maintain proper platooning of vehicles. This warrant is satisfied if the below criteria is satisfied as follows: criteria 1 is satisfied and either criteria 2 or 3 is satisfied.

Criteria		Fulfilled?	
		Yes	No
1. The inclusion of this proposed signal, into the coordinated system, does not result in a signal spacing of less than 305m (1,000 ft)?			X
a. On a one-way street or a street that has traffic predominantly in one direction, are the adjacent traffic control signals so far apart that they do not provide the necessary degree of vehicular platooning?			X
2. b. On a two-way street, do adjacent traffic control signals not provide the necessary degree of platooning and will the proposed and adjacent traffic control signals collectively provide a progressive operation?			X

TRAFFIC SIGNAL WARRANTS

WARRANT 7 - CRASH EXPERIENCE

Satisfied: Yes No

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider the installation of a traffic control signal. The need for a traffic control signal shall be considered if an engineering study finds that criteria 1, 2, and 3 are met.

Criteria			Fulfilled?	
			Yes	No
1. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency as shown below:				
				X
2. How many crashes within the past 12 months? For this criteria to be met, five or more reported crashes, of types susceptible to correction by the installation of a traffic control signal, must have occurred.				X
3. If Warrant 1A or Warrant 1B are 80 percent satisfied of the current values or if Warrant 4, 4-hour or peak, is met at the 80 percent values.			Met?	
			Yes	No
Warrant 1, Condition A, Minimum Vehicular Volume (80 percent satisfied):				X
Warrant 1, Condition B, Interruption of Continuous Traffic (80 percent satisfied):				X
Warrant 4, Four-Hour Volume (80 percent satisfied):				X
Warrant 4, Peak Hour Volume (80 percent satisfied):				X
				X

WARRANT 8 - ROADWAY NETWORK

Satisfied: Yes No

This warrant is used to encourage the concentration and organization of traffic flow on a roadway network. This warrant is satisfied if one of the following 2 criteria is met and both routes meet at least one of the characteristics of a Major Route below.

Criteria			Met?		Fulfilled?	
			Yes	No	Yes	No
1. Both of the criteria to the right are required in order to be met.	a. Please enter the total existing, or immediately projected, entering traffic volume during the peak hour of a typical weekday. Requires a minimum of 1,000 vehicles to be met.			X		X
	b. Based on an engineering study, does the 5 year projected traffic volumes, for this location, meet one or more of Warrants 1, 2, or 3 during an average weekday? *			X		
2. Enter the total existing, or immediately projected, entering volume for each of any 5 hours of a non-normal business day. (Saturday or Sunday). 1,000 vph for each hour required.						X

* Supporting data required for verification of the projected 5 year traffic Warrants.

A major route, as used in this signal warrant, shall have at least one of the following characteristics:			Met?		Fulfilled?	
			Yes	No	Yes	No
Characteristics of Major Routes						
1. Is it a part of the street or highway system that serves as the principal roadway network for through traffic flow?	Major Route		X			
	* Minor Route		X			
2. Does it include rural or suburban highways outside, entering, or traversing a city?	Major Route		X			X
	* Minor Route		X			
3. Does it appear as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study?	Major Route		X			
	* Minor Route		X			

* This is a minor route, but for the purposes of this Warrant, shall be considered as the other major route.

Note: Supporting data shall be required to verify the routes meet one of the characteristics of a major route.

TRAFFIC SIGNAL WARRANTS

WARRANT 9 - INTERSECTION NEAR A GRADE CROSSING

Applicable
 Yes No

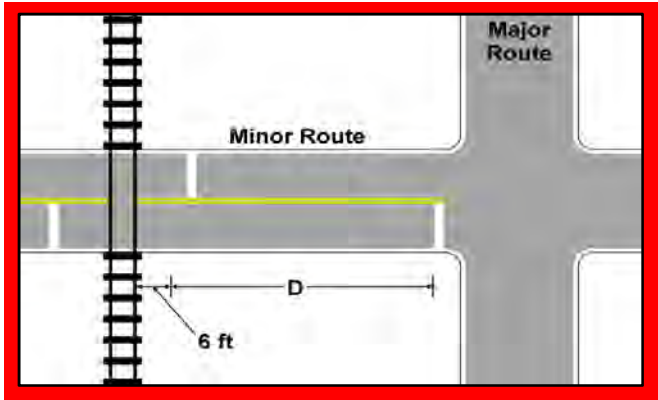
The need for a traffic control signal may be considered if an intersection that is controlled by a STOP or YIELD sign has a rail crossing within 140 feet of the stop/yield line and the highest Equivalent Minor Approach Traffic value lies above the curve represented on the graph below.

Minor Route Adjustment Factors - Enter the following:	
1. The number of occurrences of rail traffic/day:	
2. The percentage of "High-Occupancy Buses" crossing the track/day: <i>(A high-occupancy bus is defined as a bus occupied by at least 20 people)</i>	
3. The percentage of Tractor-trailer Trucks crossing the track/day:	

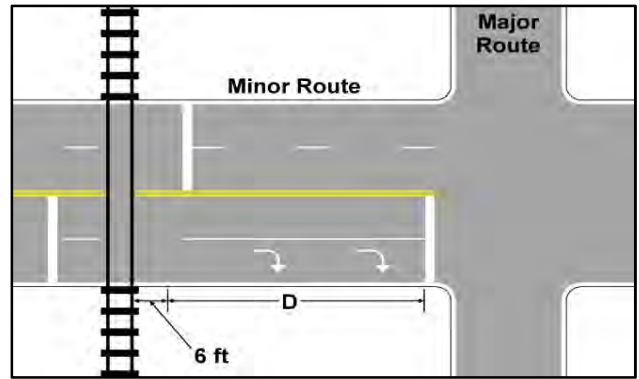
Satisfied: Yes No

Peak Hour Data		
Peak Hour	Major Route	Minor Route

Enter the distance value "D" from the STOP/YIELD bar to the track as shown below:

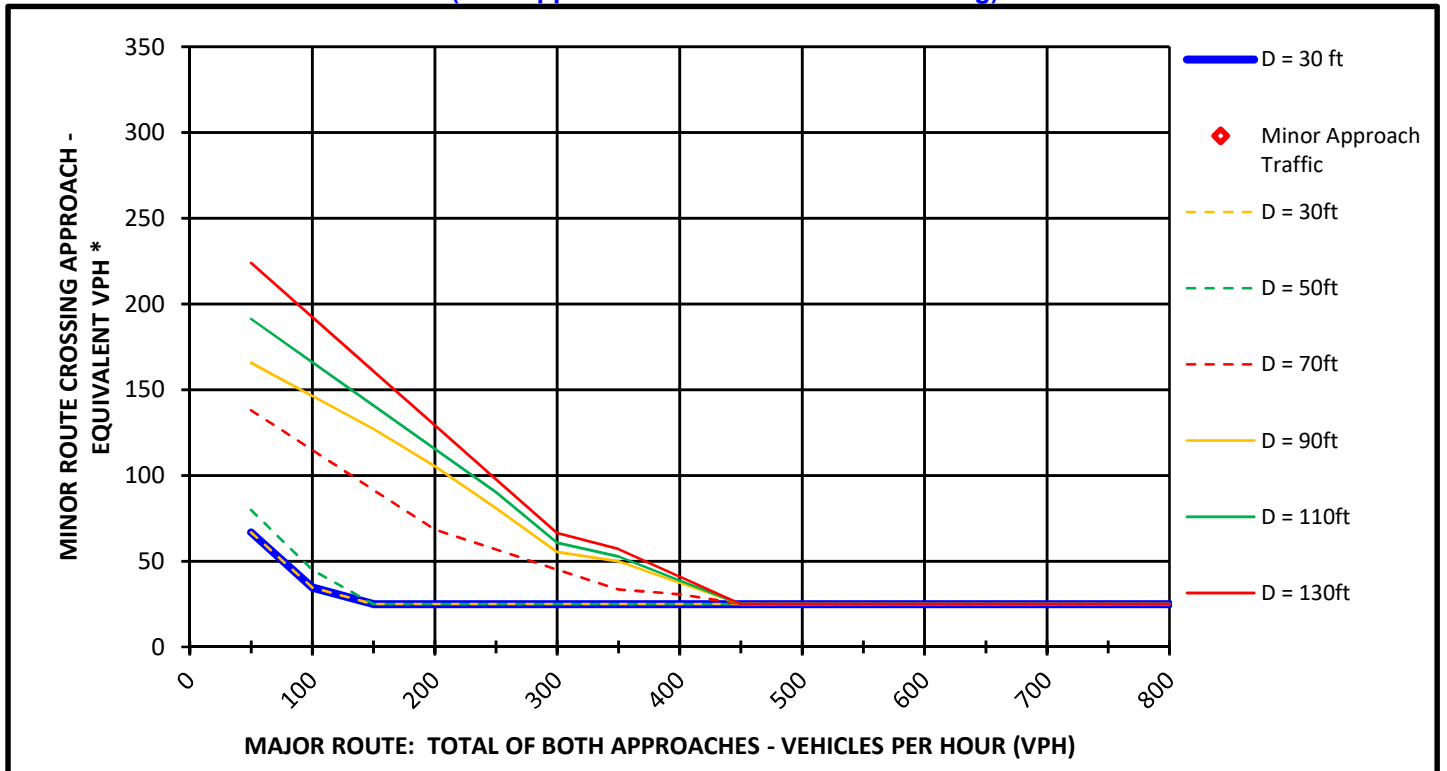


(One Approach Lane at the Track Crossing)



(Two or More Approach Lanes at the Track Crossing)

FIGURE W-9: Intersection Near a Grade Crossing
 (One Approach Lane at the Track Crossing)



* VPH after applying the adjustment factors for Rail, Bus, and Tractor-Trailer traffic
 25 vph applies as the lower threshold volume

TRAFFIC SIGNAL WARRANT SUMMARY

City/Town: Kuna, ID
County: ADA County
Division: _____
Data Date: 2025 Background

Analysis Performed By: Kbaker
Date Analysis Performed: 5/4/2020
Project Number if Applicable: _____
Weather Conditions: _____

Major Route: Columbia
Minor Route: Locust Grove

Appr. Lanes: 1 Critical Approach Speed (mph): 50
Appr. Lanes: 1

Warrant #1: Eight-Hour Vehicular Volume

SATISFIED
 Yes No

1A - Minimum Vehicular Volume: Yes No 80% Satisfied
1B - Interruption of Continuous Traffic: Yes No 100% Satisfied
 Yes No Yes No

Any Remedial Measures Tried and their Outcome.

Warrant #2: Four-Hour Vehicular Volume

Yes No

Warrant #3: Peak Hour

Yes No

The Unusual Case(s) that Justifies the use of this Warrant.

Warrant #4: Pedestrian Volume

Yes No

Warrant #5: School Crossing

Yes No

Any Remedial Measures Implemented to improve the Safety of the Students.

Warrant #6: Coordinated Signal System

Yes No

Warrant #7: Crash Experience

Yes No

Other Alternatives that have failed to reduce crashes.

Warrant #8: Roadway Network

Yes No

Warrant #9: Intersection Near a Grade Crossing

Yes No

CONCLUSIONS

Warrants Satisfied:

2									
---	--	--	--	--	--	--	--	--	--

Remarks:

TRAFFIC SIGNAL WARRANTS

City/Town:	Kuna, ID	Analysis Performed By:	Kbaker
County:	ADA County	Date Analysis Performed:	5/4/2020
Division:		Project Number if Applicable:	
Data Date:	2025 Background	Weather Conditions:	
Major Route:	Hubbard	Apr. Lanes:	1
Minor Route:	Locust Grove	Apr. Lanes:	1
		Critical Approach Speed (mph):	50

Volume Level Criteria

- 1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
- 2. Is the intersection in a built-up area or isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied. Satisfied: Yes No

Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied, given adequate trials of other remedial measures have been tried.

Adequate trial(s) of other remedial measures tried: Yes No

List Remedial Measures Tried (Required for 80% Combination of A & B)

Condition A - Minimum Vehicular Volume & Condition B - Interruption of Continuous Traffic

100% Satisfied: Yes No

(Used if neither Condition A or B is satisfied) 80% Satisfied: Yes No

		(volumes in veh/hr)		Minimum Requirements		Eight Highest Hours								
						12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	
		Approach Lanes	1		2 or more									
		Volume Level	100%	70%	100%	70%								
W - 1A	100%	Both Approaches on Major Street	500	350	600	420	551	590	866	866	1,437	1,437	886	571
		Highest Approach on Minor Street	150	105	200	140	95	101	149	152	247	247	152	98
W - 1B	100%	Both Approaches on Major Street	750	525	900	630	551	590	866	866	1,437	1,437	886	571
		Highest Approach on Minor Street	75	53	100	70	95	101	149	152	247	247	152	98
W - 1A	80%	Both Approaches on Major Street	400	280	480	336	551	590	866	866	1,437	1,437	886	571
		Highest Approach on Minor Street	120	84	160	112	95	101	149	152	247	247	152	98
W - 1B	80%	Both Approaches on Major Street	600	420	720	504	551	590	866	866	1,437	1,437	886	571
		Highest Approach on Minor Street	60	42	80	56	95	101	149	152	247	247	152	98

TRAFFIC SIGNAL WARRANTS

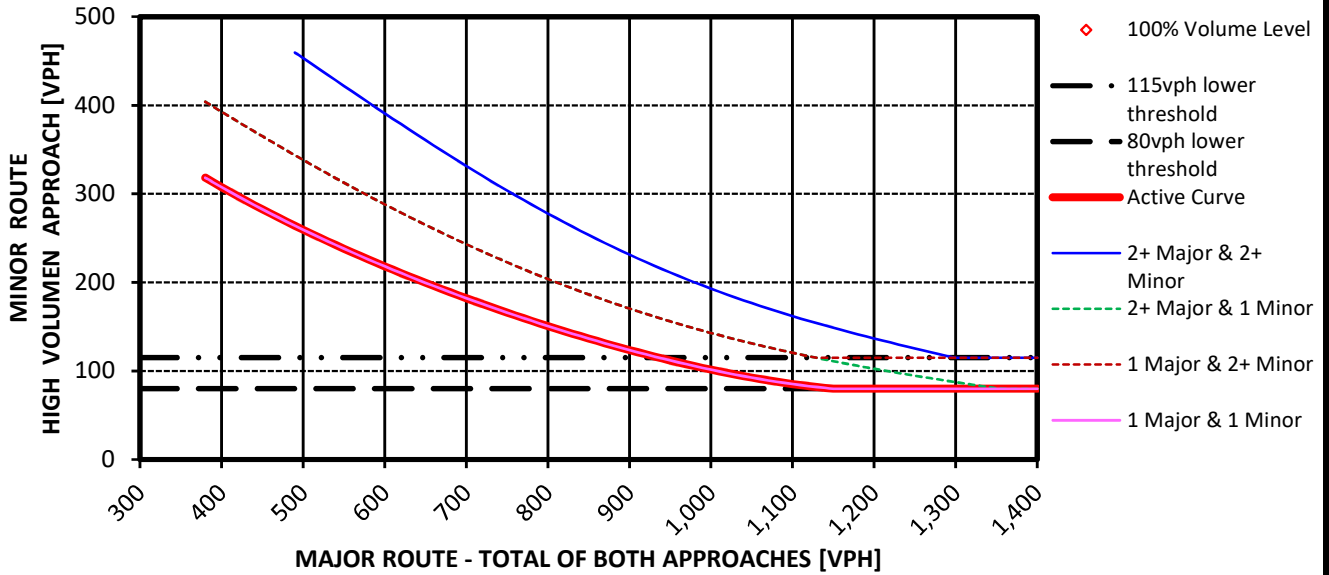
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

Satisfied: Yes No

If all four points lie above the appropriate line, then this warrant is satisfied.

	Four Highest Hours			
	3 PM	4 PM	5 PM	6 PM
(Volumes in veh/hr)				
SUM of Both Approaches on Major Street	886	1,437	1,437	886
Highest Minor Street Approach	152	247	247	152

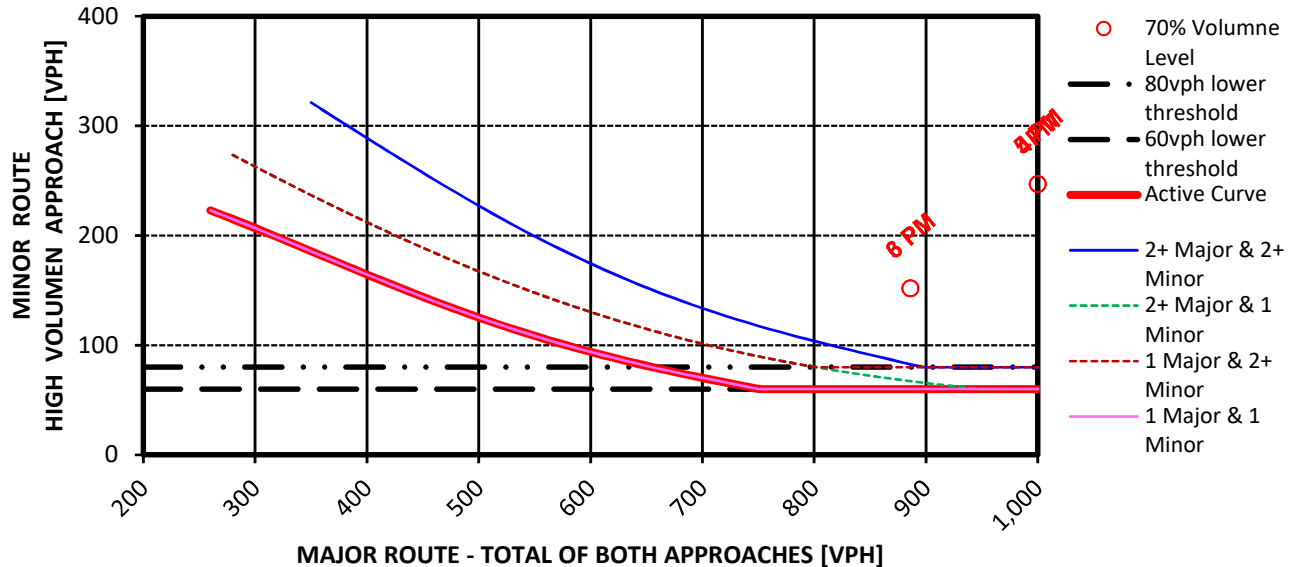
FIGURE W-2: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

FIGURE W-2: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

TRAFFIC SIGNAL WARRANTS

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

Applicable: Yes No
 Satisfied: Yes No

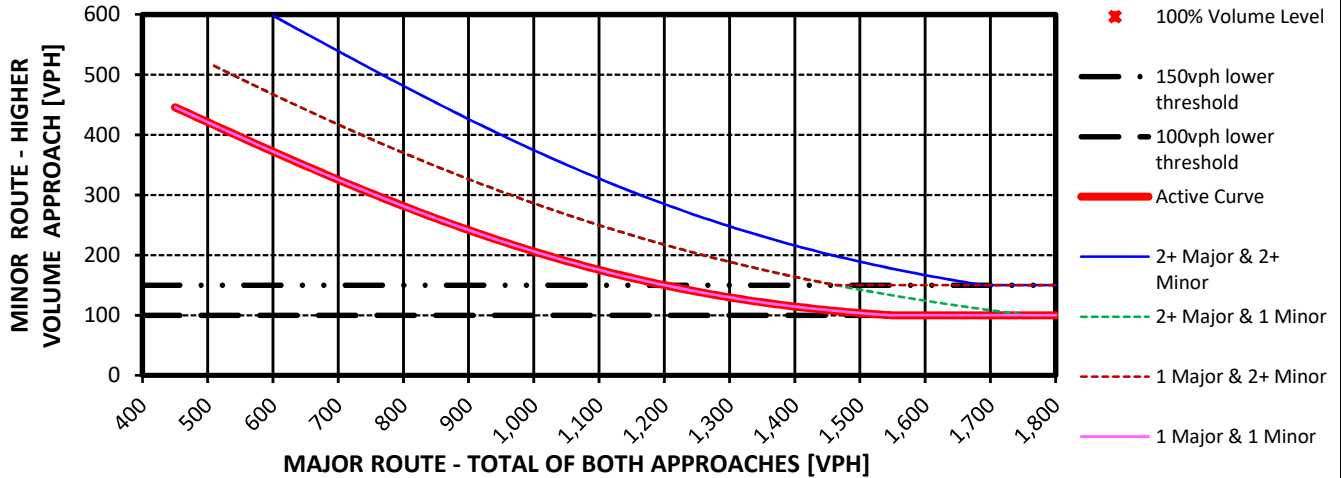
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:



Peak Hour Data		
Peak Hour	Major Route	Minor Route
5 PM	1,437	247

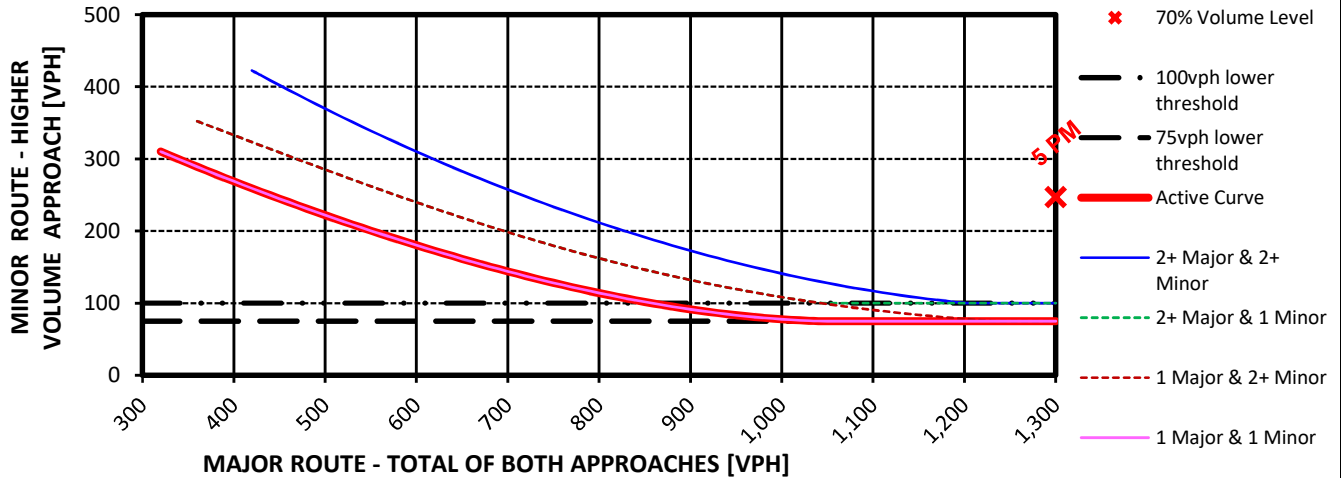
FIGURE W-3: Criteria for "100%" Volume Level



* Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

DELAY CRITERIA	1. Delay on Minor Approach (vehicle-hours)				2. Volume on Minor Approach (veh/hr)				3. Total Entering Volume (veh/hr)						
	Approaches		Lanes		Approaches		Lanes		Number of Approaches		Volume Criteria				
	Approaches	1	2	Approaches	1	2	3	4	No. of Approaches	3	4	Volume Criteria	650	800	
	Delay Criteria:	4.0	5.0	Volume Criteria	100	150	Volume :		Volume :			Fullfilled?	Yes	X	NO
Delay:			Volume :			Volume :		Volume :			Fullfilled?	Yes	X	NO	
Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO

TRAFFIC SIGNAL WARRANTS

WARRANT 4 - PEDESTRIAN VOLUME

Satisfied: Yes No

Pedestrian Signal Location Criteria		Fulfilled?	
		Yes	No
The nearest traffic control device (signal or STOP sign) controlling traffic on the major route is more than 90m (300 ft) away:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	
If no above, will this proposed signal restrict the progressive movement of traffic?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

Vehicle volumes in veh/hr and Pedestrian volumes in ped/hr	Four Greatest Hours				Peak Hour
SUM of Both Approaches on Major Route					
Pedestrians crossing the Major Route					

FIGURE W-4a: Criteria for 70% Volume Level, Four-Hour Volumes

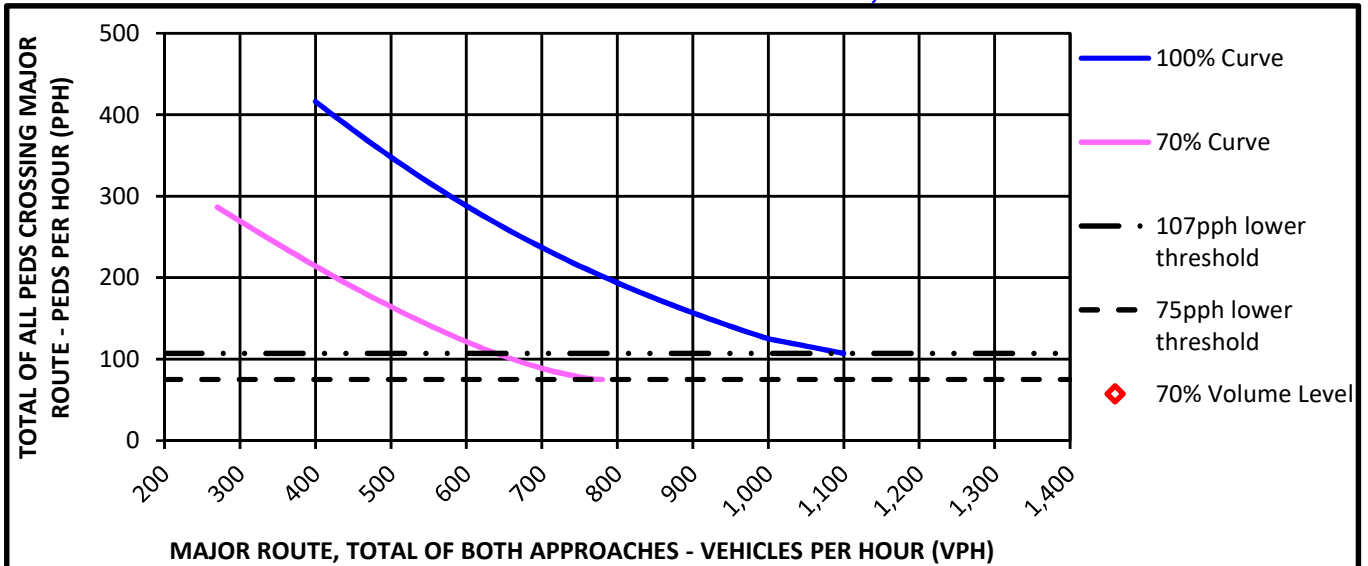
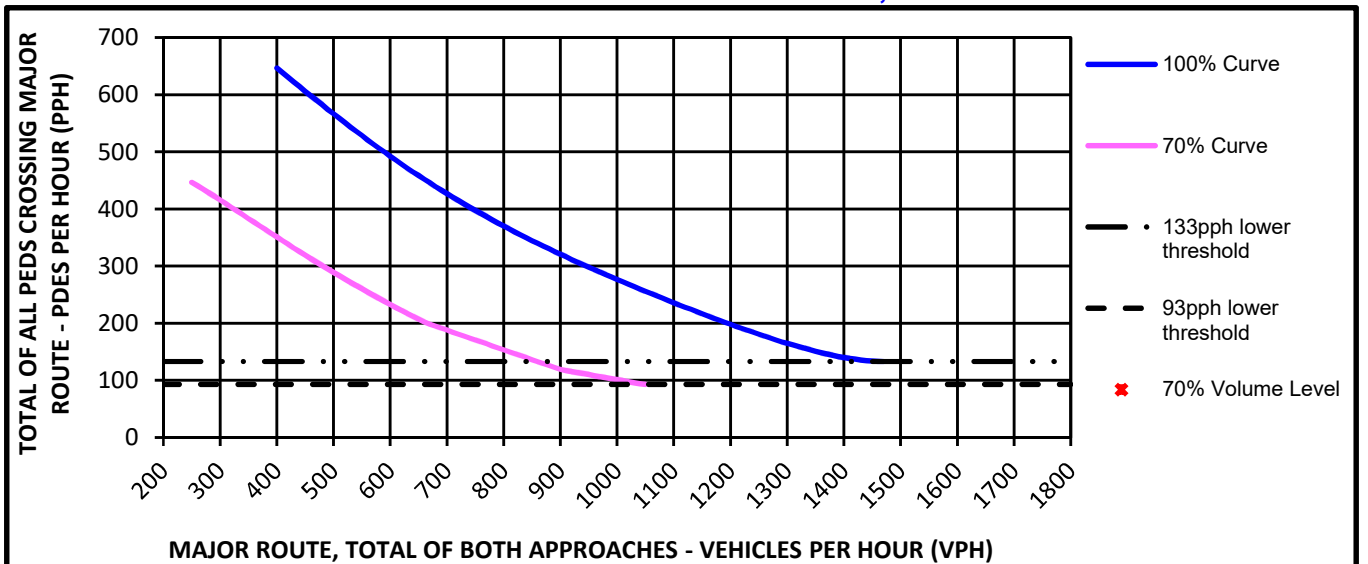


FIGURE W-4b: Criteria for 70% Volume Level, Peak Hour Volume



TRAFFIC SIGNAL WARRANTS

WARRANT 5 - SCHOOL CROSSING

Satisfied: Yes No

This warrant is intended for application where the fact that schoolchildren crossing the major route is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word "schoolchildren" includes elementary through high school students. This warrant is satisfied if all three of the criteria below are fulfilled after remedial measures have been considered.

Any remedial measures implemented in or around the intersection to improve the safety of the students as noted in Section **4C.06 Warrant 5, School Crossing** in the MUTCD:

Criteria			Fulfilled?	
			Yes	No
1. Enter the number of schoolchildren crossing the major route along with the hour this occurs. The hour can be any 60 minute interval (ex 2:15 PM - 3:15 PM enter 2:15 - 3:15). Requires a minimum of 20 schoolchildren during the any hour.	Num. of Students	Highest Crossing Hour Period		X
2. For both the morning (AM) and afternoon (PM) periods of operation, enter the number of adequate gaps observed for each period and the number of minutes each period lasted. Requires one period to operate with fewer gaps than the number of minutes in the period.	AM PM	Period Minutes Gaps		X
3. Is the nearest traffic signal along the major route more than 90m (300 ft) from this crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If the signal is within 90m (300 ft) of an existing signalize intersection, will it restrict progressive movement of traffic? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				X

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Satisfied: Yes No

Progressive movement in a coordinated signal system sometimes necessitates the installation of traffic control signals at intersections that would not otherwise be considered in order to maintain proper platooning of vehicles. This warrant is satisfied if the below criteria is satisfied as follows: criteria 1 is satisfied and either criteria 2 or 3 is satisfied.

Criteria		Fulfilled?	
		Yes	No
1. The inclusion of this proposed signal, into the coordinated system, does not result in a signal spacing of less than 305m (1,000 ft)?			X
a. On a one-way street or a street that has traffic predominantly in one direction, are the adjacent traffic control signals so far apart that they do not provide the necessary degree of vehicular platooning?			X
2. b. On a two-way street, do adjacent traffic control signals not provide the necessary degree of platooning and will the proposed and adjacent traffic control signals collectively provide a progressive operation?			X

TRAFFIC SIGNAL WARRANTS

WARRANT 7 - CRASH EXPERIENCE

Satisfied: Yes No

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider the installation of a traffic control signal. The need for a traffic control signal shall be considered if an engineering study finds that criteria 1, 2, and 3 are met.

Criteria			Fulfilled?	
			Yes	No
1. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency as shown below:				
				X
2. How many crashes within the past 12 months? For this criteria to be met, five or more reported crashes, of types susceptible to correction by the installation of a traffic control signal, must have occurred.				X
3. If Warrant 1A or Warrant 1B are 80 percent satisfied of the current values or if Warrant 4, 4-hour or peak, is met at the 80 percent values.			Met?	
			Yes	No
Warrant 1, Condition A, Minimum Vehicular Volume (80 percent satisfied):				X
Warrant 1, Condition B, Interruption of Continuous Traffic (80 percent satisfied):				X
Warrant 4, Four-Hour Volume (80 percent satisfied):				X
Warrant 4, Peak Hour Volume (80 percent satisfied):				X
				X

WARRANT 8 - ROADWAY NETWORK

Satisfied: Yes No

This warrant is used to encourage the concentration and organization of traffic flow on a roadway network. This warrant is satisfied if one of the following 2 criteria is met and both routes meet at least one of the characteristics of a Major Route below.

Criteria			Met?		Fulfilled?	
			Yes	No	Yes	No
1. Both of the criteria to the right are required in order to be met.	a. Please enter the total existing, or immediately projected, entering traffic volume during the peak hour of a typical weekday. Requires a minimum of 1,000 vehicles to be met.			X		X
	b. Based on an engineering study, does the 5 year projected traffic volumes, for this location, meet one or more of Warrants 1, 2, or 3 during an average weekday? *			X		
2. Enter the total existing, or immediately projected, entering volume for each of any 5 hours of a non-normal business day. (Saturday or Sunday). 1,000 vph for each hour required.						X

* Supporting data required for verification of the projected 5 year traffic Warrants.

A major route, as used in this signal warrant, shall have at least one of the following characteristics:			Met?		Fulfilled?	
			Yes	No	Yes	No
Characteristics of Major Routes						
1. Is it a part of the street or highway system that serves as the principal roadway network for through traffic flow?	Major Route		X		X	
	* Minor Route		X			
2. Does it include rural or suburban highways outside, entering, or traversing a city?	Major Route		X		X	
	* Minor Route		X			
3. Does it appear as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study?	Major Route		X		X	
	* Minor Route		X			

* This is a minor route, but for the purposes of this Warrant, shall be considered as the other major route.

Note: Supporting data shall be required to verify the routes meet one of the characteristics of a major route.

TRAFFIC SIGNAL WARRANTS

WARRANT 9 - INTERSECTION NEAR A GRADE CROSSING

Applicable
 Yes No

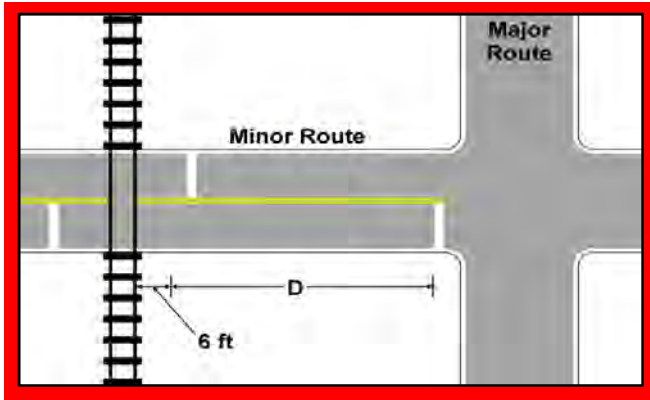
The need for a traffic control signal may be considered if an intersection that is controlled by a STOP or YIELD sign has a rail crossing within 140 feet of the stop/yield line and the highest Equivalent Minor Approach Traffic value lies above the curve represented on the graph below.

Minor Route Adjustment Factors - Enter the following:	
1. The number of occurrences of rail traffic/day:	
2. The percentage of "High-Occupancy Buses" crossing the track/day: (A high-occupancy bus is defined as a bus occupied by at least 20 people)	
3. The percentage of Tractor-trailer Trucks crossing the track/day:	

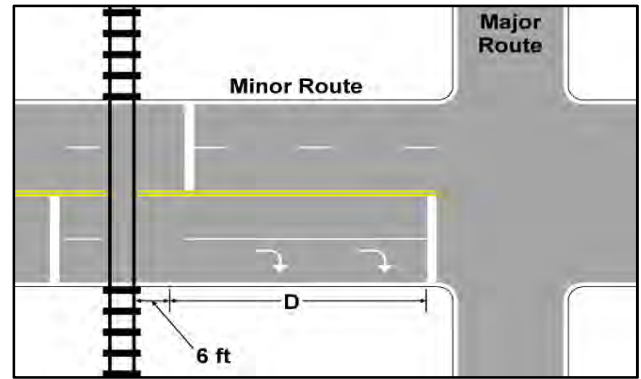
Satisfied: Yes No

Peak Hour Data		
Peak Hour	Major Route	Minor Route

Enter the distance value "D" from the STOP/YIELD bar to the track as shown below:

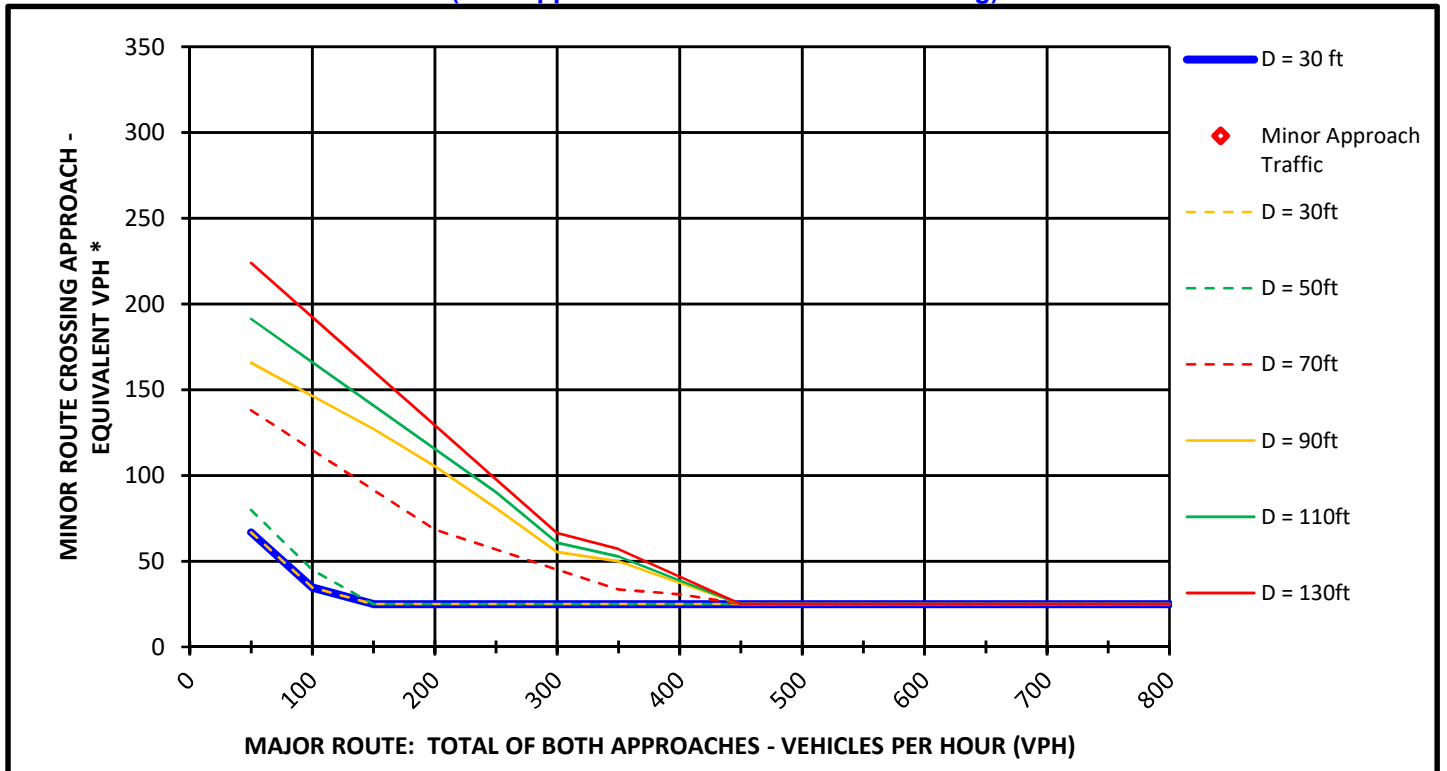


(One Approach Lane at the Track Crossing)



(Two or More Approach Lanes at the Track Crossing)

FIGURE W-9: Intersection Near a Grade Crossing
 (One Approach Lane at the Track Crossing)



* VPH after applying the adjustment factors for Rail, Bus, and Tractor-Trailer traffic
 25 vph applies as the lower threshold volume

TRAFFIC SIGNAL WARRANT SUMMARY

City/Town: Kuna, ID
County: ADA County
Division: _____
Data Date: 2025 Background

Analysis Performed By: Kbaker
Date Analysis Performed: 5/4/2020
Project Number if Applicable: _____
Weather Conditions: _____

Major Route: Hubbard
Minor Route: Locust Grove

Appr. Lanes: 1 Critical Approach Speed (mph): 50
Appr. Lanes: 1

Warrant #1: Eight-Hour Vehicular Volume SATISFIED
 Yes No

1A - Minimum Vehicular Volume: Yes No 80% Satisfied Yes No 100% Satisfied Yes No
1B - Interruption of Continuous Traffic: Yes No 80% Satisfied Yes No 100% Satisfied Yes No

Any Remedial Measures Tried and their Outcome.

Warrant #2: Four-Hour Vehicular Volume Yes No

Warrant #3: Peak Hour Yes No

The Unusual Case(s) that Justifies the use of this Warrant.

Warrant #4: Pedestrian Volume Yes No

Warrant #5: School Crossing Yes No

Any Remedial Measures Implemented to improve the Safety of the Students.

Warrant #6: Coordinated Signal System Yes No

Warrant #7: Crash Experience Yes No

Other Alternatives that have failed to reduce crashes.

Warrant #8: Roadway Network Yes No

Warrant #9: Intersection Near a Grade Crossing Yes No

CONCLUSIONS

Warrants Satisfied:

1	2								
---	---	--	--	--	--	--	--	--	--

Remarks:

TRAFFIC SIGNAL WARRANTS

City/Town:	Kuna, ID	Analysis Performed By:	Kbaker
County:	ADA County	Date Analysis Performed:	5/4/2020
Division:		Project Number if Applicable:	
Data Date:	2025 Background	Weather Conditions:	
Major Route:	Lake Hazel	Apr. Lanes: 1	Critical Approach Speed (mph): 50
Minor Route:	Locust Grove	Apr. Lanes: 1	

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
 2. Is the intersection in a built-up area or isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied. Satisfied: Yes No

Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied, given adequate trials of other remedial measures have been tried.

Adequate trial(s) of other remedial measures tried: Yes No

List Remedial Measures Tried (Required for 80% Combination of A & B)

Condition A - Minimum Vehicular Volume & Condition B - Interruption of Continuous Traffic

100% Satisfied: Yes No

(Used if neither Condition A or B is satisfied) 80% Satisfied: Yes No

		(volumes in veh/hr)		Minimum Requirements		Eight Highest Hours								
						6AM	7AM	8AM	9 AM	10AM	11AM	12PM	1 PM	
		Approach Lanes	1	2 or more										
		Volume Level	100%	70%	100%	70%								
W - 1A	100%	Both Approaches on Major Street	500	350	600	420	555	1,083	971	494	381	399	407	433
		Highest Approach on Minor Street	150	105	200	140	476	929	833	424	327	342	349	372
W - 1B	100%	Both Approaches on Major Street	750	525	900	630	555	1,083	971	494	381	399	407	433
		Highest Approach on Minor Street	75	53	100	70	476	929	833	424	327	342	349	372
W - 1A	80%	Both Approaches on Major Street	400	280	480	336	555	1,083	971	494	381	399	407	433
		Highest Approach on Minor Street	120	84	160	112	476	929	833	424	327	342	349	372
W - 1B	80%	Both Approaches on Major Street	600	420	720	504	555	1,083	971	494	381	399	407	433
		Highest Approach on Minor Street	60	42	80	56	476	929	833	424	327	342	349	372

TRAFFIC SIGNAL WARRANTS

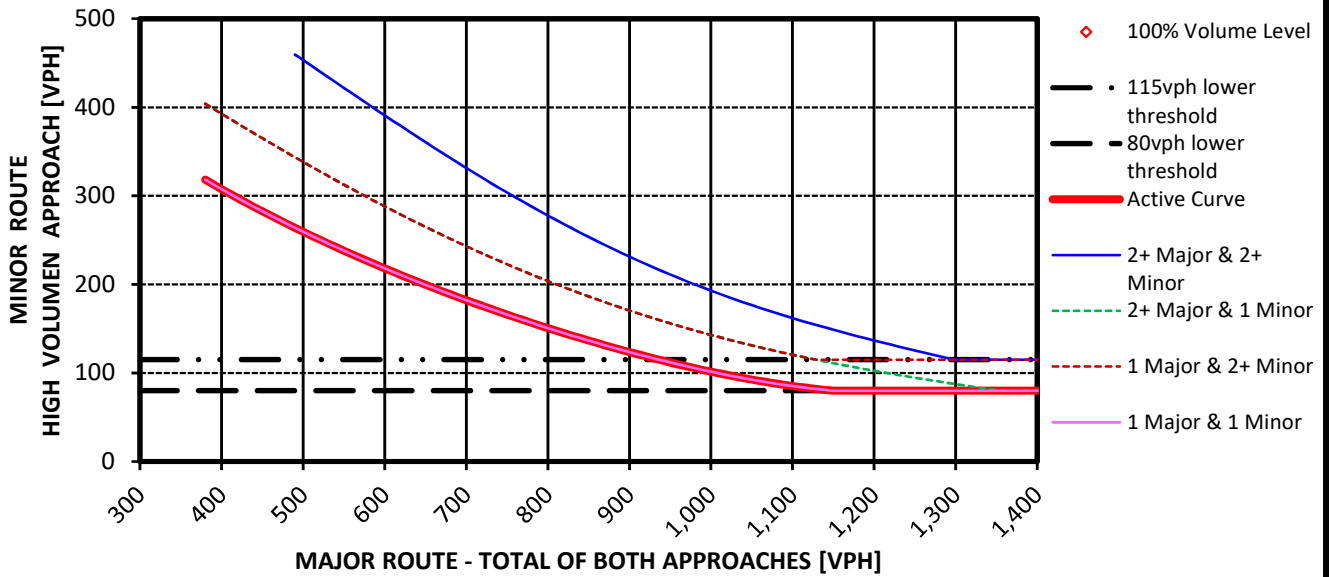
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

Satisfied: Yes No

If all four points lie above the appropriate line, then this warrant is satisfied.

(Volumes in veh/hr)	Four Highest Hours			
	6 AM	7 AM	8 AM	9 AM
SUM of Both Approaches on Major Street	555	1,083	971	494
Highest Minor Street Approach	476	929	833	424

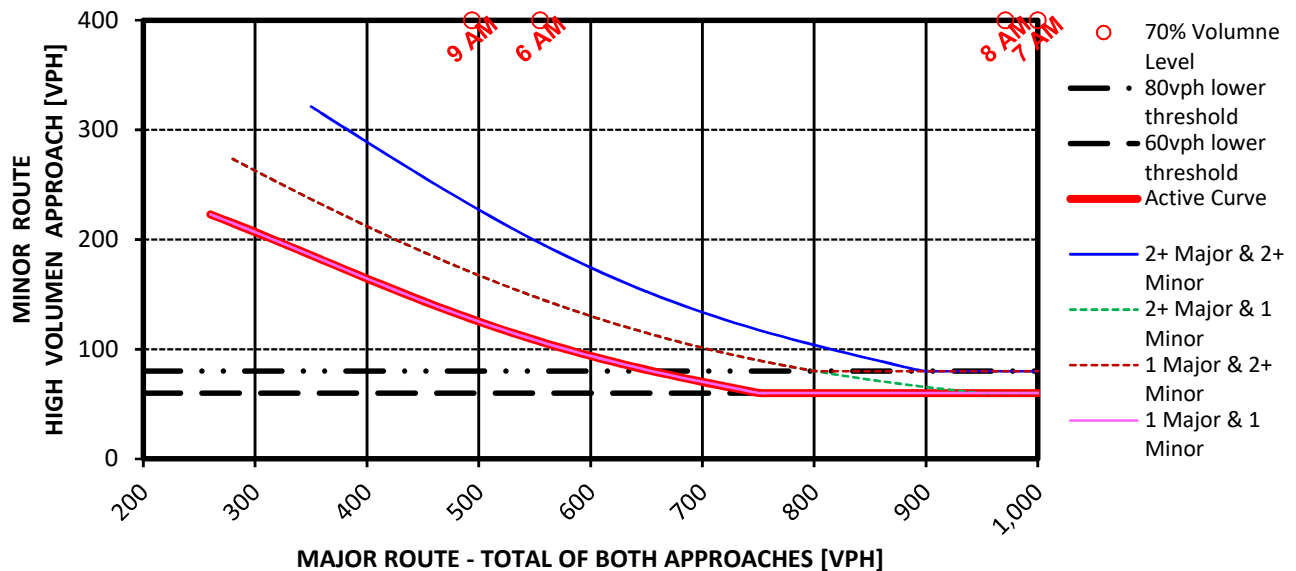
FIGURE W-2: Criteria for "100%" Volume Level



* Note: 115 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-2: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: 80 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

TRAFFIC SIGNAL WARRANTS

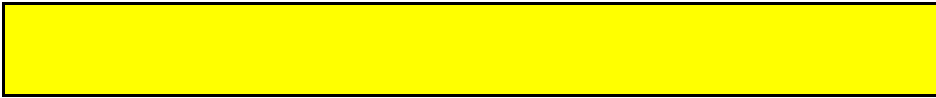
WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time period.

Applicable: Yes No
 Satisfied: Yes No

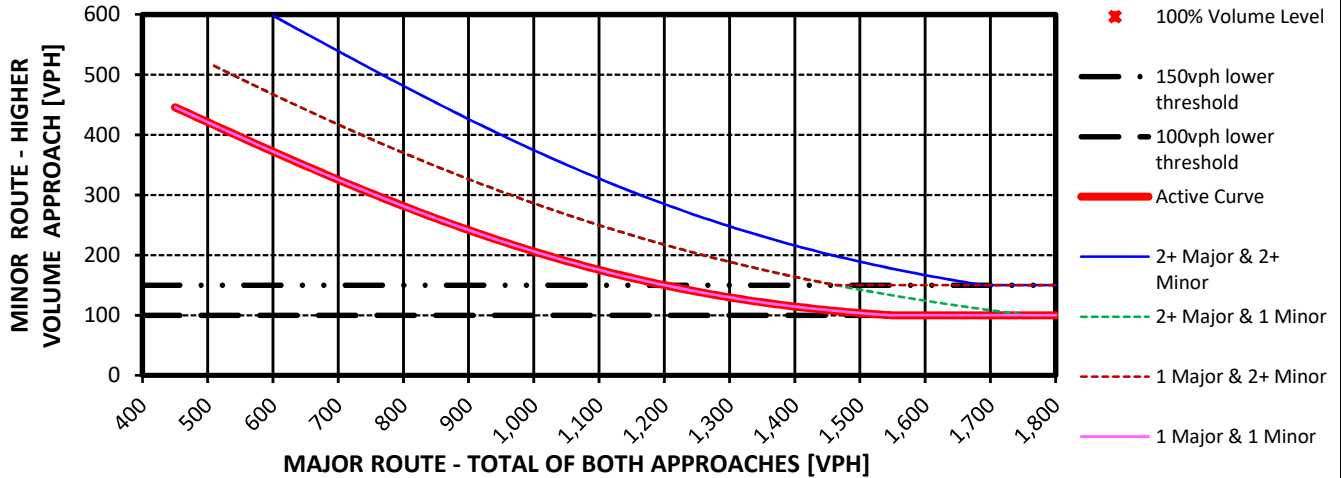
Signalization shall be considered if a point lies above the appropriate line or the Delay criteria is met.

Unusual case(s) justifying this Warrant:



Peak Hour Data		
Peak Hour	Major Route	Minor Route
7AM	1,083	929

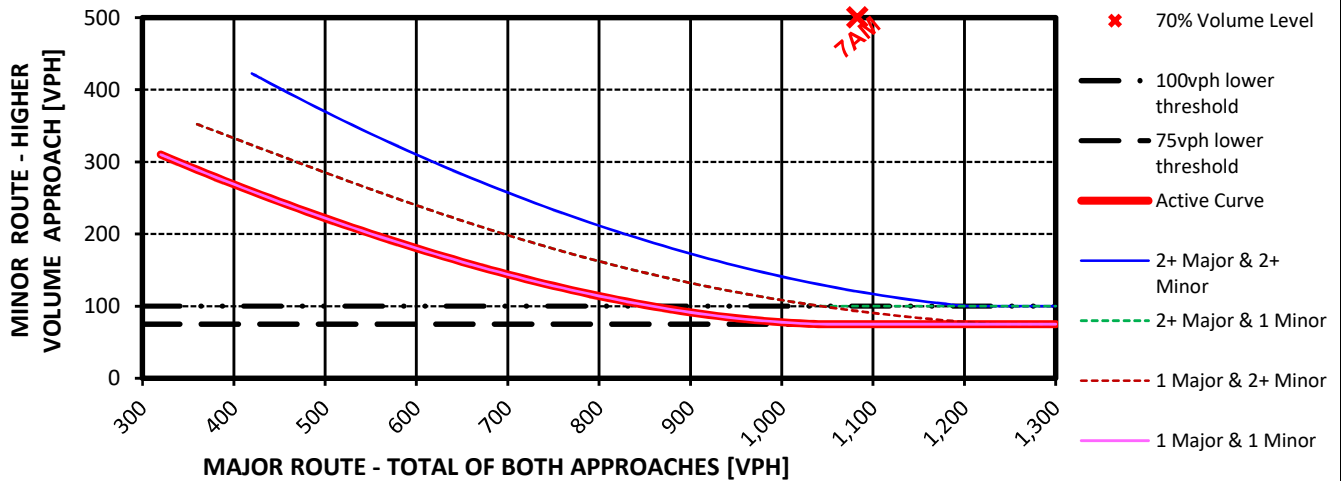
FIGURE W-3: Criteria for "100%" Volume Level



* Note: 150 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

FIGURE W-3: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



* Note: 100 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor route approach with one lane.

DELAY CRITERIA	1. Delay on Minor Approach (vehicle-hours)				2. Volume on Minor Approach (veh/hr)				3. Total Entering Volume (veh/hr)						
	Approaches		Lanes		Approaches		Lanes		Number of Approaches		Volume Criteria				
	Approaches	1	2	Approaches	1	2	3	4	No. of Approaches	3	4	Volume Criteria	650	800	
	Delay Criteria:	4.0	5.0	Volume Criteria	100	150	Volume :		Volume :			Fullfilled?	Yes	X	NO
Delay:			Volume :			Volume :		Volume :			Fullfilled?	Yes	X	NO	
Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO	Fullfilled?	Yes	X	NO

TRAFFIC SIGNAL WARRANTS

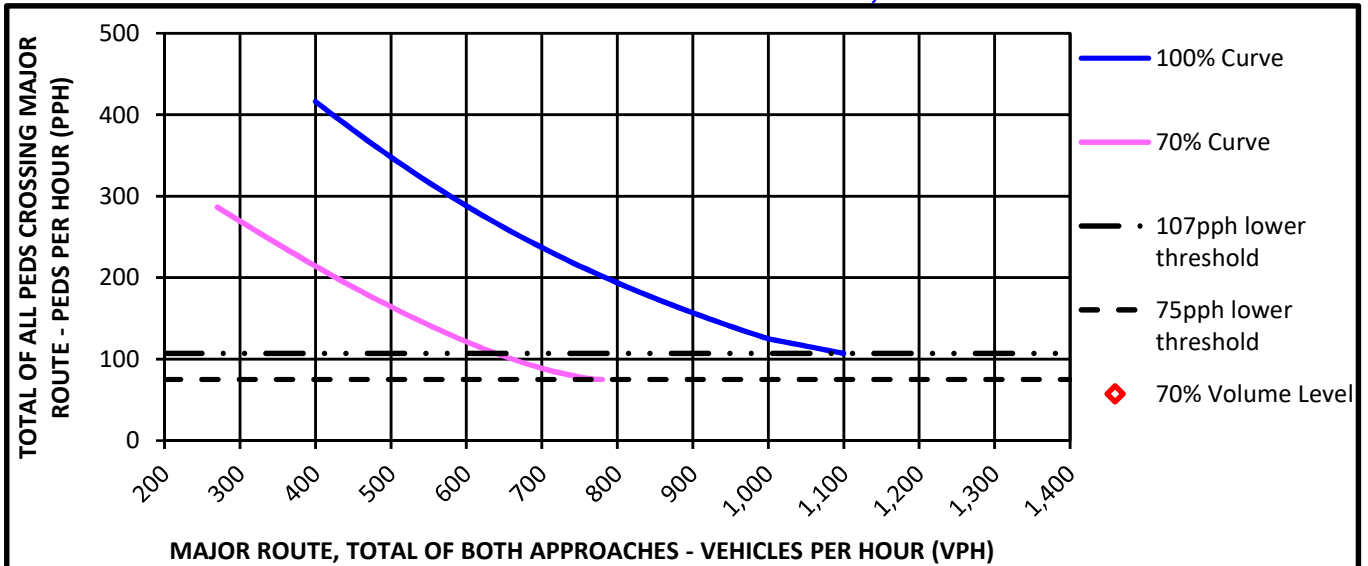
WARRANT 4 - PEDESTRIAN VOLUME

Satisfied: Yes No

Pedestrian Signal Location Criteria		Fulfilled?	
		Yes	No
The nearest traffic control device (signal or STOP sign) controlling traffic on the major route is more than 90m (300 ft) away:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	
If no above, will this proposed signal restrict the progressive movement of traffic?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

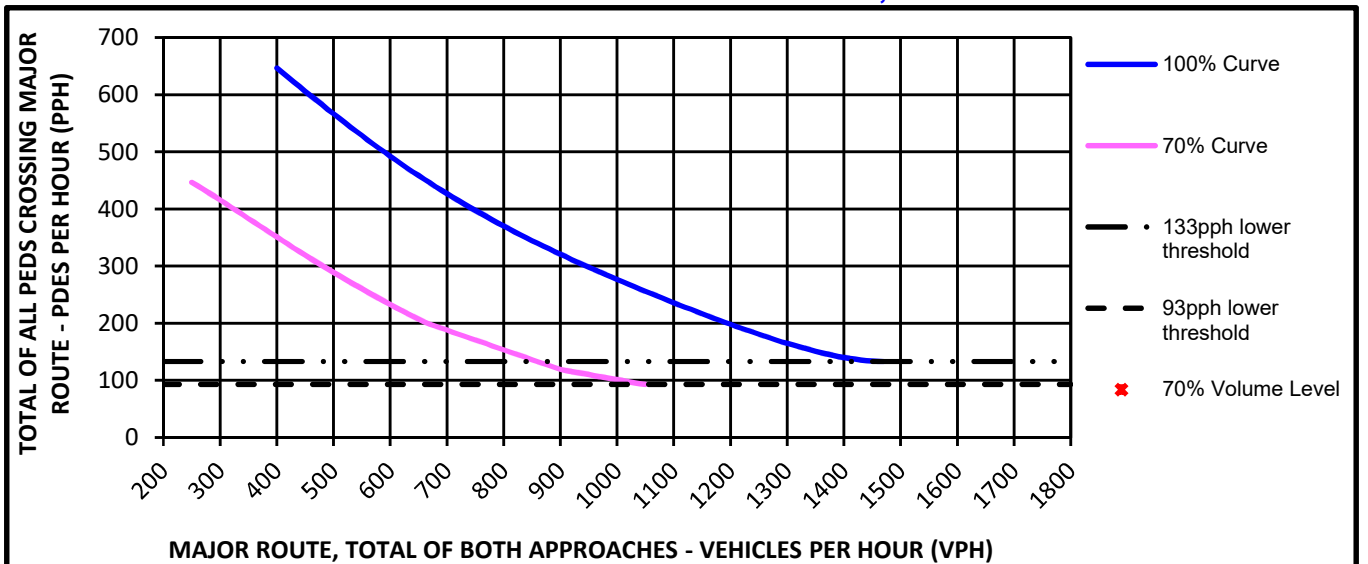
Vehicle volumes in veh/hr and Pedestrian volumes in ped/hr	Four Greatest Hours				Peak Hour
SUM of Both Approaches on Major Route					
Pedestrians crossing the Major Route					

FIGURE W-4a: Criteria for 70% Volume Level, Four-Hour Volumes



* Note: 107 pph applies as the lower threshold volume for the 100% Volume Level.
75 pph applies as the lower threshold volume for the 70% Volume Level.

FIGURE W-4b: Criteria for 70% Volume Level, Peak Hour Volume



* Note: 133 pph applies as the lower threshold volume for the 100% Volume Level.
93 pph applies as the lower threshold volume for the 70% Volume Level.

TRAFFIC SIGNAL WARRANTS

WARRANT 5 - SCHOOL CROSSING

Satisfied: Yes No

This warrant is intended for application where the fact that schoolchildren crossing the major route is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word "schoolchildren" includes elementary through high school students. This warrant is satisfied if all three of the criteria below are fulfilled after remedial measures have been considered.

Any remedial measures implemented in or around the intersection to improve the safety of the students as noted in Section **4C.06 Warrant 5, School Crossing** in the MUTCD:

Criteria			Fulfilled?	
			Yes	No
1. Enter the number of schoolchildren crossing the major route along with the hour this occurs. The hour can be any 60 minute interval (ex 2:15 PM - 3:15 PM enter 2:15 - 3:15). Requires a minimum of 20 schoolchildren during the any hour.	Num. of Students	Highest Crossing Hour Period		X
2. For both the morning (AM) and afternoon (PM) periods of operation, enter the number of adequate gaps observed for each period and the number of minutes each period lasted. Requires one period to operate with fewer gaps than the number of minutes in the period.	AM PM	Period Minutes Gaps		X
3. Is the nearest traffic signal along the major route more than 90m (300 ft) from this crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If the signal is within 90m (300 ft) of an existing signalize intersection, will it restrict progressive movement of traffic? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				X

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Satisfied: Yes No

Progressive movement in a coordinated signal system sometimes necessitates the installation of traffic control signals at intersections that would not otherwise be considered in order to maintain proper platooning of vehicles. This warrant is satisfied if the below criteria is satisfied as follows: criteria 1 is satisfied and either criteria 2 or 3 is satisfied.

Criteria		Fulfilled?	
		Yes	No
1. The inclusion of this proposed signal, into the coordinated system, does not result in a signal spacing of less than 305m (1,000 ft)?			X
a. On a one-way street or a street that has traffic predominantly in one direction, are the adjacent traffic control signals so far apart that they do not provide the necessary degree of vehicular platooning?			X
2. b. On a two-way street, do adjacent traffic control signals not provide the necessary degree of platooning and will the proposed and adjacent traffic control signals collectively provide a progressive operation?			X

TRAFFIC SIGNAL WARRANTS

WARRANT 7 - CRASH EXPERIENCE

Satisfied: Yes No

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider the installation of a traffic control signal. The need for a traffic control signal shall be considered if an engineering study finds that criteria 1, 2, and 3 are met.

Criteria			Fulfilled?	
			Yes	No
1. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency as shown below:				
				X
2. How many crashes within the past 12 months? For this criteria to be met, five or more reported crashes, of types susceptible to correction by the installation of a traffic control signal, must have occurred.				X
3. If Warrant 1A or Warrant 1B are 80 percent satisfied of the current values or if Warrant 4, 4-hour or peak, is met at the 80 percent values.			Met?	
			Yes	No
Warrant 1, Condition A, Minimum Vehicular Volume (80 percent satisfied):				X
Warrant 1, Condition B, Interruption of Continuous Traffic (80 percent satisfied):				X
Warrant 4, Four-Hour Volume (80 percent satisfied):				X
Warrant 4, Peak Hour Volume (80 percent satisfied):				X
				X

WARRANT 8 - ROADWAY NETWORK

Satisfied: Yes No

This warrant is used to encourage the concentration and organization of traffic flow on a roadway network. This warrant is satisfied if one of the following 2 criteria is met and both routes meet at least one of the characteristics of a Major Route below.

Criteria			Met?		Fulfilled?	
			Yes	No	Yes	No
1. Both of the criteria to the right are required in order to be met.	a. Please enter the total existing, or immediately projected, entering traffic volume during the peak hour of a typical weekday. Requires a minimum of 1,000 vehicles to be met.			X		X
	b. Based on an engineering study, does the 5 year projected traffic volumes, for this location, meet one or more of Warrants 1, 2, or 3 during an average weekday? *			X		
2. Enter the total existing, or immediately projected, entering volume for each of any 5 hours of a non-normal business day. (Saturday or Sunday). 1,000 vph for each hour required.						X

* Supporting data required for verification of the projected 5 year traffic Warrants.

A major route, as used in this signal warrant, shall have at least one of the following characteristics:			Met?		Fulfilled?	
			Yes	No	Yes	No
Characteristics of Major Routes						
1. Is it a part of the street or highway system that serves as the principal roadway network for through traffic flow?	Major Route		X			
	* Minor Route		X			
2. Does it include rural or suburban highways outside, entering, or traversing a city?	Major Route		X			X
	* Minor Route		X			
3. Does it appear as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study?	Major Route		X			
	* Minor Route		X			

* This is a minor route, but for the purposes of this Warrant, shall be considered as the other major route.

Note: Supporting data shall be required to verify the routes meet one of the characteristics of a major route.

TRAFFIC SIGNAL WARRANTS

WARRANT 9 - INTERSECTION NEAR A GRADE CROSSING

Applicable
 Yes No

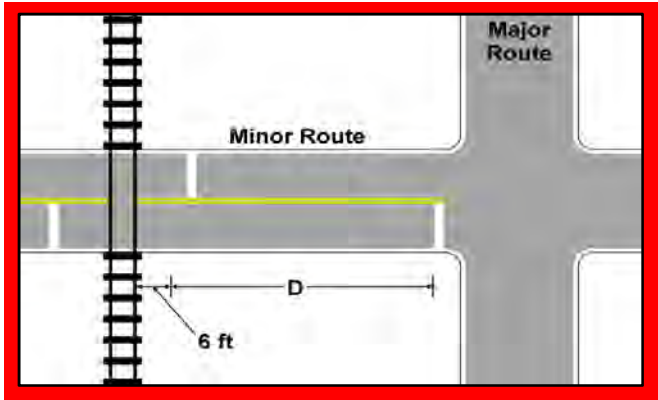
The need for a traffic control signal may be considered if an intersection that is controlled by a STOP or YIELD sign has a rail crossing within 140 feet of the stop/yield line and the highest Equivalent Minor Approach Traffic value lies above the curve represented on the graph below.

Minor Route Adjustment Factors - Enter the following:	
1. The number of occurrences of rail traffic/day:	
2. The percentage of "High-Occupancy Buses" crossing the track/day: <i>(A high-occupancy bus is defined as a bus occupied by at least 20 people)</i>	
3. The percentage of Tractor-trailer Trucks crossing the track/day:	

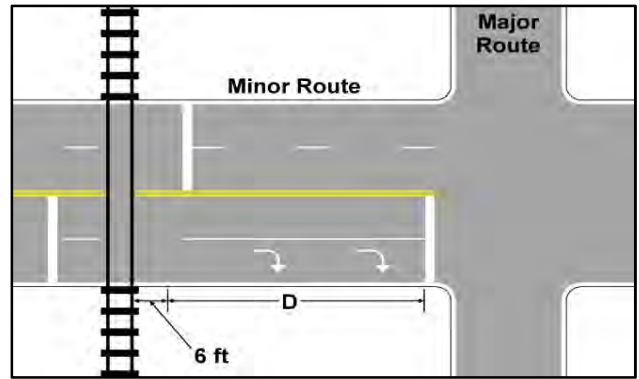
Satisfied: Yes No

Peak Hour Data		
Peak Hour	Major Route	Minor Route

Enter the distance value "D" from the STOP/YIELD bar to the track as shown below:

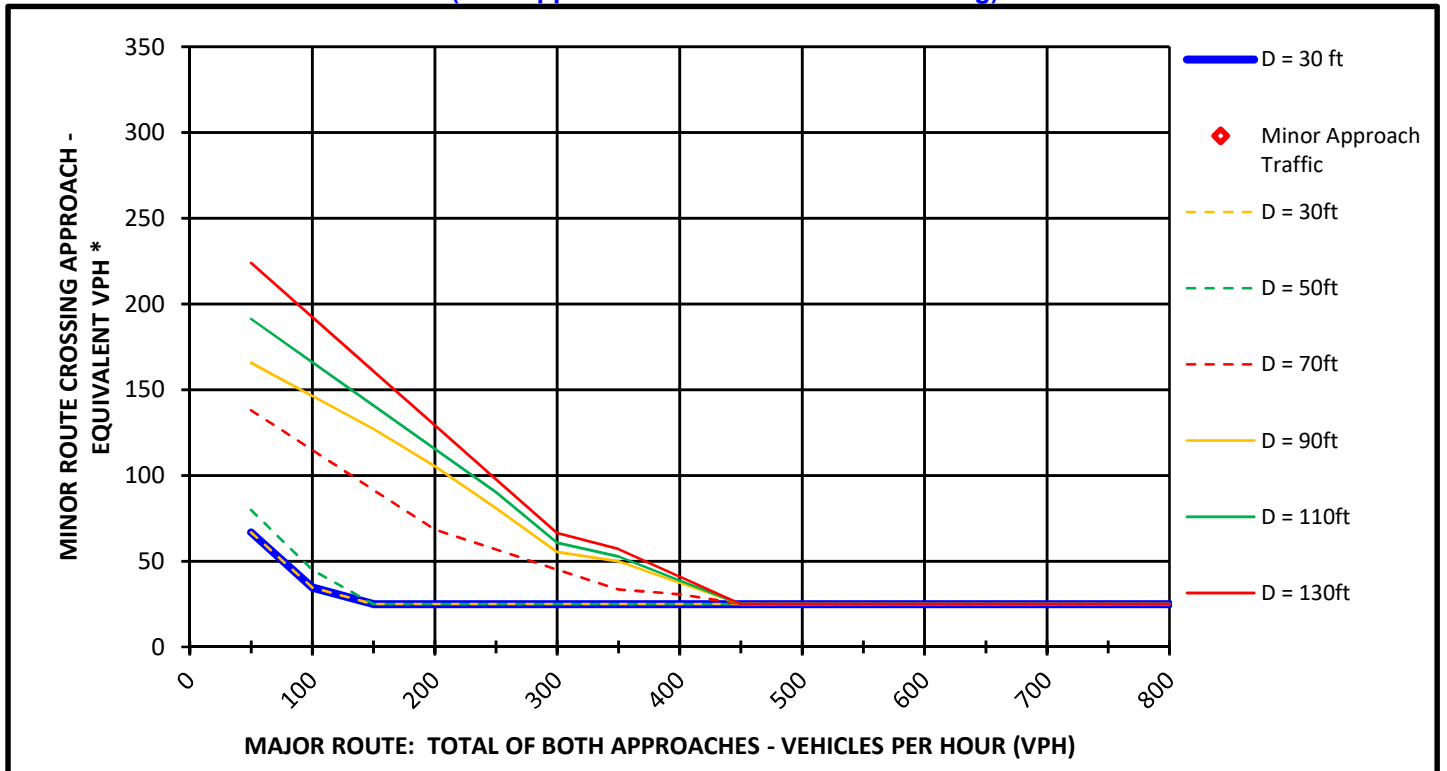


(One Approach Lane at the Track Crossing)



(Two or More Approach Lanes at the Track Crossing)

FIGURE W-9: Intersection Near a Grade Crossing
 (One Approach Lane at the Track Crossing)



* VPH after applying the adjustment factors for Rail, Bus, and Tractor-Trailer traffic
 25 vph applies as the lower threshold volume

TRAFFIC SIGNAL WARRANT SUMMARY

City/Town: Kuna, ID
County: ADA County
Division: _____
Data Date: 2025 Background

Analysis Performed By: Kbaker
Date Analysis Performed: 5/4/2020
Project Number if Applicable: _____
Weather Conditions: _____

Major Route: Lake Hazel Rd
Minor Route: Locust Grove

Appr. Lanes: 1 Critical Approach Speed (mph): 50
Appr. Lanes: 1

Warrant #1: Eight-Hour Vehicular Volume SATISFIED
 Yes No

1A - Minimum Vehicular Volume: Yes No 80% Satisfied 100% Satisfied
1B - Interruption of Continuous Traffic: Yes No Yes No Yes No

Any Remedial Measures Tried and their Outcome.

Warrant #2: Four-Hour Vehicular Volume Yes No

Warrant #3: Peak Hour Yes No

The Unusual Case(s) that Justifies the use of this Warrant.

Warrant #4: Pedestrian Volume Yes No

Warrant #5: School Crossing Yes No

Any Remedial Measures Implemented to improve the Safety of the Students.

Warrant #6: Coordinated Signal System Yes No

Warrant #7: Crash Experience Yes No

Other Alternatives that have failed to reduce crashes.

Warrant #8: Roadway Network Yes No

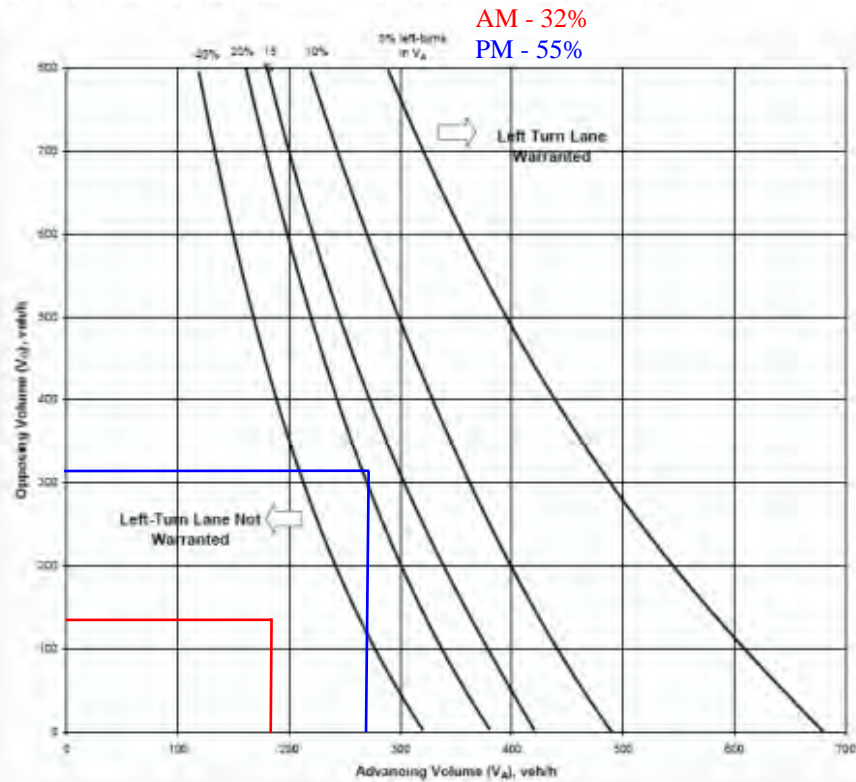
Warrant #9: Intersection Near a Grade Crossing Yes No

CONCLUSIONS

Warrants Satisfied:

1	2								
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Remarks:

Figure 3 – Left-Turn Lane Guidelines for Two-Lane Roads, 50 mphHubbard/StroebeI - West Bound Left Turn Lane

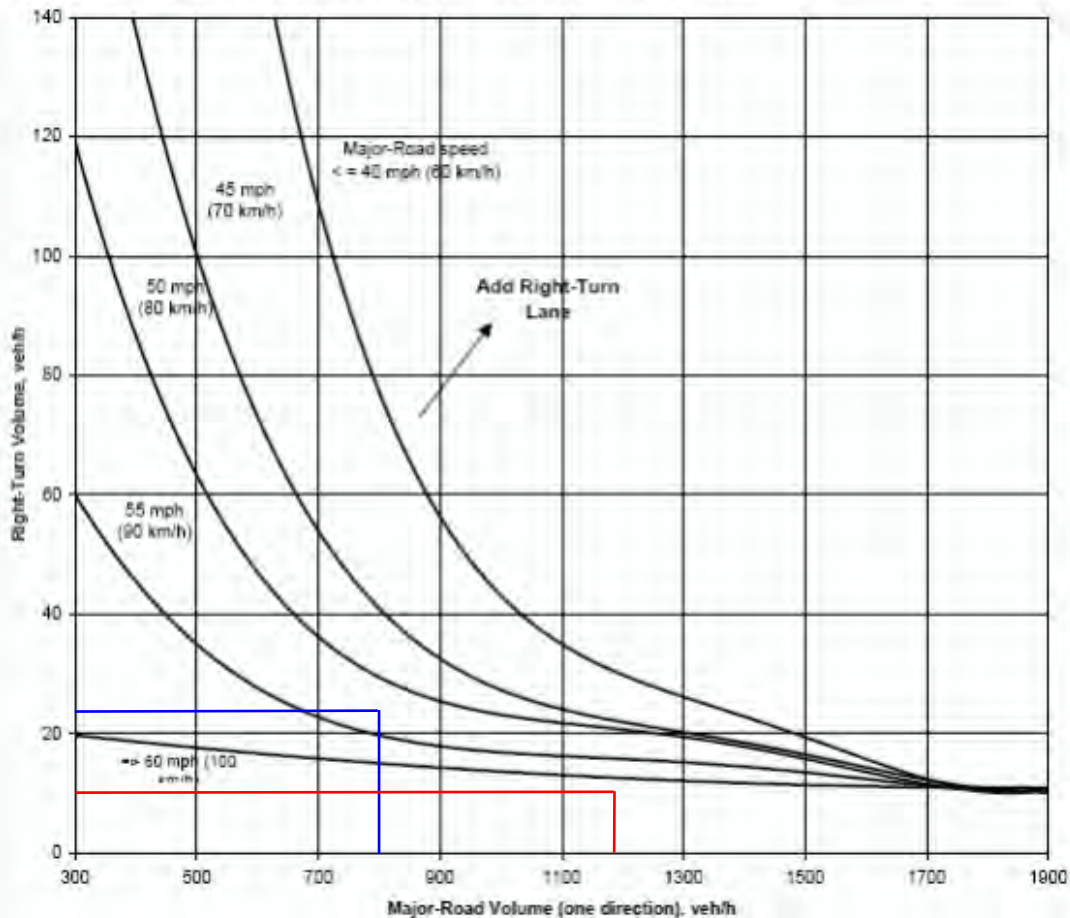
The following data are required:

1. Opposing Volume (veh/hr) - VO - The opposing volume is to include only the right-turn and through movements in the opposite direction of the left-turning vehicle.
2. Advancing Volume (veh/hr) - VA - The advancing volume is to include the right-turn, left-turn and through movements in the same direction as the left-turning vehicle.
3. Operating Speed (mph) - The greatest of anticipated operating speed, measured 85th percentile speed or posted speed.
4. Percentage of left-turns in VA

Left-turn lane is not needed for left-turn volume less than 10 vph. However, criteria other than volume, such as crash experience, may be used to justify a left-turn lane.

The appropriate trend line is identified on the basis of the percentage of left-turns in the advancing volume, rounded up to the nearest percentage trend line. If the advancing and opposing volume combination intersects above or to the right of this trend line, a left-turn lane is appropriate.

Source: NCHRP Report 279 and 457

Figure 7 – Right-Turn Lane Guidelines for Four-Lane Roadways

S Meridian/Ardell - North Bound Right Turn Lane

The following data are required:

1. Advancing Volume (veh/hr) - The advancing volume is to include the right-turn, left-turn and through movements in the same direction as the right-turning vehicle.
2. Right-Turning Volume (veh/hr) - The right-turning volume is the number of advancing vehicles turning right.
3. Operating Speed (mph) - The greatest of anticipated operating speed, measured 85th percentile speed or posted speed.

Note: Right-turn lane not warranted for right-turn volume less than 10 vph. However, criteria other than volume, e.g., crash experience, may be used to justify a right-turn lane.























If the combination of major road approach volume and right-turn volume intersects above or to the right of the speed trend line corresponding to the major road operating speed, then a right-turn lane is appropriate.

Source: NCHRP Report 279 and 457

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	25	15	8	4	11	10	945	4	15	350	45
Future Volume (veh/h)	144	25	15	8	4	11	10	945	4	15	350	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	158	27	16	9	4	12	11	1038	4	16	385	49
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	482	300	178	359	83	249	600	1697	7	228	863	109
Arrive On Green	0.09	0.29	0.29	0.01	0.21	0.21	0.22	0.50	0.50	0.02	0.29	0.29
Sat Flow, veh/h	1674	1034	613	1674	387	1162	1674	3412	13	1674	2983	377
Grp Volume(v), veh/h	158	0	43	9	0	16	11	508	534	16	214	220
Grp Sat Flow(s),veh/h/ln	1674	0	1648	1674	0	1549	1674	1670	1756	1674	1670	1690
Q Serve(g_s), s	10.0	0.0	2.7	0.6	0.0	1.1	0.4	30.8	30.8	0.9	14.7	14.9
Cycle Q Clear(g_c), s	10.0	0.0	2.7	0.6	0.0	1.1	0.4	30.8	30.8	0.9	14.7	14.9
Prop In Lane	1.00		0.37	1.00		0.75	1.00		0.01	1.00		0.22
Lane Grp Cap(c), veh/h	482	0	478	359	0	332	600	830	873	228	483	489
V/C Ratio(X)	0.33	0.00	0.09	0.03	0.00	0.05	0.02	0.61	0.61	0.07	0.44	0.45
Avail Cap(c_a), veh/h	516	0	478	521	0	332	600	830	873	380	644	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	36.2	42.3	0.0	43.7	16.7	25.4	25.4	34.1	40.5	40.6
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.3	0.0	1.3	1.3	0.1	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.1	0.2	0.0	0.5	0.2	12.5	13.1	0.4	6.2	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	36.6	42.3	0.0	43.9	16.7	26.8	26.7	34.2	41.2	41.3
LnGrp LOS	D	A	D	D	A	D	B	C	C	C	D	D
Approach Vol, veh/h		201			25			1053			450	
Approach Delay, s/veh		36.7			43.4			26.6			41.0	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.1	36.0	38.4	47.5	7.5	46.6	9.3	76.6				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	15.0	30.0	15.0	54.0	15.0	30.0	15.0	54.0				
Max Q Clear Time (g_c+I1), s	12.0	3.1	2.4	16.9	2.6	4.7	2.9	32.8				
Green Ext Time (p_c), s	0.1	0.0	0.0	2.8	0.0	0.2	0.0	7.2				
Intersection Summary												
HCM 6th Ctrl Delay				31.8								
HCM 6th LOS				C								

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	164	7	1	53	5	4	15	4	5	6	15
Future Vol, veh/h	33	164	7	1	53	5	4	15	4	5	6	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	38	189	8	1	61	6	5	17	5	6	7	17

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	67	0	0	197	0	0	347	338	193	346	339	64
Stage 1	-	-	-	-	-	-	269	269	-	66	66	-
Stage 2	-	-	-	-	-	-	78	69	-	280	273	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1528	-	-	1370	-	-	606	582	846	606	581	998
Stage 1	-	-	-	-	-	-	734	685	-	942	838	-
Stage 2	-	-	-	-	-	-	928	835	-	725	682	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1528	-	-	1370	-	-	577	565	846	576	564	998
Mov Cap-2 Maneuver	-	-	-	-	-	-	577	565	-	576	564	-
Stage 1	-	-	-	-	-	-	713	666	-	916	837	-
Stage 2	-	-	-	-	-	-	904	834	-	683	663	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.2		0.1		11.3		10	
HCM LOS					B		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	602	1528	-	-	1370	-	-	757
HCM Lane V/C Ratio	0.044	0.025	-	-	0.001	-	-	0.039
HCM Control Delay (s)	11.3	7.4	0	-	7.6	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

HCM 6th TWSC

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	45	11	3	24	5	1	54	1	1	16	7
Future Vol, veh/h	37	45	11	3	24	5	1	54	1	1	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	45	55	13	4	29	6	1	66	1	1	20	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	68	0	0	207	195	62	225	198	32
Stage 1	-	-	-	-	-	-	152	152	-	40	40	-
Stage 2	-	-	-	-	-	-	55	43	-	185	158	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1570	-	-	1527	-	-	748	699	1000	728	696	1039
Stage 1	-	-	-	-	-	-	848	770	-	972	860	-
Stage 2	-	-	-	-	-	-	955	857	-	814	765	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1570	-	-	1527	-	-	708	676	1000	656	673	1039
Mov Cap-2 Maneuver	-	-	-	-	-	-	708	676	-	656	673	-
Stage 1	-	-	-	-	-	-	823	747	-	943	857	-
Stage 2	-	-	-	-	-	-	923	854	-	719	742	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.9			0.7			10.9			10		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	680	1570	-	-	1527	-	-	749
HCM Lane V/C Ratio	0.1	0.029	-	-	0.002	-	-	0.039
HCM Control Delay (s)	10.9	7.4	0	-	7.4	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.1

HCM 6th AWSC

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection

Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	78	269	5	5	91	19	6	58	10	25	23	23
Future Vol, veh/h	78	269	5	5	91	19	6	58	10	25	23	23
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	98	336	6	6	114	24	8	73	13	31	29	29
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.6	9.1	9.3	9.2
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	22%	4%	35%
Vol Thru, %	78%	76%	79%	32%
Vol Right, %	14%	1%	17%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	352	115	71
LT Vol	6	78	5	25
Through Vol	58	269	91	23
RT Vol	10	5	19	23
Lane Flow Rate	92	440	144	89
Geometry Grp	1	1	1	1
Degree of Util (X)	0.138	0.567	0.194	0.131
Departure Headway (Hd)	5.382	4.636	4.852	5.329
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	660	774	733	666
Service Time	3.468	2.69	2.923	3.417
HCM Lane V/C Ratio	0.139	0.568	0.196	0.134
HCM Control Delay	9.3	13.6	9.1	9.2
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.5	3.6	0.7	0.4

HCM 6th AWSC

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection

Intersection Delay, s/veh 11.5

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	302	3	9	193	56	4	121	13	46	38	8
Future Vol, veh/h	17	302	3	9	193	56	4	121	13	46	38	8
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	18	321	3	10	205	60	4	129	14	49	40	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0






















Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.7	11.2	10.4	10
HCM LOS	B	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	3%	50%
Vol Thru, %	88%	94%	75%	41%
Vol Right, %	9%	1%	22%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	138	322	258	92
LT Vol	4	17	9	46
Through Vol	121	302	193	38
RT Vol	13	3	56	8
Lane Flow Rate	147	343	274	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.231	0.482	0.384	0.159
Departure Headway (Hd)	5.653	5.065	5.035	5.849
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	634	713	714	613
Service Time	3.691	3.094	3.066	3.891
HCM Lane V/C Ratio	0.232	0.481	0.384	0.16
HCM Control Delay	10.4	12.7	11.2	10
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	0.9	2.6	1.8	0.6

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	10	30	4	10	31	31	525	8	16	1132	295
Future Volume (veh/h)	72	10	30	4	10	31	31	525	8	16	1132	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	76	11	32	4	11	33	33	553	8	17	1192	311
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	600	152	442	336	80	240	90	1420	21	335	1087	280
Arrive On Green	0.18	0.38	0.38	0.01	0.21	0.21	0.02	0.42	0.42	0.02	0.41	0.41
Sat Flow, veh/h	1674	397	1154	1674	387	1162	1674	3370	49	1674	2629	677
Grp Volume(v), veh/h	76	0	43	4	0	44	33	274	287	17	751	752
Grp Sat Flow(s),veh/h/ln	1674	0	1550	1674	0	1549	1674	1670	1749	1674	1670	1636
Q Serve(g_s), s	4.3	0.0	2.6	0.3	0.0	3.5	1.7	17.0	17.0	0.9	62.0	62.0
Cycle Q Clear(g_c), s	4.3	0.0	2.6	0.3	0.0	3.5	1.7	17.0	17.0	0.9	62.0	62.0
Prop In Lane	1.00		0.74	1.00		0.75	1.00		0.03	1.00		0.41
Lane Grp Cap(c), veh/h	600	0	594	336	0	320	90	704	737	335	690	676
V/C Ratio(X)	0.13	0.00	0.07	0.01	0.00	0.14	0.37	0.39	0.39	0.05	1.09	1.11
Avail Cap(c_a), veh/h	600	0	594	506	0	320	215	704	737	475	690	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	29.3	46.7	0.0	48.6	37.0	30.0	30.0	25.5	44.0	44.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.9	2.5	0.4	0.3	0.1	60.9	69.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.0	0.1	0.0	1.4	0.8	7.0	7.4	0.4	37.0	37.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	0.0	29.6	46.7	0.0	49.5	39.5	30.4	30.4	25.5	104.9	113.4
LnGrp LOS	C	A	C	D	A	D	D	C	C	C	F	F
Approach Vol, veh/h		119			48			594			1520	
Approach Delay, s/veh		28.8			49.2			30.9			108.2	
Approach LOS		C			D			C			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.3	37.0	10.7	69.0	6.8	63.5	9.5	70.2				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	16.0	31.0	15.0	62.0	16.0	31.0	15.0	62.0				
Max Q Clear Time (g_c+I1), s	6.3	5.5	3.7	64.0	2.3	4.6	2.9	19.0				
Green Ext Time (p_c), s	0.1	0.2	0.0	0.0	0.0	0.2	0.0	3.8				
Intersection Summary												
HCM 6th Ctrl Delay				82.7								
HCM 6th LOS				F								

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	47	1	1	217	5	1	18	1	6	36	79
Future Vol, veh/h	27	47	1	1	217	5	1	18	1	6	36	79
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	53	1	1	247	6	1	20	1	7	41	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	253	0	0	54	0	0	434	371	54	378	368	250
Stage 1	-	-	-	-	-	-	116	116	-	252	252	-
Stage 2	-	-	-	-	-	-	318	255	-	126	116	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1306	-	-	1545	-	-	530	557	1010	578	559	786
Stage 1	-	-	-	-	-	-	886	798	-	750	697	-
Stage 2	-	-	-	-	-	-	691	695	-	875	798	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1306	-	-	1545	-	-	434	543	1010	550	545	786
Mov Cap-2 Maneuver	-	-	-	-	-	-	434	543	-	550	545	-
Stage 1	-	-	-	-	-	-	865	779	-	732	696	-
Stage 2	-	-	-	-	-	-	576	694	-	831	779	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.8	0	11.8	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	549	1306	-	-	1545	-	-	682
HCM Lane V/C Ratio	0.041	0.023	-	-	0.001	-	-	0.202
HCM Control Delay (s)	11.8	7.8	0	-	7.3	0	-	11.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7

HCM 6th TWSC

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	24	11	21	29	3	3	23	4	1	91	10
Future Vol, veh/h	5	24	11	21	29	3	3	23	4	1	91	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	26	12	23	31	3	3	25	4	1	98	11

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	34	0	0	38	0	0	175	122	32	136	127	33
Stage 1	-	-	-	-	-	-	42	42	-	79	79	-
Stage 2	-	-	-	-	-	-	133	80	-	57	48	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1571	-	-	1566	-	-	785	766	1039	833	762	1038
Stage 1	-	-	-	-	-	-	970	858	-	927	827	-
Stage 2	-	-	-	-	-	-	868	826	-	952	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1571	-	-	1566	-	-	689	752	1039	798	748	1038
Mov Cap-2 Maneuver	-	-	-	-	-	-	689	752	-	798	748	-
Stage 1	-	-	-	-	-	-	967	855	-	924	815	-
Stage 2	-	-	-	-	-	-	745	814	-	918	850	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	2.9	9.9	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	773	1571	-	-	1566	-	-	770
HCM Lane V/C Ratio	0.042	0.003	-	-	0.014	-	-	0.142
HCM Control Delay (s)	9.9	7.3	0	-	7.3	0	-	10.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.5

HCM 6th AWSC

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection

Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	119	5	13	331	24	3	16	8	23	82	96
Future Vol, veh/h	19	119	5	13	331	24	3	16	8	23	82	96
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	20	125	5	14	348	25	3	17	8	24	86	101
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.5	12.6	8.7	10.2
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	13%	4%	11%
Vol Thru, %	59%	83%	90%	41%
Vol Right, %	30%	3%	7%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	27	143	368	201
LT Vol	3	19	13	23
Through Vol	16	119	331	82
RT Vol	8	5	24	96
Lane Flow Rate	28	151	387	212
Geometry Grp	1	1	1	1
Degree of Util (X)	0.043	0.21	0.507	0.293
Departure Headway (Hd)	5.491	5.027	4.711	4.992
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	656	707	759	713
Service Time	3.491	3.11	2.777	3.07
HCM Lane V/C Ratio	0.043	0.214	0.51	0.297
HCM Control Delay	8.7	9.5	12.6	10.2
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.1	0.8	2.9	1.2

HCM 6th AWSC

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection

Intersection Delay, s/veh 18
Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	215	3	14	306	74	7	76	11	86	192	25
Future Vol, veh/h	8	215	3	14	306	74	7	76	11	86	192	25
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	9	239	3	16	340	82	8	84	12	96	213	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	21.8	11.6	17.9
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	4%	4%	28%
Vol Thru, %	81%	95%	78%	63%
Vol Right, %	12%	1%	19%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	226	394	303
LT Vol	7	8	14	86
Through Vol	76	215	306	192
RT Vol	11	3	74	25
Lane Flow Rate	104	251	438	337
Geometry Grp	1	1	1	1
Degree of Util (X)	0.198	0.437	0.708	0.586
Departure Headway (Hd)	6.822	6.271	5.824	6.271
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	524	573	622	576
Service Time	4.881	4.318	3.863	4.313
HCM Lane V/C Ratio	0.198	0.438	0.704	0.585
HCM Control Delay	11.6	14.1	21.8	17.9
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	0.7	2.2	5.8	3.8

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (veh/h)	144	25	15	8	4	11	10	945	4	15	350	45
Future Volume (veh/h)	144	25	15	8	4	11	10	945	4	15	350	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	160	28	17	9	4	12	11	1050	4	17	389	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	483	298	181	358	83	249	600	1655	738	221	1020	455
Arrive On Green	0.09	0.29	0.29	0.01	0.21	0.21	0.21	0.50	0.50	0.02	0.31	0.31
Sat Flow, veh/h	1674	1024	622	1674	387	1162	1674	3340	1490	1674	3340	1490
Grp Volume(v), veh/h	160	0	45	9	0	16	11	1050	4	17	389	50
Grp Sat Flow(s),veh/h/ln	1674	0	1646	1674	0	1549	1674	1670	1490	1674	1670	1490
Q Serve(g_s), s	10.1	0.0	2.8	0.6	0.0	1.1	0.4	32.4	0.2	1.0	12.8	3.4
Cycle Q Clear(g_c), s	10.1	0.0	2.8	0.6	0.0	1.1	0.4	32.4	0.2	1.0	12.8	3.4
Prop In Lane	1.00		0.38	1.00		0.75	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	483	0	479	358	0	332	600	1655	738	221	1020	455
V/C Ratio(X)	0.33	0.00	0.09	0.03	0.00	0.05	0.02	0.63	0.01	0.08	0.38	0.11
Avail Cap(c_a), veh/h	516	0	479	520	0	332	600	1655	738	371	1288	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	36.2	42.3	0.0	43.7	16.6	26.0	17.9	32.6	38.2	34.9
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.0	0.0	0.3	0.0	0.8	0.0	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.2	0.2	0.0	0.5	0.2	13.0	0.1	0.4	5.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	36.6	42.3	0.0	43.9	16.6	26.8	17.9	32.7	38.5	35.1
LnGrp LOS	D	A	D	D	A	D	B	C	B	C	D	D
Approach Vol, veh/h		205			25			1065			456	
Approach Delay, s/veh		36.7			43.4			26.6			37.9	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.2	36.0	36.0	49.8	7.5	46.7	9.4	76.4				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	15.0	30.0	15.0	54.0	15.0	30.0	15.0	54.0				
Max Q Clear Time (g_c+I1), s	12.1	3.1	2.4	14.8	2.6	4.8	3.0	34.4				
Green Ext Time (p_c), s	0.1	0.0	0.0	3.0	0.0	0.2	0.0	7.7				
Intersection Summary												
HCM 6th Ctrl Delay				31.0								
HCM 6th LOS				C								

Timings
1: Hubbard Rd

05/29/2020

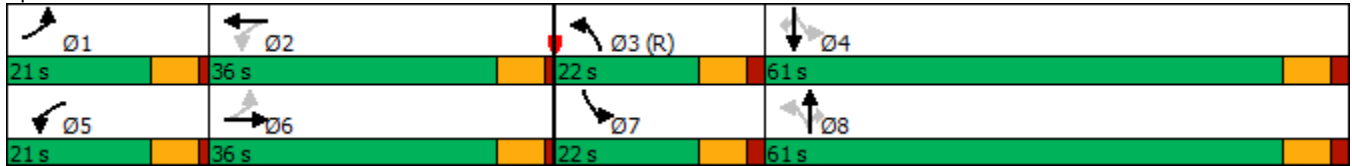


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (vph)	144	25	8	4	10	945	4	15	350	45
Future Volume (vph)	144	25	8	4	10	945	4	15	350	45
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8		7	4	
Permitted Phases	6		2		8		8	4		4
Detector Phase	1	6	5	2	3	8	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0	11.0	24.0	12.0	24.0	24.0	12.0	24.0	24.0
Total Split (s)	21.0	36.0	21.0	36.0	22.0	61.0	61.0	22.0	61.0	61.0
Total Split (%)	15.0%	25.7%	15.0%	25.7%	15.7%	43.6%	43.6%	15.7%	43.6%	43.6%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 36 (26%), Referenced to phase 3:NBL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated























Splits and Phases: 1: Hubbard Rd



HCM 6th Signalized Intersection Summary

1: Hubbard Rd

06/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	10	30	4	10	31	31	525	8	16	1132	295
Future Volume (veh/h)	72	10	30	4	10	31	31	525	8	16	1132	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	80	11	33	4	11	34	34	583	9	18	1258	328
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	584	141	422	246	53	164	119	1473	657	342	1447	646
Arrive On Green	0.23	0.36	0.36	0.01	0.14	0.14	0.03	0.44	0.44	0.02	0.43	0.43
Sat Flow, veh/h	1674	387	1162	1674	378	1169	1674	3340	1490	1674	3340	1490
Grp Volume(v), veh/h	80	0	44	4	0	45	34	583	9	18	1258	328
Grp Sat Flow(s),veh/h/ln	1674	0	1549	1674	0	1547	1674	1670	1490	1674	1670	1490
Q Serve(g_s), s	4.7	0.0	2.8	0.3	0.0	3.9	1.7	17.7	0.5	0.9	51.4	24.0
Cycle Q Clear(g_c), s	4.7	0.0	2.8	0.3	0.0	3.9	1.7	17.7	0.5	0.9	51.4	24.0
Prop In Lane	1.00		0.75	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	584	0	562	246	0	217	119	1473	657	342	1447	646
V/C Ratio(X)	0.14	0.00	0.08	0.02	0.00	0.21	0.28	0.40	0.01	0.05	0.87	0.51
Avail Cap(c_a), veh/h	584	0	562	393	0	217	222	1692	755	457	1692	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	31.3	54.9	0.0	57.1	32.3	28.4	23.6	23.8	38.6	30.9
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.0	2.2	1.3	0.2	0.0	0.1	4.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.1	0.1	0.0	1.7	0.7	7.2	0.2	0.4	21.8	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	0.0	31.6	55.0	0.0	59.3	33.6	28.6	23.6	23.9	43.2	31.5
LnGrp LOS	C	A	C	D	A	E	C	C	C	C	D	C
Approach Vol, veh/h		124			49			626			1604	
Approach Delay, s/veh		30.8			58.9			28.8			40.6	
Approach LOS		C			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	40.2	27.0	10.8	72.0	6.8	60.4	9.6	73.2				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	14.0	21.0	13.0	76.0	14.0	21.0	13.0	76.0				
Max Q Clear Time (g_c+I1), s	6.7	5.9	3.7	53.4	2.3	4.8	2.9	19.7				
Green Ext Time (p_c), s	0.1	0.1	0.0	11.6	0.0	0.1	0.0	4.7				
Intersection Summary												
HCM 6th Ctrl Delay				37.4								
HCM 6th LOS				D								

Timings

1: Hubbard Rd

06/02/2020



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	72	10	4	10	31	525	8	16	1132	295
Future Volume (vph)	72	10	4	10	31	525	8	16	1132	295
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6	5	2	3	8		7	4	
Permitted Phases	6		2		8		8	4		4
Detector Phase	1	6	5	2	3	8	8	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.0	24.0	11.0	24.0	12.0	24.0	24.0	12.0	24.0	24.0
Total Split (s)	20.0	27.0	20.0	27.0	20.0	83.0	83.0	20.0	83.0	83.0
Total Split (%)	13.3%	18.0%	13.3%	18.0%	13.3%	55.3%	55.3%	13.3%	55.3%	55.3%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	Max	None	Max	None	None	None	None	None	None

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 91 (61%), Referenced to phase 1:EBL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Hubbard Rd

Ø1 (R) 20 s	Ø2 27 s	Ø3 20 s	Ø4 83 s
Ø5 20 s	Ø6 27 s	Ø7 20 s	Ø8 83 s

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	33	18	46	20	181	12	1150	17	74	426	55
Future Volume (veh/h)	175	33	18	46	20	181	12	1150	17	74	426	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	194	37	20	51	22	201	13	1278	19	82	473	61
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	313	304	164	393	32	292	473	1523	679	171	1347	601
Arrive On Green	0.10	0.28	0.28	0.03	0.21	0.21	0.09	0.46	0.46	0.04	0.40	0.40
Sat Flow, veh/h	1674	1073	580	1674	149	1363	1674	3340	1490	1674	3340	1490
Grp Volume(v), veh/h	194	0	57	51	0	223	13	1278	19	82	473	61
Grp Sat Flow(s),veh/h/ln	1674	0	1653	1674	0	1512	1674	1670	1490	1674	1670	1490
Q Serve(g_s), s	12.3	0.0	3.6	3.3	0.0	19.0	0.5	47.2	1.0	4.0	13.8	3.6
Cycle Q Clear(g_c), s	12.3	0.0	3.6	3.3	0.0	19.0	0.5	47.2	1.0	4.0	13.8	3.6
Prop In Lane	1.00		0.35	1.00		0.90	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	469	393	0	324	473	1523	679	171	1347	601
V/C Ratio(X)	0.62	0.00	0.12	0.13	0.00	0.69	0.03	0.84	0.03	0.48	0.35	0.10
Avail Cap(c_a), veh/h	321	0	469	517	0	324	494	1523	679	281	1347	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	37.2	40.9	0.0	50.7	17.7	33.6	21.0	29.7	29.0	26.0
Incr Delay (d2), s/veh	3.5	0.0	0.5	0.1	0.0	11.3	0.0	4.3	0.0	2.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	1.5	1.4	0.0	8.3	0.2	19.8	0.4	1.7	5.6	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.9	0.0	37.8	41.1	0.0	62.0	17.7	37.9	21.0	31.8	29.2	26.1
LnGrp LOS	D	A	D	D	A	E	B	D	C	C	C	C
Approach Vol, veh/h		251			274			1310			616	
Approach Delay, s/veh		40.2			58.1			37.5			29.2	
Approach LOS		D			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.3	36.0	20.2	63.5	10.6	45.7	12.9	70.8				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	15.0	30.0	15.0	54.0	15.0	30.0	15.0	54.0				
Max Q Clear Time (g_c+I1), s	14.3	21.0	2.5	15.8	5.3	5.6	6.0	49.2				
Green Ext Time (p_c), s	0.0	0.8	0.0	3.7	0.1	0.2	0.1	3.4				

Intersection Summary

HCM 6th Ctrl Delay	38.0
HCM 6th LOS	D

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	78	382	17	3	125	11	9	37	9	11	14	37
Future Vol, veh/h	78	382	17	3	125	11	9	37	9	11	14	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	87	424	19	3	139	12	10	41	10	12	16	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	443	0	0	788	765	434	784	768	145
Stage 1	-	-	-	-	-	-	608	608	-	151	151	-
Stage 2	-	-	-	-	-	-	180	157	-	633	617	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1424	-	-	1112	-	-	308	332	620	310	331	900
Stage 1	-	-	-	-	-	-	481	484	-	849	770	-
Stage 2	-	-	-	-	-	-	819	766	-	466	480	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1424	-	-	1112	-	-	265	304	620	256	303	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	304	-	256	303	-
Stage 1	-	-	-	-	-	-	442	445	-	780	768	-
Stage 2	-	-	-	-	-	-	763	764	-	382	441	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.2			18.7			13.8		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	1424	-	-	1112	-	-	476
HCM Lane V/C Ratio	0.189	0.061	-	-	0.003	-	-	0.145
HCM Control Delay (s)	18.7	7.7	0	-	8.2	0	-	13.8
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0	-	-	0.5

HCM 6th TWSC

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	437	531	125	31	281	62	3	128	3	3	37	17
Future Vol, veh/h	437	531	125	31	281	62	3	128	3	3	37	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	486	590	139	34	312	69	3	142	3	3	41	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	729	0	0	2077	2081	660	2119	2116	347
Stage 1	-	-	-	-	-	-	1632	1632	-	415	415	-
Stage 2	-	-	-	-	-	-	445	449	-	1704	1701	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1172	-	-	870	-	-	39	~ 53	461	36	50	694
Stage 1	-	-	-	-	-	-	127	159	-	613	591	-
Stage 2	-	-	-	-	-	-	590	571	-	115	147	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1172	-	-	870	-	-	-	~ 14	461	-	~ 14	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 14	-	-	~ 14	-
Stage 1	-	-	-	-	-	-	36	~ 45	-	175	561	-
Stage 2	-	-	-	-	-	-	505	542	-	-	42	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	0.8		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1172	-	-	870	-	-	-
HCM Lane V/C Ratio	-	0.414	-	-	0.04	-	-	-
HCM Control Delay (s)	-	10.2	0	-	9.3	0	-	-
HCM Lane LOS	-	B	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	2.1	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th AWSC

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection

Intersection Delay, s/veh	67.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	144	496	9	9	167	35	14	139	24	61	54	54
Future Vol, veh/h	144	496	9	9	167	35	14	139	24	61	54	54
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	160	551	10	10	186	39	16	154	27	68	60	60
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	112.3	14.3	14.7	14.3
HCM LOS	F	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	22%	4%	36%
Vol Thru, %	79%	76%	79%	32%
Vol Right, %	14%	1%	17%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	177	649	211	169
LT Vol	14	144	9	61
Through Vol	139	496	167	54
RT Vol	24	9	35	54
Lane Flow Rate	197	721	234	188
Geometry Grp	1	1	1	1
Degree of Util (X)	0.375	1.164	0.413	0.357
Departure Headway (Hd)	7.351	5.809	6.692	7.331
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	494	627	542	494
Service Time	5.351	3.86	4.692	5.331
HCM Lane V/C Ratio	0.399	1.15	0.432	0.381
HCM Control Delay	14.7	112.3	14.3	14.3
HCM Lane LOS	B	F	B	B
HCM 95th-tile Q	1.7	23.8	2	1.6

HCM 6th AWSC

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection

Intersection Delay, s/veh 74.1

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	465	5	13	297	86	9	290	31	111	91	20
Future Vol, veh/h	27	465	5	13	297	86	9	290	31	111	91	20
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	495	5	14	316	91	10	309	33	118	97	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	130.7	57.6	41	25.7
HCM LOS	F	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	3%	50%
Vol Thru, %	88%	94%	75%	41%
Vol Right, %	9%	1%	22%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	330	497	396	222
LT Vol	9	27	13	111
Through Vol	290	465	297	91
RT Vol	31	5	86	20
Lane Flow Rate	351	529	421	236
Geometry Grp	1	1	1	1
Degree of Util (X)	0.814	1.185	0.931	0.59
Departure Headway (Hd)	8.945	8.068	8.502	9.675
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	407	449	430	376
Service Time	6.945	6.152	6.502	7.675
HCM Lane V/C Ratio	0.862	1.178	0.979	0.628
HCM Control Delay	41	130.7	57.6	25.7
HCM Lane LOS	E	F	F	D
HCM 95th-tile Q	7.4	20	10.5	3.6

HCM 6th TWSC

6: Stroebel Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	83	41	18	123	124	69
Future Vol, veh/h	83	41	18	123	124	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	92	46	20	137	138	77

























Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	138
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	-	1440
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1440
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	781	-	-	1440	-
HCM Lane V/C Ratio	0.275	-	-	0.014	-
HCM Control Delay (s)	11.3	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.1	-	-	0	-

HCM 6th Signalized Intersection Summary 3: Locust Grove Rd & Hubbard Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	437	531	125	31	281	62	3	128	3	3	37	17
Future Volume (veh/h)	437	531	125	31	281	62	3	128	3	3	37	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	486	590	139	34	312	69	3	142	3	3	41	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	608	788	668	300	402	340	255	209	177	176	209	177
Arrive On Green	0.26	0.45	0.45	0.04	0.23	0.23	0.00	0.12	0.12	0.00	0.12	0.12
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	486	590	139	34	312	69	3	142	3	3	41	19
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	12.1	17.0	3.5	0.9	10.2	2.3	0.1	4.7	0.1	0.1	1.3	0.7
Cycle Q Clear(g_c), s	12.1	17.0	3.5	0.9	10.2	2.3	0.1	4.7	0.1	0.1	1.3	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	608	788	668	300	402	340	255	209	177	176	209	177
V/C Ratio(X)	0.80	0.75	0.21	0.11	0.78	0.20	0.01	0.68	0.02	0.02	0.20	0.11
Avail Cap(c_a), veh/h	1138	1380	1170	623	777	658	632	575	487	553	575	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	14.0	10.3	17.0	22.1	19.1	23.6	25.8	23.8	23.7	24.3	24.0
Incr Delay (d2), s/veh	2.5	1.5	0.2	0.2	3.3	0.3	0.0	3.8	0.0	0.0	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	6.1	1.0	0.3	4.2	0.8	0.0	2.1	0.0	0.0	0.5	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	15.5	10.4	17.2	25.4	19.4	23.6	29.6	23.8	23.8	24.7	24.3
LnGrp LOS	B	B	B	B	C	B	C	C	C	C	C	C
Approach Vol, veh/h		1215			415			148			63	
Approach Delay, s/veh		14.4			23.7			29.4			24.6	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	13.3	8.2	33.4	6.2	13.3	21.6	20.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	14.0	20.0	14.0	48.0	14.0	20.0	35.0	27.0				
Max Q Clear Time (g_c+I1), s	2.1	6.7	2.9	19.0	2.1	3.3	14.1	12.2				
Green Ext Time (p_c), s	0.0	0.5	0.0	4.9	0.0	0.2	1.6	1.8				
Intersection Summary												
HCM 6th Ctrl Delay				18.1								
HCM 6th LOS				B								

Timings

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	437	531	125	31	281	62	3	128	3	3	37	17
Future Volume (vph)	437	531	125	31	281	62	3	128	3	3	37	17
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	41.0	54.0	54.0	20.0	33.0	33.0	20.0	26.0	26.0	20.0	26.0	26.0
Total Split (%)	34.2%	45.0%	45.0%	16.7%	27.5%	27.5%	16.7%	21.7%	21.7%	16.7%	21.7%	21.7%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

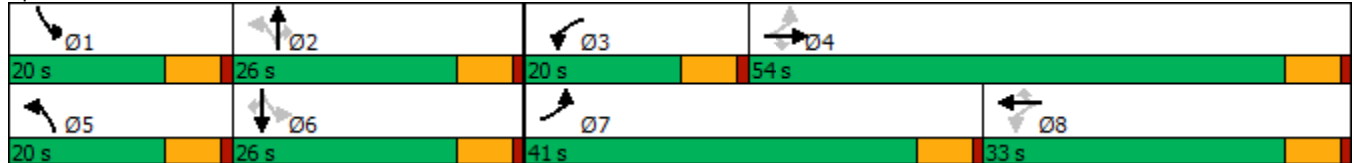
Cycle Length: 120

Actuated Cycle Length: 79.7

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Locust Grove Rd & Hubbard Rd



HCM 6th Roundabout

3: Locust Grove Rd & Hubbard Rd

























05/29/2020

Intersection									
Intersection Delay, s/veh	15.0								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	1215		415		148		63		
Demand Flow Rate, veh/h	1252		427		152		65		
Vehicles Circulating, veh/h	80		650		1112		359		
Vehicles Exiting, veh/h	344		614		220		718		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	17.7		10.0		11.4		4.0		
Approach LOS	C		A		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.886	0.114	0.834	0.166	0.980	0.020	0.692	0.308	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	1109	143	356	71	149	3	45	20	
Cap Entry Lane, veh/h	1320	1320	786	786	516	516	1024	1024	
Entry HV Adj Factor	0.971	0.972	0.971	0.972	0.971	1.000	0.973	0.950	
Flow Entry, veh/h	1076	139	346	69	145	3	44	19	
Cap Entry, veh/h	1281	1283	763	764	501	516	996	973	
V/C Ratio	0.840	0.108	0.453	0.090	0.289	0.006	0.044	0.020	
Control Delay, s/veh	19.6	3.7	10.8	5.6	11.5	7.0	4.0	3.9	
LOS	C	A	B	A	B	A	A	A	
95th %tile Queue, veh	11	0	2	0	1	0	0	0	

HCM 6th Signalized Intersection Summary

4: Locust Grove Rd & Columbia Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	496	9	9	167	35	14	139	24	61	54	54
Future Volume (veh/h)	144	496	9	9	167	35	14	139	24	61	54	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	160	551	10	10	186	39	16	154	27	68	60	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	535	676	573	233	535	454	323	231	196	277	297	252
Arrive On Green	0.09	0.38	0.38	0.01	0.30	0.30	0.02	0.13	0.13	0.06	0.17	0.17
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	160	551	10	10	186	39	16	154	27	68	60	60
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	3.6	16.3	0.2	0.2	4.8	1.1	0.5	4.8	0.9	2.0	1.7	2.0
Cycle Q Clear(g_c), s	3.6	16.3	0.2	0.2	4.8	1.1	0.5	4.8	0.9	2.0	1.7	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	535	676	573	233	535	454	323	231	196	277	297	252
V/C Ratio(X)	0.30	0.81	0.02	0.04	0.35	0.09	0.05	0.67	0.14	0.25	0.20	0.24
Avail Cap(c_a), veh/h	725	1455	1233	558	1455	1233	636	727	616	528	727	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	16.0	11.1	14.8	15.7	14.4	21.1	24.0	22.3	20.1	20.7	20.9
Incr Delay (d2), s/veh	0.3	2.5	0.0	0.1	0.4	0.1	0.1	3.3	0.3	0.5	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.1	0.1	0.1	1.8	0.3	0.2	2.1	0.3	0.8	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.8	18.5	11.1	14.9	16.1	14.5	21.2	27.3	22.6	20.6	21.1	21.3
LnGrp LOS	B	B	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		721			235			197			188	
Approach Delay, s/veh		16.9			15.8			26.1			21.0	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	13.6	6.7	28.3	7.1	15.8	11.4	23.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	24.0	12.0	48.0	12.0	24.0	12.0	48.0				
Max Q Clear Time (g_c+I1), s	4.0	6.8	2.2	18.3	2.5	4.0	5.6	6.8				
Green Ext Time (p_c), s	0.1	0.8	0.0	4.0	0.0	0.4	0.2	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				18.6								
HCM 6th LOS				B								

Timings

4: Locust Grove Rd & Columbia Rd

05/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	496	9	9	167	35	14	139	24	61	54	54
Future Volume (vph)	144	496	9	9	167	35	14	139	24	61	54	54
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	18.0	54.0	54.0	18.0	54.0	54.0	18.0	30.0	30.0	18.0	30.0	30.0
Total Split (%)	15.0%	45.0%	45.0%	15.0%	45.0%	45.0%	15.0%	25.0%	25.0%	15.0%	25.0%	25.0%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

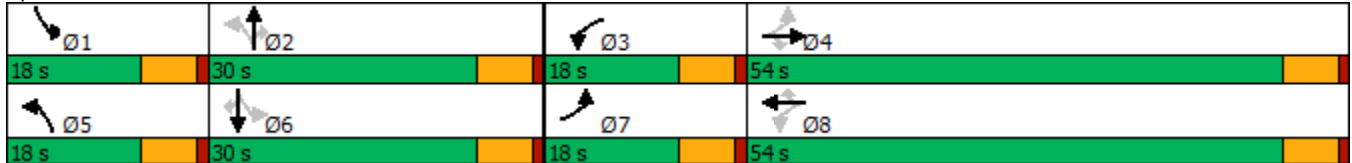
Cycle Length: 120

Actuated Cycle Length: 70.9

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Locust Grove Rd & Columbia Rd



HCM 6th Roundabout

4: Locust Grove Rd & Columbia Rd

























05/29/2020

Intersection									
Intersection Delay, s/veh	8.0								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	721		235		197		188		
Demand Flow Rate, veh/h	743		242		203		194		
Vehicles Circulating, veh/h	142		340		803		218		
Vehicles Exiting, veh/h	270		666		82		364		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	9.9		5.1		8.2		4.0		
Approach LOS	A		A		A		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.987	0.013	0.835	0.165	0.862	0.138	0.680	0.320	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	733	10	202	40	175	28	132	62	
Cap Entry Lane, veh/h	1248	1248	1042	1042	684	684	1165	1165	
Entry HV Adj Factor	0.971	1.000	0.972	0.975	0.974	0.964	0.971	0.968	
Flow Entry, veh/h	711	10	196	39	170	27	128	60	
Cap Entry, veh/h	1211	1248	1013	1016	666	659	1131	1127	
V/C Ratio	0.587	0.008	0.194	0.038	0.256	0.041	0.113	0.053	
Control Delay, s/veh	10.0	2.9	5.4	3.9	8.5	5.9	4.2	3.6	
LOS	B	A	A	A	A	A	A	A	
95th %tile Queue, veh	4	0	1	0	1	0	0	0	

HCM 6th Signalized Intersection Summary

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	465	5	13	297	86	9	290	31	111	91	20
Future Volume (veh/h)	27	465	5	13	297	86	9	290	31	111	91	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	30	517	6	14	330	96	10	322	34	123	101	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	320	605	513	191	580	491	407	399	338	284	513	435
Arrive On Green	0.03	0.34	0.34	0.02	0.33	0.33	0.01	0.23	0.23	0.08	0.29	0.29
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	30	517	6	14	330	96	10	322	34	123	101	22
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	0.8	19.6	0.2	0.4	11.1	3.3	0.3	12.4	1.3	3.9	3.1	0.8
Cycle Q Clear(g_c), s	0.8	19.6	0.2	0.4	11.1	3.3	0.3	12.4	1.3	3.9	3.1	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	605	513	191	580	491	407	399	338	284	513	435
V/C Ratio(X)	0.09	0.85	0.01	0.07	0.57	0.20	0.02	0.81	0.10	0.43	0.20	0.05
Avail Cap(c_a), veh/h	570	931	789	466	931	789	690	784	665	459	784	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	21.9	15.5	17.9	19.8	17.2	20.9	26.2	21.9	19.6	19.1	18.3
Incr Delay (d2), s/veh	0.1	4.9	0.0	0.2	0.9	0.2	0.0	3.9	0.1	1.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	8.3	0.1	0.2	4.4	1.1	0.1	5.4	0.4	1.5	1.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.9	26.8	15.5	18.0	20.7	17.4	20.9	30.1	22.1	20.7	19.3	18.3
LnGrp LOS	B	C	B	B	C	B	C	C	C	C	B	B
Approach Vol, veh/h		553			440			366			246	
Approach Delay, s/veh		26.1			19.9			29.1			19.9	
Approach LOS		C			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	22.3	7.2	30.7	6.9	26.9	8.2	29.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	13.0	32.0	13.0	38.0	13.0	32.0	13.0	38.0				
Max Q Clear Time (g_c+I1), s	5.9	14.4	2.4	21.6	2.3	5.1	2.8	13.1				
Green Ext Time (p_c), s	0.2	1.9	0.0	3.1	0.0	0.6	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay				24.1								
HCM 6th LOS				C								

Timings

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	465	5	13	297	86	9	290	31	111	91	20
Future Volume (vph)	27	465	5	13	297	86	9	290	31	111	91	20
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	19.0	44.0	44.0	19.0	44.0	44.0	19.0	38.0	38.0	19.0	38.0	38.0
Total Split (%)	15.8%	36.7%	36.7%	15.8%	36.7%	36.7%	15.8%	31.7%	31.7%	15.8%	31.7%	31.7%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

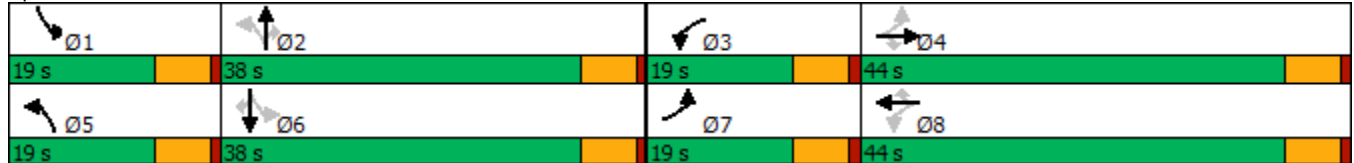
Cycle Length: 120

Actuated Cycle Length: 87.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Locust Grove Rd & Lake Hazel Rd



HCM 6th Roundabout

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	8.2								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	553		440		366		246		
Demand Flow Rate, veh/h	570		453		377		254		
Vehicles Circulating, veh/h	245		373		691		364		
Vehicles Exiting, veh/h	373		695		124		462		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	8.9		6.8		10.6		5.7		
Approach LOS	A		A		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.989	0.011	0.781	0.219	0.907	0.093	0.909	0.091	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	564	6	354	99	342	35	231	23	
Cap Entry Lane, veh/h	1136	1136	1011	1011	757	757	1020	1020	
Entry HV Adj Factor	0.971	1.000	0.972	0.970	0.972	0.971	0.970	0.957	
Flow Entry, veh/h	547	6	344	96	332	34	224	22	
Cap Entry, veh/h	1103	1136	983	981	736	736	989	975	
V/C Ratio	0.496	0.005	0.350	0.098	0.452	0.046	0.227	0.023	
Control Delay, s/veh	8.9	3.2	7.4	4.6	11.1	5.4	5.8	3.9	
LOS	A	A	A	A	B	A	A	A	
95th %tile Queue, veh	3	0	2	0	2	0	1	0	

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

06/02/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	30	37	37	21	149	38	638	50	207	1378	359
Future Volume (veh/h)	88	30	37	37	21	149	38	638	50	207	1378	359
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	98	33	41	41	23	166	42	709	56	230	1531	399
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	348	198	246	279	26	187	109	1448	646	389	1646	734
Arrive On Green	0.17	0.28	0.28	0.03	0.14	0.14	0.03	0.43	0.43	0.09	0.49	0.49
Sat Flow, veh/h	1674	713	886	1674	185	1333	1674	3340	1490	1674	3340	1490
Grp Volume(v), veh/h	98	0	74	41	0	189	42	709	56	230	1531	399
Grp Sat Flow(s),veh/h/ln	1674	0	1598	1674	0	1518	1674	1670	1490	1674	1670	1490
Q Serve(g_s), s	6.3	0.0	5.3	3.1	0.0	18.3	2.1	22.9	3.3	11.1	64.4	27.8
Cycle Q Clear(g_c), s	6.3	0.0	5.3	3.1	0.0	18.3	2.1	22.9	3.3	11.1	64.4	27.8
Prop In Lane	1.00		0.55	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	348	0	445	279	0	213	109	1448	646	389	1646	734
V/C Ratio(X)	0.28	0.00	0.17	0.15	0.00	0.89	0.39	0.49	0.09	0.59	0.93	0.54
Avail Cap(c_a), veh/h	348	0	445	388	0	213	208	1692	755	389	1692	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	41.0	53.2	0.0	63.4	34.8	30.5	25.0	22.0	35.6	26.4
Incr Delay (d2), s/veh	0.4	0.0	0.8	0.2	0.0	38.4	2.2	0.3	0.1	2.4	9.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	2.2	1.4	0.0	9.4	0.9	9.4	1.2	4.7	28.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	41.8	53.4	0.0	101.8	37.0	30.8	25.1	24.4	45.2	27.1
LnGrp LOS	D	A	D	D	A	F	D	C	C	C	D	C
Approach Vol, veh/h		172			230			807			2160	
Approach Delay, s/veh		40.1			93.2			30.7			39.6	
Approach LOS		D			F			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	27.0	11.1	80.9	10.2	47.7	20.0	72.0				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	14.0	21.0	13.0	76.0	14.0	21.0	13.0	76.0				
Max Q Clear Time (g_c+I1), s	8.3	20.3	4.1	66.4	5.1	7.3	13.1	24.9				
Green Ext Time (p_c), s	0.1	0.1	0.0	7.5	0.0	0.2	0.0	6.1				

Intersection Summary

HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	13.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	64	111	3	3	507	11	3	20	3	14	85	187
Future Vol, veh/h	64	111	3	3	507	11	3	20	3	14	85	187
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	71	123	3	3	563	12	3	22	3	16	94	208
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	575	0	0	126	0	0	993	848	125	854	843	569
Stage 1	-	-	-	-	-	-	267	267	-	575	575	-
Stage 2	-	-	-	-	-	-	726	581	-	279	268	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	993	-	-	1454	-	-	223	297	923	278	299	520
Stage 1	-	-	-	-	-	-	736	686	-	502	501	-
Stage 2	-	-	-	-	-	-	414	498	-	725	685	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	993	-	-	1454	-	-	93	273	923	244	275	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	93	273	-	244	275	-
Stage 1	-	-	-	-	-	-	679	633	-	463	499	-
Stage 2	-	-	-	-	-	-	201	497	-	643	632	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.2			0			22.1			42.8		
HCM LOS	C			C			C			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	239	993	-	-	1454	-	-	394				
HCM Lane V/C Ratio	0.121	0.072	-	-	0.002	-	-	0.807				
HCM Control Delay (s)	22.1	8.9	0	-	7.5	0	-	42.8				
HCM Lane LOS	C	A	A	-	A	A	-	E				
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0	-	-	7.1				

HCM 6th TWSC

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 187.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	62	281	125	250	344	31	7	54	10	3	216	24
Future Vol, veh/h	62	281	125	250	344	31	7	54	10	3	216	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	67	302	134	269	370	33	8	58	11	3	232	26

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	403	0	0	436
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.13	-	-	4.13
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.227	-	-	2.227
Pot Cap-1 Maneuver	1150	-	-	1118
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1150	-	-	1118
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	3.7		\$ 1074.9
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1150	-	-	1118	-	-	83
HCM Lane V/C Ratio	-	0.058	-	-	0.24	-	-	3.148
HCM Control Delay (s)	-	8.3	0	-	9.2	0		\$ 1074.9
HCM Lane LOS	-	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0.2	-	-	0.9	-	-	26

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th AWSC

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection

Intersection Delay, s/veh	101.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	219	9	24	609	45	7	37	20	54	196	230
Future Vol, veh/h	35	219	9	24	609	45	7	37	20	54	196	230
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	37	231	9	25	641	47	7	39	21	57	206	242
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20	179.9	13.7	48
HCM LOS	C	F	B	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	13%	4%	11%
Vol Thru, %	58%	83%	90%	41%
Vol Right, %	31%	3%	7%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	263	678	480
LT Vol	7	35	24	54
Through Vol	37	219	609	196
RT Vol	20	9	45	230
Lane Flow Rate	67	277	714	505
Geometry Grp	1	1	1	1
Degree of Util (X)	0.152	0.551	1.326	0.91
Departure Headway (Hd)	9.094	7.84	6.688	7.211
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	397	462	550	505
Service Time	7.094	5.84	4.692	5.211
HCM Lane V/C Ratio	0.169	0.6	1.298	1
HCM Control Delay	13.7	20	179.9	48
HCM Lane LOS	B	C	F	E
HCM 95th-tile Q	0.5	3.3	30.6	10.5

HCM 6th AWSC

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection

Intersection Delay, s/veh 284.1

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	330	5	22	471	114	17	182	26	204	457	60
Future Vol, veh/h	12	330	5	22	471	114	17	182	26	204	457	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	367	6	24	523	127	19	202	29	227	508	67
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	77.6	304.5	40.5	442.3
HCM LOS	F	F	E	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	3%	4%	28%
Vol Thru, %	81%	95%	78%	63%
Vol Right, %	12%	1%	19%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	225	347	607	721
LT Vol	17	12	22	204
Through Vol	182	330	471	457
RT Vol	26	5	114	60
Lane Flow Rate	250	386	674	801
Geometry Grp	1	1	1	1
Degree of Util (X)	0.653	0.937	1.586	1.909
Departure Headway (Hd)	14.218	13.098	10.948	10.07
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	258	281	337	369
Service Time	12.218	11.098	8.948	8.07
HCM Lane V/C Ratio	0.969	1.374	2	2.171
HCM Control Delay	40.5	77.6	304.5	442.3
HCM Lane LOS	E	F	F	F
HCM 95th-tile Q	4.1	8.8	30.5	46.2

HCM 6th TWSC

6: Stroebel Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖	↘	
Traffic Vol, veh/h	148	139	60	125	82	45
Future Vol, veh/h	148	139	60	125	82	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	164	154	67	139	91	50

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	318
Stage 1	-	-	164
Stage 2	-	-	273
Critical Hdwy	-	4.13	6.43
Critical Hdwy Stg 1	-	-	5.43
Critical Hdwy Stg 2	-	-	5.43
Follow-up Hdwy	-	2.227	3.527
Pot Cap-1 Maneuver	-	1236	575
Stage 1	-	-	863
Stage 2	-	-	771
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1236	541
Mov Cap-2 Maneuver	-	-	541
Stage 1	-	-	863
Stage 2	-	-	726

























Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	626	-	-	1236	-
HCM Lane V/C Ratio	0.225	-	-	0.054	-
HCM Control Delay (s)	12.4	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

HCM 6th Signalized Intersection Summary

3: Locust Grove Rd & Hubbard Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	281	125	250	344	31	7	54	10	3	216	24
Future Volume (veh/h)	62	281	125	250	344	31	7	54	10	3	216	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	69	312	139	278	382	34	8	60	11	3	240	27
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	367	420	356	454	594	503	203	338	286	345	327	277
Arrive On Green	0.06	0.24	0.24	0.16	0.34	0.34	0.01	0.19	0.19	0.00	0.19	0.19
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	69	312	139	278	382	34	8	60	11	3	240	27
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	1.8	9.7	4.6	6.7	10.8	0.9	0.2	1.7	0.4	0.1	7.6	0.9
Cycle Q Clear(g_c), s	1.8	9.7	4.6	6.7	10.8	0.9	0.2	1.7	0.4	0.1	7.6	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	420	356	454	594	503	203	338	286	345	327	277
V/C Ratio(X)	0.19	0.74	0.39	0.61	0.64	0.07	0.04	0.18	0.04	0.01	0.73	0.10
Avail Cap(c_a), veh/h	613	1077	912	733	1286	1090	527	867	735	680	867	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	20.7	18.8	13.2	16.5	13.2	19.6	19.9	19.3	19.3	22.6	19.8
Incr Delay (d2), s/veh	0.2	2.6	0.7	1.3	1.2	0.1	0.1	0.2	0.1	0.0	3.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.9	1.5	2.3	4.1	0.3	0.1	0.7	0.1	0.0	3.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	23.3	19.5	14.5	17.6	13.2	19.6	20.1	19.4	19.3	25.8	20.0
LnGrp LOS	B	C	B	B	B	B	B	C	B	B	C	B
Approach Vol, veh/h		520			694			79			270	
Approach Delay, s/veh		21.3			16.2			20.0			25.1	
Approach LOS		C			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.2	17.3	15.2	20.0	6.6	16.9	9.4	25.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	29.0	19.0	36.0	12.0	29.0	12.0	43.0				
Max Q Clear Time (g_c+I1), s	2.1	3.7	8.7	11.7	2.2	9.6	3.8	12.8				
Green Ext Time (p_c), s	0.0	0.3	0.6	2.4	0.0	1.4	0.1	2.6				
Intersection Summary												
HCM 6th Ctrl Delay				19.6								
HCM 6th LOS				B								

Timings

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	281	125	250	344	31	7	54	10	3	216	24
Future Volume (vph)	62	281	125	250	344	31	7	54	10	3	216	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	18.0	42.0	42.0	25.0	49.0	49.0	18.0	35.0	35.0	18.0	35.0	35.0
Total Split (%)	15.0%	35.0%	35.0%	20.8%	40.8%	40.8%	15.0%	29.2%	29.2%	15.0%	29.2%	29.2%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

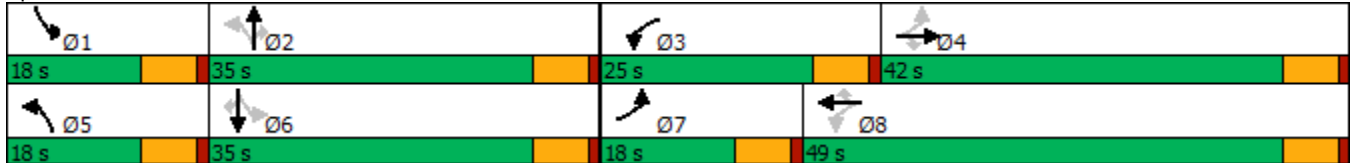
Cycle Length: 120

Actuated Cycle Length: 68.2

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Locust Grove Rd & Hubbard Rd



HCM 6th Roundabout

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	8.6								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	520		694		79		270		
Demand Flow Rate, veh/h	535		714		81		278		
Vehicles Circulating, veh/h	536		141		395		687		
Vehicles Exiting, veh/h	429		335		676		168		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	8.8		8.9		4.3		8.5		
Approach LOS	A		A		A		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.733	0.267	0.951	0.049	0.864	0.136	0.899	0.101	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	392	143	679	35	70	11	250	28	
Cap Entry Lane, veh/h	872	872	1249	1249	991	991	760	760	
Entry HV Adj Factor	0.971	0.972	0.971	0.971	0.974	1.000	0.971	0.964	
Flow Entry, veh/h	381	139	660	34	68	11	243	27	
Cap Entry, veh/h	847	847	1213	1213	966	991	738	733	
V/C Ratio	0.450	0.164	0.544	0.028	0.071	0.011	0.329	0.037	
Control Delay, s/veh	9.9	5.9	9.2	3.2	4.4	3.7	8.9	5.3	
LOS	A	A	A	A	A	A	A	A	
95th %tile Queue, veh	2	1	3	0	0	0	1	0	

HCM 6th Signalized Intersection Summary

4: Locust Grove Rd & Columbia Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	219	9	24	609	45	7	37	20	54	196	230
Future Volume (veh/h)	35	219	9	24	609	45	7	37	20	54	196	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	39	243	10	27	677	50	8	41	22	60	218	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	214	786	666	537	772	654	202	316	268	380	379	321
Arrive On Green	0.04	0.45	0.45	0.03	0.44	0.44	0.01	0.18	0.18	0.05	0.22	0.22
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	39	243	10	27	677	50	8	41	22	60	218	256
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	1.0	7.1	0.3	0.7	28.2	1.6	0.3	1.6	1.0	2.3	8.9	13.1
Cycle Q Clear(g_c), s	1.0	7.1	0.3	0.7	28.2	1.6	0.3	1.6	1.0	2.3	8.9	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	786	666	537	772	654	202	316	268	380	379	321
V/C Ratio(X)	0.18	0.31	0.02	0.05	0.88	0.08	0.04	0.13	0.08	0.16	0.57	0.80
Avail Cap(c_a), veh/h	403	1138	965	740	1138	965	435	985	835	553	985	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	14.2	12.4	11.9	20.5	13.1	26.7	27.6	27.4	25.0	28.2	29.8
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.0	5.5	0.0	0.1	0.2	0.1	0.2	1.4	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.7	0.1	0.3	11.8	0.5	0.1	0.7	0.4	0.9	3.8	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	14.5	12.4	11.9	26.1	13.1	26.8	27.8	27.5	25.2	29.6	34.3
LnGrp LOS	B	B	B	B	C	B	C	C	C	C	C	C
Approach Vol, veh/h		292			754			71			534	
Approach Delay, s/veh		14.7			24.7			27.6			31.4	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	20.5	8.3	41.9	6.8	23.3	8.9	41.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	45.0	12.0	52.0	12.0	45.0	12.0	52.0				
Max Q Clear Time (g_c+I1), s	4.3	3.6	2.7	9.1	2.3	15.1	3.0	30.2				
Green Ext Time (p_c), s	0.1	0.3	0.0	1.6	0.0	2.3	0.0	5.0				
Intersection Summary												
HCM 6th Ctrl Delay											25.2	
HCM 6th LOS											C	

Timings

4: Locust Grove Rd & Columbia Rd

05/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	219	9	24	609	45	7	37	20	54	196	230
Future Volume (vph)	35	219	9	24	609	45	7	37	20	54	196	230
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	18.0	58.0	58.0	18.0	58.0	58.0	18.0	51.0	51.0	18.0	51.0	51.0
Total Split (%)	12.4%	40.0%	40.0%	12.4%	40.0%	40.0%	12.4%	35.2%	35.2%	12.4%	35.2%	35.2%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

Cycle Length: 145

Actuated Cycle Length: 96

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Locust Grove Rd & Columbia Rd

Ø1	Ø2	Ø3	Ø4
18 s	51 s	18 s	58 s
Ø5	Ø6	Ø7	Ø8
18 s	51 s	18 s	58 s

HCM 6th Roundabout

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	8.5								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	292		754		71		534		
Demand Flow Rate, veh/h	300		777		73		551		
Vehicles Circulating, veh/h	315		90		352		733		
Vehicles Exiting, veh/h	969		335		263		134		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	6.0		8.7		4.0		10.1		
Approach LOS	A		A		A		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.967	0.033	0.933	0.067	0.685	0.315	0.521	0.479	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	290	10	725	52	50	23	287	264	
Cap Entry Lane, veh/h	1066	1066	1308	1308	1031	1031	729	729	
Entry HV Adj Factor	0.971	1.000	0.971	0.962	0.976	0.957	0.970	0.970	
Flow Entry, veh/h	282	10	704	50	49	22	278	256	
Cap Entry, veh/h	1036	1066	1270	1258	1006	986	707	707	
V/C Ratio	0.272	0.009	0.554	0.040	0.049	0.022	0.394	0.362	
Control Delay, s/veh	6.1	3.5	9.1	3.2	4.0	3.8	10.3	9.8	
LOS	A	A	A	A	A	A	B	A	
95th %tile Queue, veh	1	0	4	0	0	0	2	2	

HCM 6th Signalized Intersection Summary

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (veh/h)	12	330	5	22	471	114	17	182	26	204	457	60
Future Volume (veh/h)	12	330	5	22	471	114	17	182	26	204	457	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	13	367	6	24	523	127	19	202	29	227	508	67
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	164	591	500	288	608	515	176	414	351	445	592	502
Arrive On Green	0.02	0.34	0.34	0.03	0.35	0.35	0.02	0.24	0.24	0.12	0.34	0.34
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	13	367	6	24	523	127	19	202	29	227	508	67
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	0.4	15.0	0.2	0.8	23.7	5.2	0.7	8.5	1.3	8.3	23.1	2.7
Cycle Q Clear(g_c), s	0.4	15.0	0.2	0.8	23.7	5.2	0.7	8.5	1.3	8.3	23.1	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	591	500	288	608	515	176	414	351	445	592	502
V/C Ratio(X)	0.08	0.62	0.01	0.08	0.86	0.25	0.11	0.49	0.08	0.51	0.86	0.13
Avail Cap(c_a), veh/h	392	966	819	500	966	819	414	1069	906	514	1069	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	23.8	18.9	19.0	26.0	20.0	25.1	28.2	25.5	19.7	26.5	19.7
Incr Delay (d2), s/veh	0.2	1.1	0.0	0.1	4.8	0.2	0.3	0.9	0.1	0.9	3.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.2	0.1	0.3	10.2	1.8	0.3	3.6	0.5	3.2	9.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	24.9	18.9	19.2	30.8	20.2	25.4	29.1	25.6	20.6	30.2	19.8
LnGrp LOS	C	C	B	B	C	C	C	C	C	C	C	B
Approach Vol, veh/h		386			674			250			802	
Approach Delay, s/veh		24.7			28.4			28.4			26.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.5	26.1	8.2	34.7	7.8	34.8	7.3	35.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	14.0	52.0	13.0	47.0	14.0	52.0	13.0	47.0				
Max Q Clear Time (g_c+I1), s	10.3	10.5	2.8	17.0	2.7	25.1	2.4	25.7				
Green Ext Time (p_c), s	0.2	1.3	0.0	2.4	0.0	3.7	0.0	3.9				

Intersection Summary

HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

Timings

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	12	330	5	22	471	114	17	182	26	204	457	60
Future Volume (vph)	12	330	5	22	471	114	17	182	26	204	457	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0	18.0	24.0	24.0
Total Split (s)	19.0	53.0	53.0	19.0	53.0	53.0	20.0	58.0	58.0	20.0	58.0	58.0
Total Split (%)	12.7%	35.3%	35.3%	12.7%	35.3%	35.3%	13.3%	38.7%	38.7%	13.3%	38.7%	38.7%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 102.8

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Splits and Phases: 5: Locust Grove Rd & Lake Hazel Rd

20 s	58 s	19 s	53 s
20 s	58 s	19 s	53 s

HCM 6th Roundabout

5: Locust Grove Rd & Lake Hazel Rd

























05/29/2020

Intersection									
Intersection Delay, s/veh	18.6								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	386		674		250		802		
Demand Flow Rate, veh/h	397		695		258		826		
Vehicles Circulating, veh/h	782		241		625		584		
Vehicles Exiting, veh/h	628		642		554		352		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	14.5		8.0		7.5		33.0		
Approach LOS	B		A		A		D		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.985	0.015	0.812	0.188	0.884	0.116	0.916	0.084	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	391	6	564	131	228	30	757	69	
Cap Entry Lane, veh/h	697	697	1140	1140	804	804	835	835	
Entry HV Adj Factor	0.972	1.000	0.970	0.969	0.969	0.967	0.971	0.971	
Flow Entry, veh/h	380	6	547	127	221	29	735	67	
Cap Entry, veh/h	677	697	1107	1106	779	777	810	810	
V/C Ratio	0.561	0.009	0.495	0.115	0.284	0.037	0.907	0.083	
Control Delay, s/veh	14.7	5.3	8.9	4.3	7.9	5.0	35.5	5.3	
LOS	B	A	A	A	A	A	E	A	
95th %tile Queue, veh	4	0	3	0	1	0	13	0	

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

06/02/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	175	33	18	46	20	202	12	1232	17	84	467	55	
Future Volume (veh/h)	175	33	18	46	20	202	12	1232	17	84	467	55	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No			No			No			No		
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	
Adj Flow Rate, veh/h	194	37	20	51	22	224	13	1369	19	93	519	61	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3	
Cap, veh/h	292	304	164	393	29	295	443	1511	674	155	1393	621	
Arrive On Green	0.10	0.28	0.28	0.03	0.21	0.21	0.08	0.45	0.45	0.05	0.42	0.42	
Sat Flow, veh/h	1674	1073	580	1674	135	1375	1674	3340	1490	1674	3340	1490	
Grp Volume(v), veh/h	194	0	57	51	0	246	13	1369	19	93	519	61	
Grp Sat Flow(s),veh/h/ln	1674	0	1653	1674	0	1510	1674	1670	1490	1674	1670	1490	
Q Serve(g_s), s	12.3	0.0	3.6	3.3	0.0	21.4	0.6	53.3	1.0	4.4	15.0	3.5	
Cycle Q Clear(g_c), s	12.3	0.0	3.6	3.3	0.0	21.4	0.6	53.3	1.0	4.4	15.0	3.5	
Prop In Lane	1.00		0.35	1.00		0.91	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	292	0	469	393	0	324	443	1511	674	155	1393	621	
V/C Ratio(X)	0.67	0.00	0.12	0.13	0.00	0.76	0.03	0.91	0.03	0.60	0.37	0.10	
Avail Cap(c_a), veh/h	300	0	469	517	0	324	487	1511	674	259	1393	621	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	37.8	0.0	37.2	40.9	0.0	51.6	18.6	35.6	21.3	32.1	28.2	24.8	
Incr Delay (d2), s/veh	5.3	0.0	0.5	0.1	0.0	15.4	0.0	8.2	0.0	3.7	0.2	0.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	5.5	0.0	1.5	1.4	0.0	9.5	0.2	23.1	0.4	1.9	6.1	1.3	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	43.1	0.0	37.8	41.1	0.0	67.0	18.6	43.8	21.3	35.7	28.3	24.9	
LnGrp LOS	D	A	D	D	A	E	B	D	C	D	C	C	
Approach Vol, veh/h		251			297			1401			673		
Approach Delay, s/veh		41.9			62.6			43.3			29.0		
Approach LOS		D			E			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	20.3	36.0	18.3	65.4	10.6	45.7	13.4	70.3					
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0					
Max Green Setting (Gmax), s	15.0	30.0	15.0	54.0	15.0	30.0	15.0	54.0					
Max Q Clear Time (g_c+I1), s	14.3	23.4	2.6	17.0	5.3	5.6	6.4	55.3					
Green Ext Time (p_c), s	0.0	0.8	0.0	4.1	0.1	0.2	0.1	0.0					
Intersection Summary													
HCM 6th Ctrl Delay				41.7									
HCM 6th LOS				D									

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	78	382	17	3	125	11	9	42	9	11	24	37
Future Vol, veh/h	78	382	17	3	125	11	9	42	9	11	24	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	87	424	19	3	139	12	10	47	10	12	27	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	443	0	0	793	765	434	787	768	145
Stage 1	-	-	-	-	-	-	608	608	-	151	151	-
Stage 2	-	-	-	-	-	-	185	157	-	636	617	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1424	-	-	1112	-	-	305	332	620	308	331	900
Stage 1	-	-	-	-	-	-	481	484	-	849	770	-
Stage 2	-	-	-	-	-	-	814	766	-	464	480	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1424	-	-	1112	-	-	254	304	620	251	303	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	304	-	251	303	-
Stage 1	-	-	-	-	-	-	442	445	-	780	768	-
Stage 2	-	-	-	-	-	-	748	764	-	376	441	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.3			0.2			19.2			15		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	319	1424	-	-	1112	-	-	439
HCM Lane V/C Ratio	0.209	0.061	-	-	0.003	-	-	0.182
HCM Control Delay (s)	19.2	7.7	0	-	8.2	0	-	15
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.8	0.2	-	-	0	-	-	0.7

HCM 6th Signalized Intersection Summary 3: Locust Grove Rd & Hubbard Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	488	552	135	31	291	62	8	128	3	3	37	43
Future Volume (veh/h)	488	552	135	31	291	62	8	128	3	3	37	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	542	613	150	34	323	69	9	142	3	3	41	48
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	634	833	706	304	407	345	244	205	174	166	192	163
Arrive On Green	0.28	0.47	0.47	0.04	0.23	0.23	0.01	0.12	0.12	0.00	0.11	0.11
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	542	613	150	34	323	69	9	142	3	3	41	48
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	14.3	18.3	3.8	1.0	11.2	2.4	0.3	5.0	0.1	0.1	1.4	1.9
Cycle Q Clear(g_c), s	14.3	18.3	3.8	1.0	11.2	2.4	0.3	5.0	0.1	0.1	1.4	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	634	833	706	304	407	345	244	205	174	166	192	163
V/C Ratio(X)	0.86	0.74	0.21	0.11	0.79	0.20	0.04	0.69	0.02	0.02	0.21	0.29
Avail Cap(c_a), veh/h	1071	1300	1102	606	731	620	586	542	459	520	542	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	13.8	10.0	17.9	23.5	20.1	25.2	27.5	25.4	25.7	26.4	26.6
Incr Delay (d2), s/veh	3.6	1.3	0.1	0.2	3.5	0.3	0.1	4.1	0.0	0.0	0.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	6.5	1.1	0.4	4.7	0.8	0.1	2.3	0.0	0.0	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	15.1	10.1	18.0	27.0	20.4	25.3	31.7	25.4	25.8	26.9	27.6
LnGrp LOS	B	B	B	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1305			426			154			92	
Approach Delay, s/veh		14.8			25.2			31.2			27.2	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	13.6	8.3	36.8	6.7	13.1	24.0	21.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	14.0	20.0	14.0	48.0	14.0	20.0	35.0	27.0				
Max Q Clear Time (g_c+I1), s	2.1	7.0	3.0	20.3	2.3	3.9	16.3	13.2				
Green Ext Time (p_c), s	0.0	0.5	0.0	5.1	0.0	0.2	1.7	1.8				

Intersection Summary

HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

HCM 6th Roundabout

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	18.7								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	1305		426		154		92		
Demand Flow Rate, veh/h	1343		439		158		94		
Vehicles Circulating, veh/h	80		713		1192		377		
Vehicles Exiting, veh/h	391		637		232		775		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	22.9		11.3		12.9		4.1		
Approach LOS	C		B		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.885	0.115	0.838	0.162	0.981	0.019	0.479	0.521	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	1189	154	368	71	155	3	45	49	
Cap Entry Lane, veh/h	1320	1320	742	742	480	480	1008	1008	
Entry HV Adj Factor	0.971	0.974	0.971	0.972	0.973	1.000	0.973	0.980	
Flow Entry, veh/h	1155	150	357	69	151	3	44	48	
Cap Entry, veh/h	1282	1286	721	721	467	480	980	987	
V/C Ratio	0.900	0.117	0.496	0.096	0.323	0.006	0.045	0.049	
Control Delay, s/veh	25.4	3.8	12.3	6.0	13.0	7.6	4.1	4.1	
LOS	D	A	B	A	B	A	A	A	
95th %tile Queue, veh	14	0	3	0	1	0	0	0	

HCM 6th Signalized Intersection Summary

4: Locust Grove Rd & Columbia Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	144	496	9	9	167	35	14	190	24	61	80	54
Future Volume (veh/h)	144	496	9	9	167	35	14	190	24	61	80	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	160	551	10	10	186	39	16	211	27	68	89	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	520	668	566	219	529	448	342	287	244	266	351	298
Arrive On Green	0.09	0.38	0.38	0.01	0.30	0.30	0.02	0.16	0.16	0.06	0.20	0.20
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	160	551	10	10	186	39	16	211	27	68	89	60
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	3.9	17.5	0.3	0.3	5.1	1.2	0.5	7.1	1.0	2.0	2.6	2.1
Cycle Q Clear(g_c), s	3.9	17.5	0.3	0.3	5.1	1.2	0.5	7.1	1.0	2.0	2.6	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	668	566	219	529	448	342	287	244	266	351	298
V/C Ratio(X)	0.31	0.83	0.02	0.05	0.35	0.09	0.05	0.73	0.11	0.26	0.25	0.20
Avail Cap(c_a), veh/h	691	1365	1157	523	1365	1157	634	682	578	497	682	578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	17.3	12.0	16.0	16.9	15.5	20.8	24.6	22.0	20.1	20.9	20.6
Incr Delay (d2), s/veh	0.3	2.7	0.0	0.1	0.4	0.1	0.1	3.6	0.2	0.5	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	6.7	0.1	0.1	2.0	0.4	0.2	3.0	0.3	0.8	1.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	20.0	12.0	16.0	17.3	15.6	20.9	28.2	22.2	20.6	21.2	21.0
LnGrp LOS	B	B	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		721			235			254			217	
Approach Delay, s/veh		18.2			17.0			27.1			20.9	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	16.1	6.8	29.5	7.2	18.4	11.7	24.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	24.0	12.0	48.0	12.0	24.0	12.0	48.0				
Max Q Clear Time (g_c+I1), s	4.0	9.1	2.3	19.5	2.5	4.6	5.9	7.1				
Green Ext Time (p_c), s	0.1	1.1	0.0	4.0	0.0	0.6	0.2	1.3				
Intersection Summary												
HCM 6th Ctrl Delay				20.0								
HCM 6th LOS				C								

HCM 6th Roundabout

4: Locust Grove Rd & Columbia Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	8.5								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	721		235		254		217		
Demand Flow Rate, veh/h	743		242		261		224		
Vehicles Circulating, veh/h	172		398		803		218		
Vehicles Exiting, veh/h	270		666		112		422		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	10.5		5.5		9.5		4.2		
Approach LOS	B		A		A		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.987	0.013	0.835	0.165	0.893	0.107	0.723	0.277	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	733	10	202	40	233	28	162	62	
Cap Entry Lane, veh/h	1214	1214	989	989	684	684	1165	1165	
Entry HV Adj Factor	0.971	1.000	0.972	0.975	0.973	0.964	0.971	0.968	
Flow Entry, veh/h	711	10	196	39	227	27	157	60	
Cap Entry, veh/h	1179	1214	961	964	665	659	1131	1127	
V/C Ratio	0.604	0.008	0.204	0.040	0.341	0.041	0.139	0.053	
Control Delay, s/veh	10.6	3.0	5.7	4.1	9.9	5.9	4.4	3.6	
LOS	B	A	A	A	A	A	A	A	
95th %tile Queue, veh	4	0	1	0	2	0	0	0	

HCM 6th Signalized Intersection Summary

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	465	5	13	297	86	9	341	31	111	117	20
Future Volume (veh/h)	27	465	5	13	297	86	9	341	31	111	117	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	30	517	6	14	330	96	10	379	34	123	130	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	307	597	506	178	572	485	430	452	383	269	561	475
Arrive On Green	0.03	0.34	0.34	0.02	0.33	0.33	0.01	0.26	0.26	0.07	0.32	0.32
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	30	517	6	14	330	96	10	379	34	123	130	22
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	0.9	21.2	0.2	0.4	12.0	3.6	0.3	15.7	1.3	4.0	4.2	0.8
Cycle Q Clear(g_c), s	0.9	21.2	0.2	0.4	12.0	3.6	0.3	15.7	1.3	4.0	4.2	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	597	506	178	572	485	430	452	383	269	561	475
V/C Ratio(X)	0.10	0.87	0.01	0.08	0.58	0.20	0.02	0.84	0.09	0.46	0.23	0.05
Avail Cap(c_a), veh/h	539	869	736	433	869	736	692	732	620	428	732	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	23.8	16.8	19.4	21.5	18.7	20.6	27.1	21.7	20.0	19.3	18.1
Incr Delay (d2), s/veh	0.1	6.4	0.0	0.2	0.9	0.2	0.0	4.7	0.1	1.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	9.3	0.1	0.2	4.8	1.2	0.1	6.9	0.5	1.6	1.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	30.2	16.8	19.6	22.4	18.9	20.7	31.8	21.8	21.2	19.5	18.1
LnGrp LOS	B	C	B	B	C	B	C	C	C	C	B	B
Approach Vol, veh/h		553			440			423			275	
Approach Delay, s/veh		29.3			21.6			30.7			20.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	25.8	7.3	32.1	7.0	30.5	8.4	31.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	13.0	32.0	13.0	38.0	13.0	32.0	13.0	38.0				
Max Q Clear Time (g_c+I1), s	6.0	17.7	2.4	23.2	2.3	6.2	2.9	14.0				
Green Ext Time (p_c), s	0.2	2.1	0.0	3.0	0.0	0.7	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay				26.2								
HCM 6th LOS				C								

HCM 6th Roundabout

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	9.0								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	553		440		423		275		
Demand Flow Rate, veh/h	570		453		435		284		
Vehicles Circulating, veh/h	275		431		691		364		
Vehicles Exiting, veh/h	373		695		154		520		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	9.3		7.3		12.3		6.0		
Approach LOS	A		A		B		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.989	0.011	0.781	0.219	0.920	0.080	0.919	0.081	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	564	6	354	99	400	35	261	23	
Cap Entry Lane, veh/h	1106	1106	959	959	757	757	1020	1020	
Entry HV Adj Factor	0.971	1.000	0.972	0.970	0.972	0.971	0.970	0.957	
Flow Entry, veh/h	547	6	344	96	389	34	253	22	
Cap Entry, veh/h	1073	1106	932	930	736	736	989	975	
V/C Ratio	0.510	0.005	0.369	0.103	0.528	0.046	0.256	0.023	
Control Delay, s/veh	9.3	3.3	7.9	4.8	12.9	5.4	6.2	3.9	
LOS	A	A	A	A	B	A	A	A	
95th %tile Queue, veh	3	0	2	0	3	0	1	0	

HCM 6th TWSC

6: Stroebel Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	83	51	59	123	145	151
Future Vol, veh/h	83	51	59	123	145	151
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	92	57	66	137	161	168

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	149	0	361
Stage 1	-	-	-	-	92
Stage 2	-	-	-	-	269
Critical Hdwy	-	-	4.13	-	6.43
Critical Hdwy Stg 1	-	-	-	-	5.43
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1426	-	636
Stage 1	-	-	-	-	929
Stage 2	-	-	-	-	774
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1426	-	604
Mov Cap-2 Maneuver	-	-	-	-	604
Stage 1	-	-	-	-	929
Stage 2	-	-	-	-	735

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	746	-	-	1426	-
HCM Lane V/C Ratio	0.441	-	-	0.046	-
HCM Control Delay (s)	13.6	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-

HCM 6th TWSC

7: Meridian Rd & Ardell Rd

05/29/2020

Intersection

Int Delay, s/veh 2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑		Y	↑↑
Traffic Vol, veh/h	21	82	1179	10	41	490
Future Vol, veh/h	21	82	1179	10	41	490
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	23	91	1310	11	46	544

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1680	661	0	0	1321
Stage 1	1316	-	-	-	-
Stage 2	364	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16
Critical Hdwy Stg 1	5.86	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23
Pot Cap-1 Maneuver	85	403	-	-	514
Stage 1	213	-	-	-	-
Stage 2	671	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	77	403	-	-	514
Mov Cap-2 Maneuver	77	-	-	-	-
Stage 1	213	-	-	-	-
Stage 2	611	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39	0	1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	514
HCM Lane V/C Ratio	-	-	0.53	0.089
HCM Control Delay (s)	-	-	39	12.7
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	2.8	0.3

HCM 6th Signalized Intersection Summary

1: Hubbard Rd

06/02/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	30	37	37	21	165	38	704	50	230	1472	359
Future Volume (veh/h)	88	30	37	37	21	165	38	704	50	230	1472	359
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	98	33	41	41	23	183	42	782	56	256	1636	399
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	312	190	236	279	24	188	100	1488	664	373	1686	752
Arrive On Green	0.15	0.27	0.27	0.03	0.14	0.14	0.03	0.45	0.45	0.09	0.50	0.50
Sat Flow, veh/h	1674	713	886	1674	169	1346	1674	3340	1490	1674	3340	1490
Grp Volume(v), veh/h	98	0	74	41	0	206	42	782	56	256	1636	399
Grp Sat Flow(s),veh/h/ln	1674	0	1598	1674	0	1516	1674	1670	1490	1674	1670	1490
Q Serve(g_s), s	6.5	0.0	5.3	3.1	0.0	20.3	2.0	25.4	3.2	12.3	71.3	27.2
Cycle Q Clear(g_c), s	6.5	0.0	5.3	3.1	0.0	20.3	2.0	25.4	3.2	12.3	71.3	27.2
Prop In Lane	1.00		0.55	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	425	279	0	212	100	1488	664	373	1686	752
V/C Ratio(X)	0.31	0.00	0.17	0.15	0.00	0.97	0.42	0.53	0.08	0.69	0.97	0.53
Avail Cap(c_a), veh/h	312	0	425	388	0	212	199	1692	755	373	1692	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	0.0	42.3	53.2	0.0	64.2	35.9	30.1	24.0	22.4	36.1	25.1
Incr Delay (d2), s/veh	0.6	0.0	0.9	0.2	0.0	54.7	2.8	0.3	0.1	5.2	15.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	2.3	1.4	0.0	11.1	0.9	10.4	1.2	5.4	32.1	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	0.0	43.2	53.4	0.0	118.9	38.7	30.4	24.0	27.6	51.5	25.8
LnGrp LOS	D	A	D	D	A	F	D	C	C	C	D	C
Approach Vol, veh/h		172			247			880			2291	
Approach Delay, s/veh		41.7			108.0			30.4			44.3	
Approach LOS		D			F			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.2	27.0	11.1	82.7	10.2	45.9	20.0	73.8				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	14.0	21.0	13.0	76.0	14.0	21.0	13.0	76.0				
Max Q Clear Time (g_c+I1), s	8.5	22.3	4.0	73.3	5.1	7.3	14.3	27.4				
Green Ext Time (p_c), s	0.1	0.0	0.0	2.4	0.0	0.2	0.0	6.9				

Intersection Summary

HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

HCM 6th TWSC

2: Deer Flat Rd & Locust Grove Rd

05/29/2020

Intersection												
Int Delay, s/veh	15											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	64	111	3	3	507	11	3	32	3	14	93	187
Future Vol, veh/h	64	111	3	3	507	11	3	32	3	14	93	187
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	71	123	3	3	563	12	3	36	3	16	103	208

























Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	575	0	0	126	0	0	998	848	125	861	843	569
Stage 1	-	-	-	-	-	-	267	267	-	575	575	-
Stage 2	-	-	-	-	-	-	731	581	-	286	268	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	993	-	-	1454	-	-	222	297	923	275	299	520
Stage 1	-	-	-	-	-	-	736	686	-	502	501	-
Stage 2	-	-	-	-	-	-	412	498	-	719	685	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	993	-	-	1454	-	-	89	273	923	232	275	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	273	-	232	275	-
Stage 1	-	-	-	-	-	-	679	633	-	463	499	-
Stage 2	-	-	-	-	-	-	196	497	-	624	632	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0	22.6	47.9
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	246	993	-	-	1454	-	-	388
HCM Lane V/C Ratio	0.172	0.072	-	-	0.002	-	-	0.842
HCM Control Delay (s)	22.6	8.9	0	-	7.5	0	-	47.9
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0	-	-	7.9

HCM 6th Signalized Intersection Summary 3: Locust Grove Rd & Hubbard Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	298	133	250	367	31	19	54	10	3	216	82
Future Volume (veh/h)	103	298	133	250	367	31	19	54	10	3	216	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	114	331	148	278	408	34	21	60	11	3	240	91
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	357	435	368	442	581	492	217	363	308	358	327	278
Arrive On Green	0.07	0.25	0.25	0.16	0.33	0.33	0.02	0.21	0.21	0.00	0.19	0.19
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	114	331	148	278	408	34	21	60	11	3	240	91
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	3.1	10.8	5.2	7.2	12.6	1.0	0.6	1.7	0.4	0.1	8.0	3.3
Cycle Q Clear(g_c), s	3.1	10.8	5.2	7.2	12.6	1.0	0.6	1.7	0.4	0.1	8.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	435	368	442	581	492	217	363	308	358	327	278
V/C Ratio(X)	0.32	0.76	0.40	0.63	0.70	0.07	0.10	0.17	0.04	0.01	0.73	0.33
Avail Cap(c_a), veh/h	560	1019	863	694	1217	1031	499	821	696	675	821	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	21.7	19.5	14.1	18.1	14.2	20.1	20.2	19.7	20.4	23.8	21.9
Incr Delay (d2), s/veh	0.5	2.8	0.7	1.5	1.6	0.1	0.2	0.2	0.0	0.0	3.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	4.5	1.7	2.5	4.9	0.3	0.2	0.7	0.1	0.0	3.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.4	24.5	20.2	15.6	19.7	14.3	20.3	20.4	19.7	20.4	27.0	22.6
LnGrp LOS	B	C	C	B	B	B	C	C	B	C	C	C
Approach Vol, veh/h		593			720			92			334	
Approach Delay, s/veh		21.9			17.9			20.3			25.7	
Approach LOS		C			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	18.8	15.7	21.4	7.5	17.6	10.5	26.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	29.0	19.0	36.0	12.0	29.0	12.0	43.0				
Max Q Clear Time (g_c+I1), s	2.1	3.7	9.2	12.8	2.6	10.0	5.1	14.6				
Green Ext Time (p_c), s	0.0	0.3	0.6	2.5	0.0	1.6	0.1	2.8				
Intersection Summary												
HCM 6th Ctrl Delay				20.9								
HCM 6th LOS				C								

HCM 6th Roundabout

3: Locust Grove Rd & Hubbard Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	9.6								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	593		720		92		334		
Demand Flow Rate, veh/h	610		741		95		344		
Vehicles Circulating, veh/h	536		201		461		728		
Vehicles Exiting, veh/h	536		355		685		214		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	10.1		10.3		4.7		8.6		
Approach LOS	B		B		A		A		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.751	0.249	0.953	0.047	0.884	0.116	0.727	0.273	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	458	152	706	35	84	11	250	94	
Cap Entry Lane, veh/h	872	872	1183	1183	933	933	732	732	
Entry HV Adj Factor	0.972	0.974	0.971	0.971	0.967	1.000	0.971	0.968	
Flow Entry, veh/h	445	148	686	34	81	11	243	91	
Cap Entry, veh/h	847	849	1149	1149	902	933	711	709	
V/C Ratio	0.525	0.174	0.597	0.030	0.090	0.012	0.341	0.128	
Control Delay, s/veh	11.5	6.0	10.6	3.4	4.8	4.0	9.4	6.5	
LOS	B	A	B	A	A	A	A	A	
95th %tile Queue, veh	3	1	4	0	0	0	2	0	

HCM 6th Signalized Intersection Summary

4: Locust Grove Rd & Columbia Rd

05/29/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	219	9	24	609	45	7	78	20	54	253	230
Future Volume (veh/h)	35	219	9	24	609	45	7	78	20	54	253	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	39	243	10	27	677	50	8	87	22	60	281	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	211	784	665	535	770	653	167	324	275	346	386	327
Arrive On Green	0.04	0.45	0.45	0.03	0.44	0.44	0.01	0.18	0.18	0.05	0.22	0.22
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	39	243	10	27	677	50	8	87	22	60	281	256
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	1.0	7.2	0.3	0.7	28.6	1.6	0.3	3.4	1.0	2.3	12.0	13.1
Cycle Q Clear(g_c), s	1.0	7.2	0.3	0.7	28.6	1.6	0.3	3.4	1.0	2.3	12.0	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	211	784	665	535	770	653	167	324	275	346	386	327
V/C Ratio(X)	0.18	0.31	0.02	0.05	0.88	0.08	0.05	0.27	0.08	0.17	0.73	0.78
Avail Cap(c_a), veh/h	399	1126	954	736	1126	954	398	975	826	517	975	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.8	14.4	12.5	12.0	20.8	13.2	27.0	28.4	27.4	25.0	29.4	29.8
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.0	5.7	0.0	0.1	0.4	0.1	0.2	2.6	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.8	0.1	0.3	12.0	0.5	0.1	1.5	0.4	0.9	5.2	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	14.7	12.5	12.1	26.6	13.3	27.1	28.8	27.5	25.3	32.0	33.9
LnGrp LOS	B	B	B	B	C	B	C	C	C	C	C	C
Approach Vol, veh/h		292			754			117			597	
Approach Delay, s/veh		14.9			25.2			28.5			32.2	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	21.0	8.3	42.2	6.8	23.8	8.9	41.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	45.0	12.0	52.0	12.0	45.0	12.0	52.0				
Max Q Clear Time (g_c+I1), s	4.3	5.4	2.7	9.2	2.3	15.1	3.0	30.6				
Green Ext Time (p_c), s	0.1	0.6	0.0	1.6	0.0	2.7	0.0	5.0				
Intersection Summary												
HCM 6th Ctrl Delay					26.1							
HCM 6th LOS					C							

HCM 6th Roundabout

4: Locust Grove Rd & Columbia Rd

























05/29/2020

Intersection									
Intersection Delay, s/veh	9.2								
Intersection LOS	A								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	292		754		117		597		
Demand Flow Rate, veh/h	300		777		121		615		
Vehicles Circulating, veh/h	379		138		352		733		
Vehicles Exiting, veh/h	969		335		327		182		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	6.5		9.4		4.3		11.1		
Approach LOS	A		A		A		B		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.967	0.033	0.933	0.067	0.810	0.190	0.571	0.429	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	290	10	725	52	98	23	351	264	
Cap Entry Lane, veh/h	1006	1006	1252	1252	1031	1031	729	729	
Entry HV Adj Factor	0.971	1.000	0.971	0.962	0.973	0.957	0.970	0.970	
Flow Entry, veh/h	282	10	704	50	95	22	341	256	
Cap Entry, veh/h	977	1006	1216	1204	1003	986	707	707	
V/C Ratio	0.288	0.010	0.579	0.042	0.095	0.022	0.482	0.362	
Control Delay, s/veh	6.6	3.7	9.8	3.3	4.4	3.8	12.1	9.8	
LOS	A	A	A	A	A	A	B	A	
95th %tile Queue, veh	1	0	4	0	0	0	3	2	

HCM 6th Signalized Intersection Summary

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	330	5	22	471	114	17	223	26	204	515	60
Future Volume (veh/h)	12	330	5	22	471	114	17	223	26	204	515	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	13	367	6	24	523	127	19	248	29	227	572	67
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	149	581	493	272	598	507	162	482	409	439	649	550
Arrive On Green	0.02	0.33	0.33	0.02	0.34	0.34	0.02	0.27	0.27	0.12	0.37	0.37
Sat Flow, veh/h	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Grp Volume(v), veh/h	13	367	6	24	523	127	19	248	29	227	572	67
Grp Sat Flow(s),veh/h/ln	1674	1758	1490	1674	1758	1490	1674	1758	1490	1674	1758	1490
Q Serve(g_s), s	0.5	16.6	0.3	0.9	26.3	5.8	0.8	11.2	1.4	8.7	28.7	2.8
Cycle Q Clear(g_c), s	0.5	16.6	0.3	0.9	26.3	5.8	0.8	11.2	1.4	8.7	28.7	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	581	493	272	598	507	162	482	409	439	649	550
V/C Ratio(X)	0.09	0.63	0.01	0.09	0.87	0.25	0.12	0.51	0.07	0.52	0.88	0.12
Avail Cap(c_a), veh/h	355	877	743	462	877	743	376	970	822	495	970	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	26.7	21.2	21.4	29.2	22.4	25.8	28.9	25.3	20.1	27.8	19.6
Incr Delay (d2), s/veh	0.2	1.1	0.0	0.1	6.9	0.3	0.3	0.9	0.1	0.9	6.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	7.0	0.1	0.3	11.8	2.0	0.3	4.8	0.5	3.4	12.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	27.8	21.2	21.5	36.1	22.7	26.1	29.7	25.4	21.0	34.4	19.7
LnGrp LOS	C	C	C	C	D	C	C	C	C	C	C	B
Approach Vol, veh/h		386			674			296			866	
Approach Delay, s/veh		27.6			33.0			29.1			29.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.9	31.8	8.3	37.2	8.0	40.8	7.4	38.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	14.0	52.0	13.0	47.0	14.0	52.0	13.0	47.0				
Max Q Clear Time (g_c+I1), s	10.7	13.2	2.9	18.6	2.8	30.7	2.5	28.3				
Green Ext Time (p_c), s	0.2	1.7	0.0	2.4	0.0	4.1	0.0	3.7				
Intersection Summary												
HCM 6th Ctrl Delay				30.3								
HCM 6th LOS				C								

HCM 6th Roundabout

5: Locust Grove Rd & Lake Hazel Rd

05/29/2020

Intersection									
Intersection Delay, s/veh	25.0								
Intersection LOS	C								
Approach	EB		WB		NB		SB		
Entry Lanes	2		2		2		2		
Conflicting Circle Lanes	1		1		1		1		
Adj Approach Flow, veh/h	386		674		296		866		
Demand Flow Rate, veh/h	397		695		305		892		
Vehicles Circulating, veh/h	848		288		625		584		
Vehicles Exiting, veh/h	628		642		620		399		
Ped Vol Crossing Leg, #/h	0		0		0		0		
Ped Cap Adj	1.000		1.000		1.000		1.000		
Approach Delay, s/veh	16.4		8.6		8.3		47.2		
Approach LOS	C		A		A		E		
Lane	Left	Right	Left	Right	Left	Right	Left	Right	
Designated Moves	LT	R	LT	R	LT	R	LT	R	
Assumed Moves	LT	R	LT	R	LT	R	LT	R	
RT Channelized									
Lane Util	0.985	0.015	0.812	0.188	0.902	0.098	0.923	0.077	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535	
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544	
Entry Flow, veh/h	391	6	564	131	275	30	823	69	
Cap Entry Lane, veh/h	656	656	1093	1093	804	804	835	835	
Entry HV Adj Factor	0.972	1.000	0.970	0.969	0.969	0.967	0.971	0.971	
Flow Entry, veh/h	380	6	547	127	267	29	799	67	
Cap Entry, veh/h	638	656	1060	1059	779	777	810	810	
V/C Ratio	0.596	0.009	0.516	0.120	0.342	0.037	0.986	0.083	
Control Delay, s/veh	16.6	5.6	9.5	4.5	8.7	5.0	50.8	5.3	
LOS	C	A	A	A	A	A	F	A	
95th %tile Queue, veh	4	0	3	0	2	0	17	0	

HCM 6th TWSC

6: Stroebel Rd & Hubbard Rd

05/29/2020

Intersection

Int Delay, s/veh 6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	148	162	153	125	98	111
Future Vol, veh/h	148	162	153	125	98	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	164	180	170	139	109	123

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	344
Stage 1	-	-	164
Stage 2	-	-	479
Critical Hdwy	-	4.13	6.43
Critical Hdwy Stg 1	-	-	5.43
Critical Hdwy Stg 2	-	-	5.43
Follow-up Hdwy	-	2.227	3.527
Pot Cap-1 Maneuver	-	1209	436
Stage 1	-	-	863
Stage 2	-	-	621
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1209	370
Mov Cap-2 Maneuver	-	-	370
Stage 1	-	-	863
Stage 2	-	-	527

Approach	EB	WB	NB
HCM Control Delay, s	0	4.7	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	534	-	-	1209	-
HCM Lane V/C Ratio	0.435	-	-	0.141	-
HCM Control Delay (s)	16.8	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.5	-

HCM 6th TWSC

7: Meridian Rd & Ardell Rd

05/29/2020

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑↓		↔	↑↑
Traffic Vol, veh/h	17	66	726	23	93	1452
Future Vol, veh/h	17	66	726	23	93	1452
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	19	73	807	26	103	1613

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1833	417	0	0	833
Stage 1	820	-	-	-	-
Stage 2	1013	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16
Critical Hdwy Stg 1	5.86	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23
Pot Cap-1 Maneuver	67	582	-	-	789
Stage 1	391	-	-	-	-
Stage 2	309	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	58	582	-	-	789
Mov Cap-2 Maneuver	58	-	-	-	-
Stage 1	391	-	-	-	-
Stage 2	269	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.4	0	0.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	204	789
HCM Lane V/C Ratio	-	-	0.452	0.131
HCM Control Delay (s)	-	-	36.4	10.2
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	2.1	0.5

