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

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: Lugarno Terra Subdivision
Stark Property - 1.725 Acres
Bennett Property - 40 Acres

Applicant: Select Development & Contracting, LLC.
P.O. Box 1030
Meridian, Idaho 83680
Attn.: Billy Edwards (208) 288-0700
wedwards@selectdev.com

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

Applicant (√)	Description	Staff (√)
✓	Completed and signed Commission & Council Review Application.	✓
✓	Vicinity map showing relationship of the proposed plat to the surrounding area with a 2-mile radius.	✓
✓	Homeowner's maintenance agreement for the care of landscaped common areas.	✓
✓	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.	✓
✓	Proof of ownership—A copy of your deed **and** Affidavit of Legal Interest (for all interested parties involved).	✓
✓	Letter of Intent indicating reasons and details for preliminary plat.	✓
✓	Commitment of Property Posting form signed by the applicant/agent.	✓
✓	If preliminary plat includes 100 lots or more, please submit a traffic impact study. If preliminary plat includes 50 lots or more, please submit an estimate of tax revenue generation and an estimate of the public service costs to provide adequate service to the development.	✓
✓	A letter from Ada County Engineer with the Subdivision Name reservation. **ANY** name change(s) needs to be submitted and approved by the Planning & Zoning Director and Ada County Engineer.	✓
✓	Phasing Plan	✓
✓	Include Large Scale Development Requirements. KCC 6-5-4	✓
✓	Landscape Plan— (in color)	✓
✓	Neighborhood meeting certification (certification & neighborhood meeting list forms shall accompany this application).	✓
✓	8 1/2 x 11 proposed preliminary plat.	✓
✓	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: ◊ Topography at two foot (2') intervals ◊ Land uses (location, layout, types & dimensions): residential, commercial & industrial land uses. ◊ Street right-of-ways: 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..	✓

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.

Exhibit
A2

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

Annexation Checklist

Annexation 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: Lugarno Terra Subdivision
Stark Property - 1.725 Acres
Bennett Property - 40 Acres

Applicant: Select Development & Contracting, LLC.
P.O. Box 1030
Meridian, Idaho 83680
Attn.: Billy Edwards (208) 288-0700
wedwards@selectdev.com

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 annexation and the availability of public services. If reason for annexation is development, also submit a conceptual plan.	✓
✓	Vicinity map drawn to scale, showing the location of the subject property. Map shall contain the following information: Shaded area showing the annexation property, Street names and names of surrounding subdivisions.	✓
✓	Legal description of the annexation 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.	✓
✓	Recorded warranty deed for the property.	✓
✓	Proof of ownership—A copy of your deed **and** Affidavit of Legal Interest (All parties involved)	✓
N/A	Development Agreement & Development Agreement Checklist	N/A
✓	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.

received
6.28.18

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)	18-04-AN 18-23-DR 18-03-S
Project name	Lugarno Terra Subdivision
Date Received	6/28/18
Date Accepted/ Complete	8/17/18
Cross Reference Files	
Commission Hearing Date	10/9/18
City Council Hearing Date	

Contact/Applicant Information

Owners of Record: Select Development & Contracting, LLC.	Phone Number: 208-288-0700
Address: P.O. Box 1030	E-Mail: randy@selectmanagement.com
City, State, Zip: Meridian, Idaho 83680	Fax #: 208-898-9527
Applicant (Developer): Select Development & Contracting	Phone Number: 208-288-0700
Address: P.O. Box 1030	E-Mail: randy@selectmanagement.com
City, State, Zip: Meridian, Idaho 83680	Fax #: 208-898-9527
Engineer/Representative: Billy Edwards, Project Manager	Phone Number: 208-288-0700
Address: P.O. Box 1030	E-Mail: wedwards@selectdev.com
City, State, Zip: Meridian, Idaho 83680	Fax #: 208-898-9527

Subject Property Information

Site Address: Parcel 1.725 Acres (1919 East Deer Flat Road; Kuna, Idaho 83634) and Parcel 40 Acres Farmland (No Address Given)

Site Location (Cross Streets): North Meridian Road and East Deer Flat Road

Parcel Number (s): S1419223000 (1.725 Acres) and S1418346600 (40 Acres)

Section, Township, Range: 2N1E18 and 2N1E19

Property size : 1.725 Acres and 40 Acres

Current land use: Private Single Family Residence & Farmland — Proposed land use: TBD & Single Family Subdivision

Current zoning district: RUT — Proposed zoning district: R-6 and R-4

Exhibit A2a

Project Description

Project / subdivision name: Stark Property (1.725 acres) - TBD and Bennett Property(40 acres) - Single Family Subdivision

General description of proposed project / request: Both parcels to be annexed into the City of Kuna. Stark Property use TBD and Bennett Property to be single family subdivision

Type of use proposed (check all that apply):

- ☑ Residential R-6 Medium Density Residential and R-4 Medium Density Residential
- ☐ Commercial
- ☐ Office
- ☐ Industrial
- ☐ Other

Amenities provided with this development (if applicable): R-4 Development to have Community Center and Features

Residential Project Summary (if applicable)

Are there existing buildings? ☑ Yes ☐ No

Please describe the existing buildings: Stark Property - Private Single Family Residence - Manufactured Home

Any existing buildings to remain? ☑ Yes ☐ No

Number of residential units: 114 Number of building lots: 114

Number of common and/or other lots: 20

Type of dwellings proposed:

- ☑ Single-Family Bennett Property - Single family Residential
- ☐ Townhouses
- ☐ Duplexes
- ☐ Multi-Family
- ☐ Other

Minimum Square footage of structure (s): TBD

Gross density (DU/acre-total property): 2.83 Acres Net density (DU/acre-excluding roads): XXX Acres

Percentage of open space provided: 11.8% Acreage of open space: 4.76 Acres

Type of open space provided (i.e. landscaping, public, common, etc.): Landscape and Common Open Space

Non-Residential Project Summary (if applicable)

Number of building lots: Other lots:

Gross floor area square footage: 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.):

Applicant's Signature: Date:

SELECT
DEVELOPMENT &
CONTRACTING

Mr. Troy Behunin
Planning & Zoning Department, City of Kuna
751 West 4th Street
Kuna, ID 83634

17 August 2018

RE: Lugarno Terra Subdivision
Stark and Bennett Properties
East Deer Flat Road

Dear Mr. Behunin,

On behalf of Select Development & Contracting, LLC (Applicant) please accept applications for Annexation, Preliminary Plat, and Design Review for two separate properties noted as (see attached site map):

Stark Property - 1.725 acres
Bennett Property – 40 acres

Overview of proposed projects:

Stark Property
The Applicant proposes this property maintain the current designation described in the future Comp Plan Map. Development plans for this property will be addressed at a future date.

Bennett Property – Lugarno Terra Subdivision

- The future Lugarno Terra Sub (Sub) will include 114 single family residential lots ranging in size from ±8,100SF to ±13,100SF. Density per acre is 2.8 residential units per acre.
- Amenities will include an approximately 1,700 SF clubhouse with integrated sales center, large community room, 850 SF covered seating area, swimming pool with zero entry/lounge with expansive perimeter patio seating within a fenced in area.
- Common area totaling 1.6 acres with a sports court, integrated hillside playground, climbing area and large grass area.
- Dedicated Landscape areas mingled throughout subdivision to soften road intersections that represent 11.3% of total project.
- Applicant will work with a select group of quality residential builders to insure quality construction and variation of construction.
- Home prices will average $340,000.
- Strong CC&R's to insure the Lugarno Terra sub is well maintained.

Exhibit
A26

- South Stroebel Road will be constructed the entire length of the east boundary of the Sub with the development of this project.
- Proposing full access from both East Deer Flat Road and South Stroebel Road in accordance with ACHD standards.
- Vinyl fencing along East Deer Flat Road and South Stroebel Road bordering the landscape buffer.

Annexation

Annexation will allow Lugarno Terra to connect to Kuna's public services including water, sewer, pressurized irrigation, police and fire. The subdivision will not create an adverse economic impact on the City as services will be supported by property taxes (see chart showing estimated tax revenue that will be generated by the development).

Access to sewer, domestic water, and pressurized irrigation is on East Deer Flat Road west of the site.

Preliminary Plat

The Applicant is submitting a preliminary plat based on two phases due to a Boise Project Irrigation canal bisecting the project in a north south direction. The plan is to alter and tile the open irrigation ditch. Based on meetings with Boise Projects and Bureau of Reclamation, approval to relocate the ditch can take from 7- 12 months (a relocation application has been submitted to Bureau of Reclamation). The applicant's goal is to start site work this winter on both phases if the Applicant can secure approval to relocate the irrigation ditch prior to 2019 irrigation season. If not successful, the applicant is proposing phase 1 this coming winter with phase 2 in 2020.

Interior streets will be dedicated to ACHD through the plating process in conformance with District standards. Two access points are proposed one on East Deer Flat Road and the other off the future South Stroebel Road.

All necessary utility easements are noted on the plat.

Design Review

A complete Design Review (DR) application accompanies this submittal for landscaping throughout the overall subdivision. All planned utilities and preliminary storm drain facilities (with directional flow arrows) are shown on the Pre-Plat map and is stamped by a professional engineer. The Pre-Plat also shows all property lines, right-of-ways, easements, and street lights per City of Kuna spacing requirements. The landscape plans identify all the other required DR checklist items to include; signage locations, vision triangles, fencing locations/details, etc.. Specific applications for signage, club house, and common lot amenities will be submitted later, when appropriate for City review and approval

In conclusion, the goal of the Applicant is not to meet City zoning requirements but to exceed them in an effort to complement the City's vision and provide additional housing opportunities for your growing community. We look forward to working with Staff to accomplish this great project.

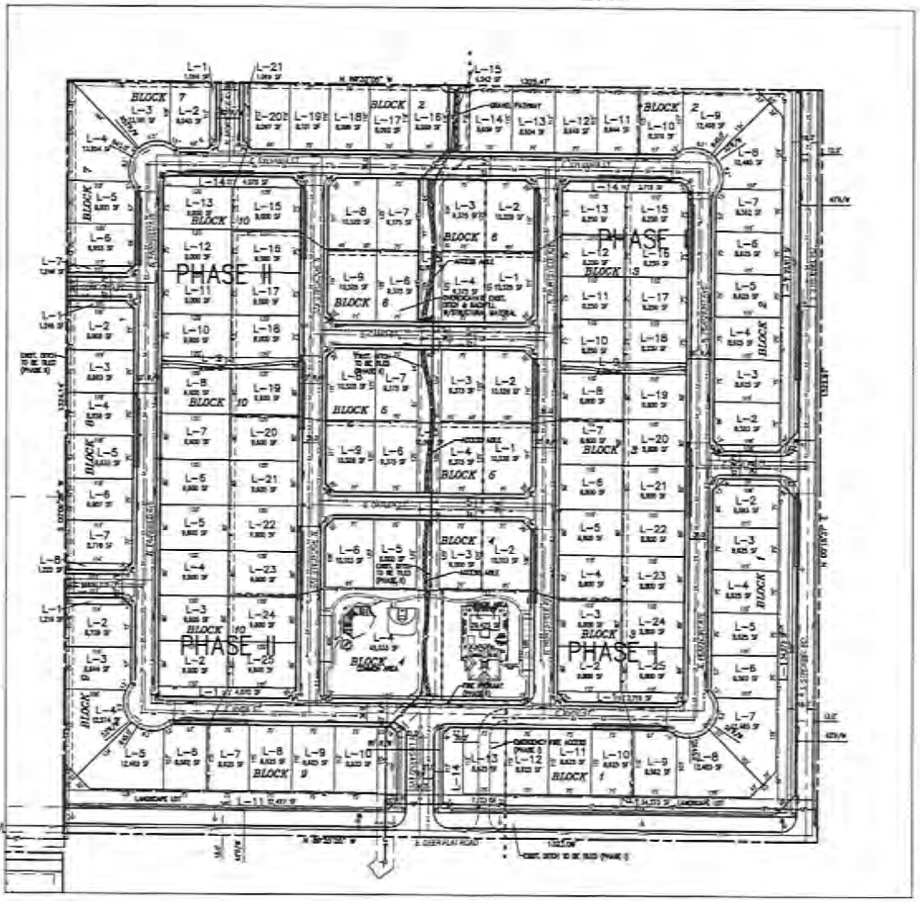
Thank you in advance for consideration of our applications. Please feel free to contact me if you have any questions. I can be reached at (208) 288-0700 or at wedwards@selectdev.com.
Thank you in advance.

Sincerely,
William Edwards, Project Manager
Select Development & Contracting, LLC.

PRELIMINARY PLAT FOR

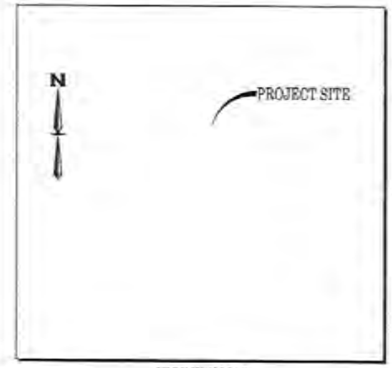
LUGARNO TERRA SUBDIVISION

LOCATED IN SE 1/4 OF THE SW 1/4 SECTION 18, AND A PORTION OF NW 1/4 OF THE NW 1/4 SECTION 19
T.2N., R.1E., B.M., KUNA ADA COUNTY, IDAHO
2018



SCALE IN FEET 1" = 100'

VICINITY MAP 1"= 800'

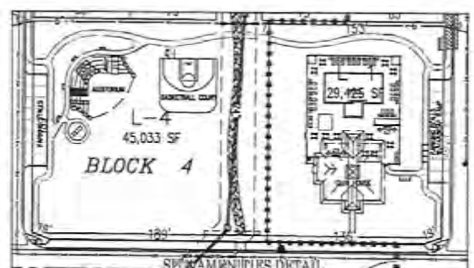


GENERAL LEGEND

L-1 BLOCK 1

DEVELOPMENT FEATURES:

TOTAL ACRES	±40.24 ACRES
TOTAL LOTS	134
BUILDABLE LOTS	114
COMMON LOTS/ACRE	20/4.78 ACRES/11.8%
GROSS DENSITY DU/ACRES	2.83 ACRES
NET DENSITY DU/ACRES	4.88 ACRES
EXISTING ZONING (ADA COUNTY)	RR
PROPOSED ZONING (CITY OF KUNA)	R4
MINIMUM RESIDENTIAL LOT SIZE	8,043 sq.ft.
AVERAGE RESIDENTIAL LOT SIZE	9,343 sq.ft.



SITE AMENITIES DETAIL

NOTES:

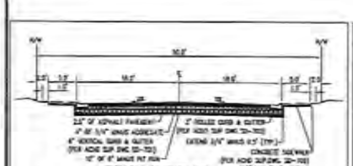
1. SANITARY SEWER MAINS SHALL BE 8" DIAMETER UNLESS OTHERWISE SHOWN.
2. WATER MAINS SHALL BE 8" DIAMETER UNLESS OTHERWISE SHOWN.
3. SURFACE STORM WATER DRAINAGE SHALL BE DIRECTED TO THE EXISTING STORM WATER MANAGEMENT FACILITIES.
4. THIS SUBDIVISION IS SUBJECT TO COMPLIANCE WITH THE IDAHO CODE SECTION 31-3805 CONCERNING IRRIGATION WATER.
5. ALL LOTS ARE TO BE DESIGNATED SINGLE FAMILY RESIDENTIAL EXCEPT: LOT 1 & 14, BLOCK 1; LOTS 1, 13 & 21, BLOCK 2; LOTS 1 & 7, BLOCK 7; LOTS 1 & 8, BLOCK 8; LOTS 1 & 11, BLOCK 9; LOTS 1, 8, & 14, BLOCK 10; LOTS 1 & 4, BLOCK 4; LOT 3, BLOCK 3; LOT 5, BLOCK 6; LOTS 1, 3, & 14, BLOCK 3. LOTS LISTED ABOVE WILL BE COMMON LOTS OWNED AND MAINTAINED BY THE HOME OWNERS ASSOCIATION.

DEVELOPER
RANDY FULLMER
SELECT DEVELOPMENT & CONTRACTING LLC
P.O. BOX 1030
MERIDIAN, ID 83680

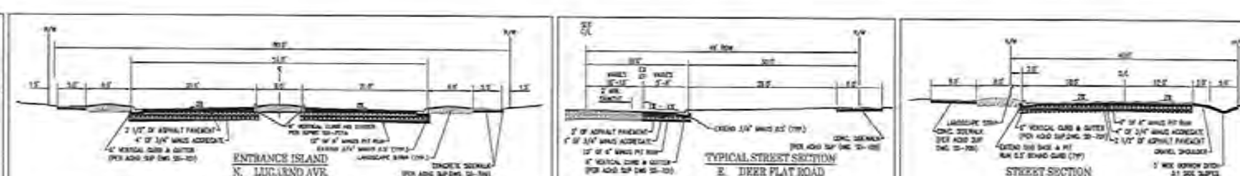
CIVIL ENGINEER
JIM E. COSLETT, P.E.
ROCK SOLID CIVIL LLC
270 N. 27th ST. SUITE 100
BOISE, ID 83702
(208) 342-2277

LAND SURVEYOR
CARL PORTER, P.L.S.
SAWTOOTH LAND SURVEYING LLC
2030 S. WASHINGTON AVE.
EMMETT, ID 83617
(208) 398-8104

CALL BEFORE YOU DIG!
CALL DIGLINE INC.
PRIOR TO COMMENCING UNDERGROUND WORK
208-342-1585



TYPICAL STREET SECTION
50' RIGHT-OF-WAY



ENTRANCE ISLAND
N. LUGARNO AVE.

TYPICAL STREET SECTION
E. DEER FLAT ROAD

STREET SECTION
E. STROEBEL RD.

Revisions

Date	Description

ROCK SOLID CIVIL

REUSE OF DRAWINGS
THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF ROCK SOLID CIVIL LLC AND IS NOT TO BE USED IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ROCK SOLID CIVIL LLC.

Project Name: LUGARNO TERRA SUBDIVISION

Sheet Name: PRELIMINARY PLAT

Stamp: 17887

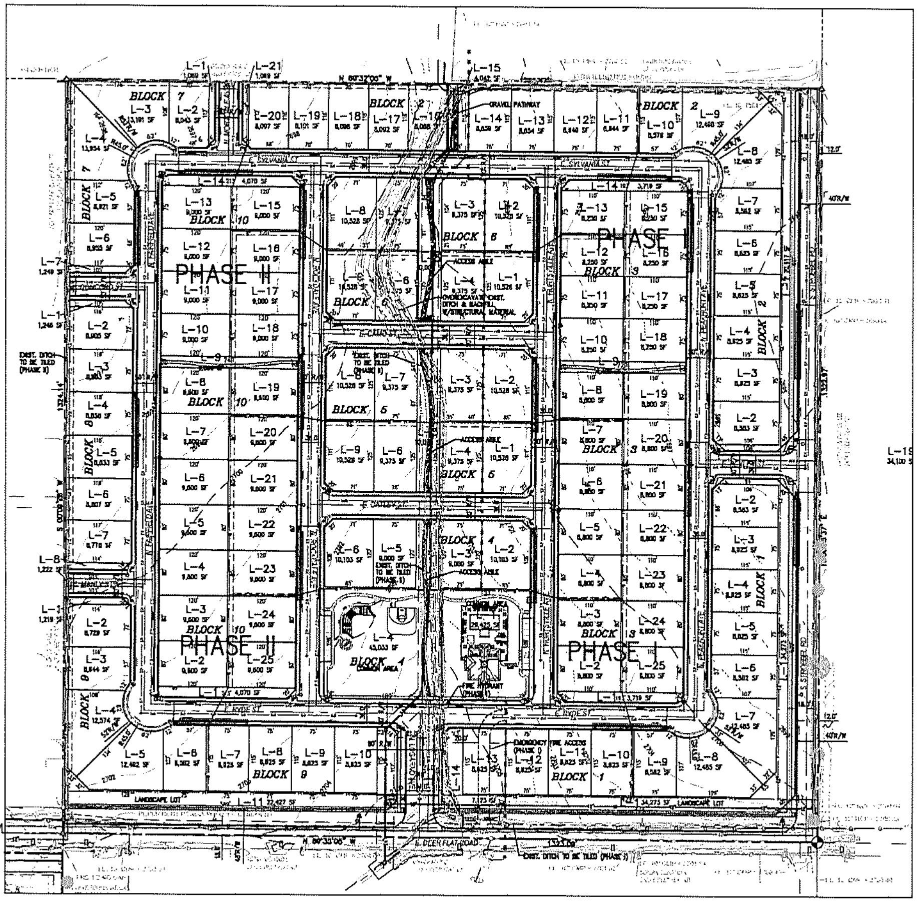
Project No. RSC-1825
Drawn By: RLS
Date: 17 August 2018
Sheet No. PP1
1 of 1

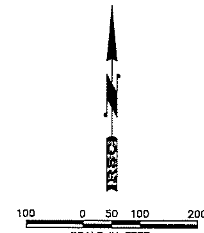
Exhibit A2m

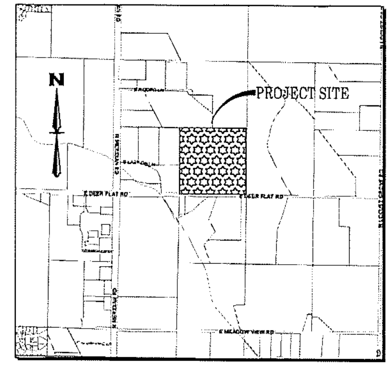
PRELIMINARY PLAT FOR

LUGARNO TERRA SUBDIVISION

LOCATED IN SE 1/4 OF THE SW 1/4 SECTION 18, AND A PORTION OF NW 1/4 OF THE NW 1/4 SECTION 19
T.2N., R.1E., B.M., KUNA ADA COUNTY, IDAHO
2018

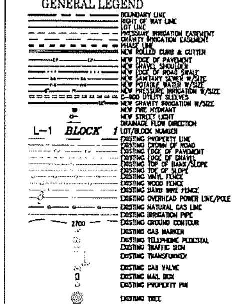






VICINITY MAP
1"= 800'

GENERAL LEGEND



DEVELOPMENT FEATURES:

TOTAL ACRES........±40.24 ACRES
TOTAL LOTS........134
BUILDABLE LOTS........114
COMMON LOTS/ACRE........20/4.78 ACRES/11.8%
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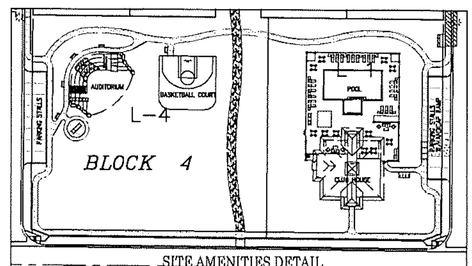

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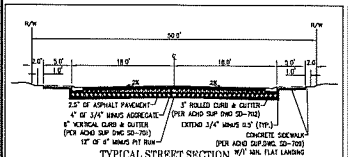
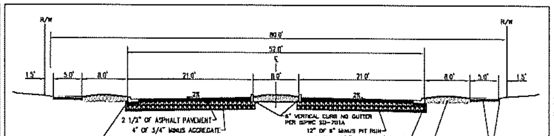
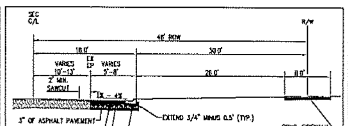


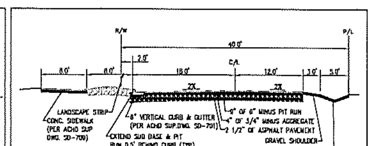
TYPICAL STREET SECTION
50' RIGHT-OF-WAY



ENTRANCE ISLAND
N. LUGARNO AVE.



TYPICAL STREET SECTION
E. DEER FLAT ROAD



STREET SECTION
S. STROEBEL RD.

Revisions

Δ	Date	Description
1		
2		
3		
4		

ROCK SOLID CIVIL
Civil Engineering and Land Development Consulting

Project Name: LUGARNO TERRA SUBDIVISION
Sheet Name: PRELIMINARY PLAT

Stamp: PROFESSIONAL ENGINEER LICENSED 17887 8-17-18 STATE OF IDAHO DERRITT KERNER

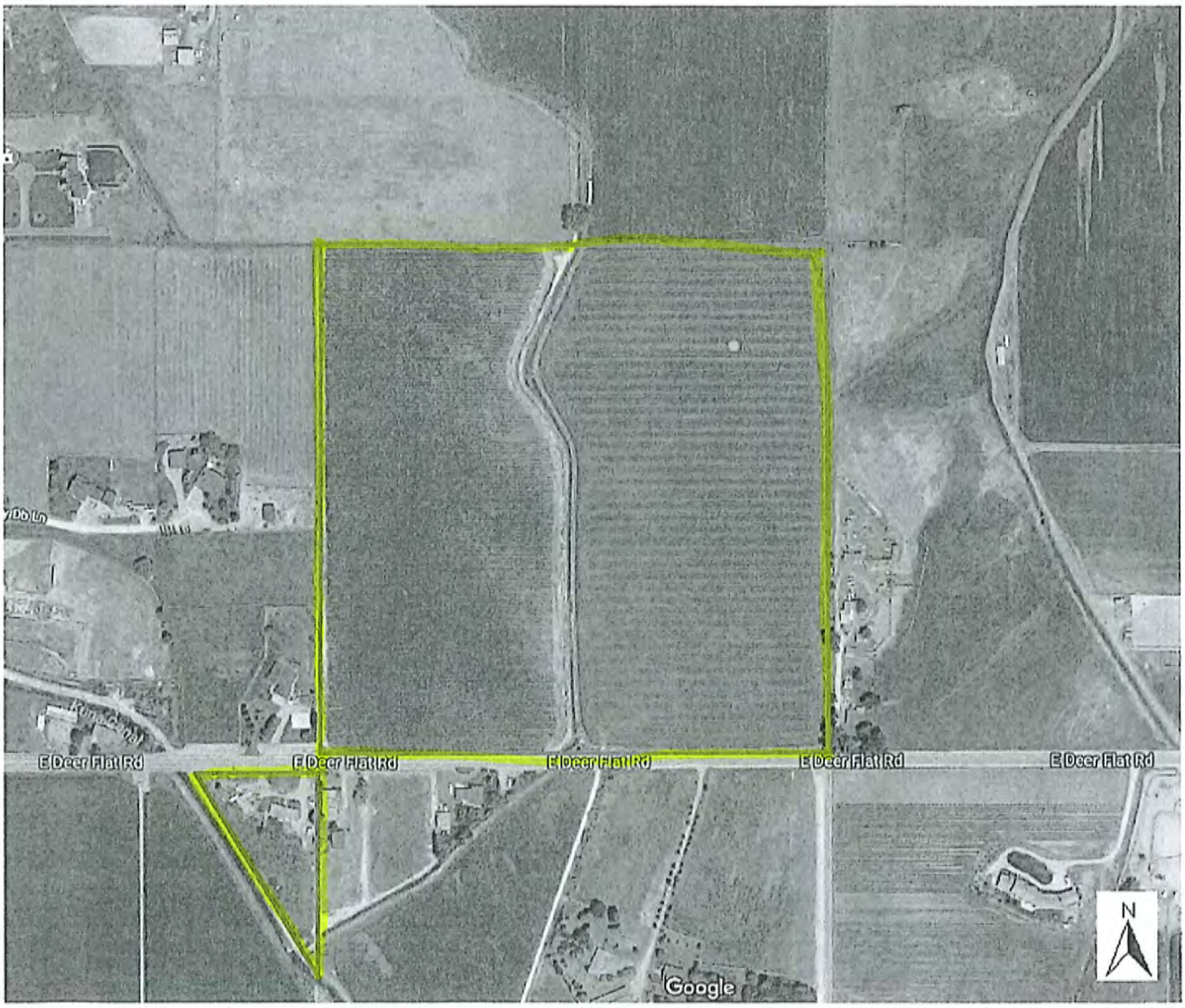
Project No. RSC-1825
Drawn By: RLC
Date: 17 August 2018
Sheet No. PP1
1 of 1

AERIAL PHOTO

LUGARNO TERRA SUBDIVISION

E. DEER FLAT ROAD, KUNA, ID 83634

SE ¼ , SW ¼, SEC-18, T-2N, R-1E, B.M



ROCK SOLID CIVIL
Civil Engineering and Land Development Consulting

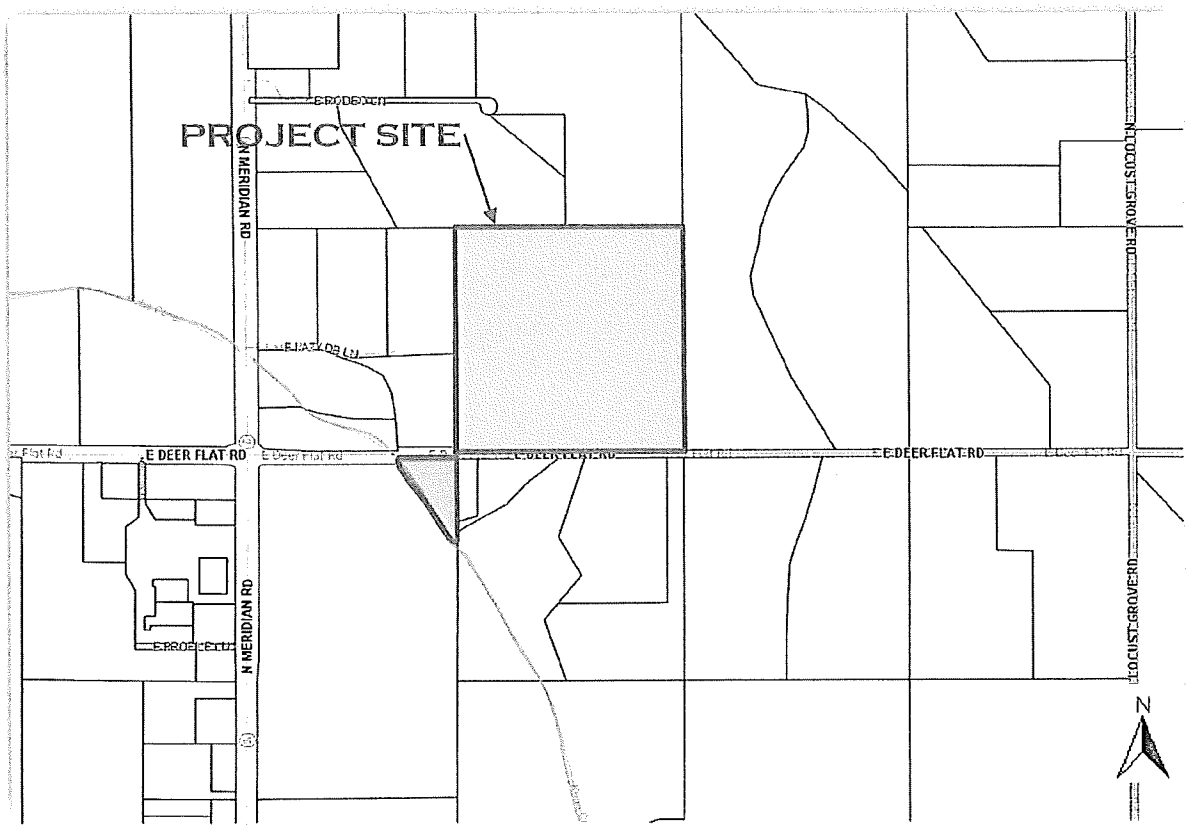
Exhibit
A2C

VICINITY MAP

LUGARNO TERRA SUBDIVISION

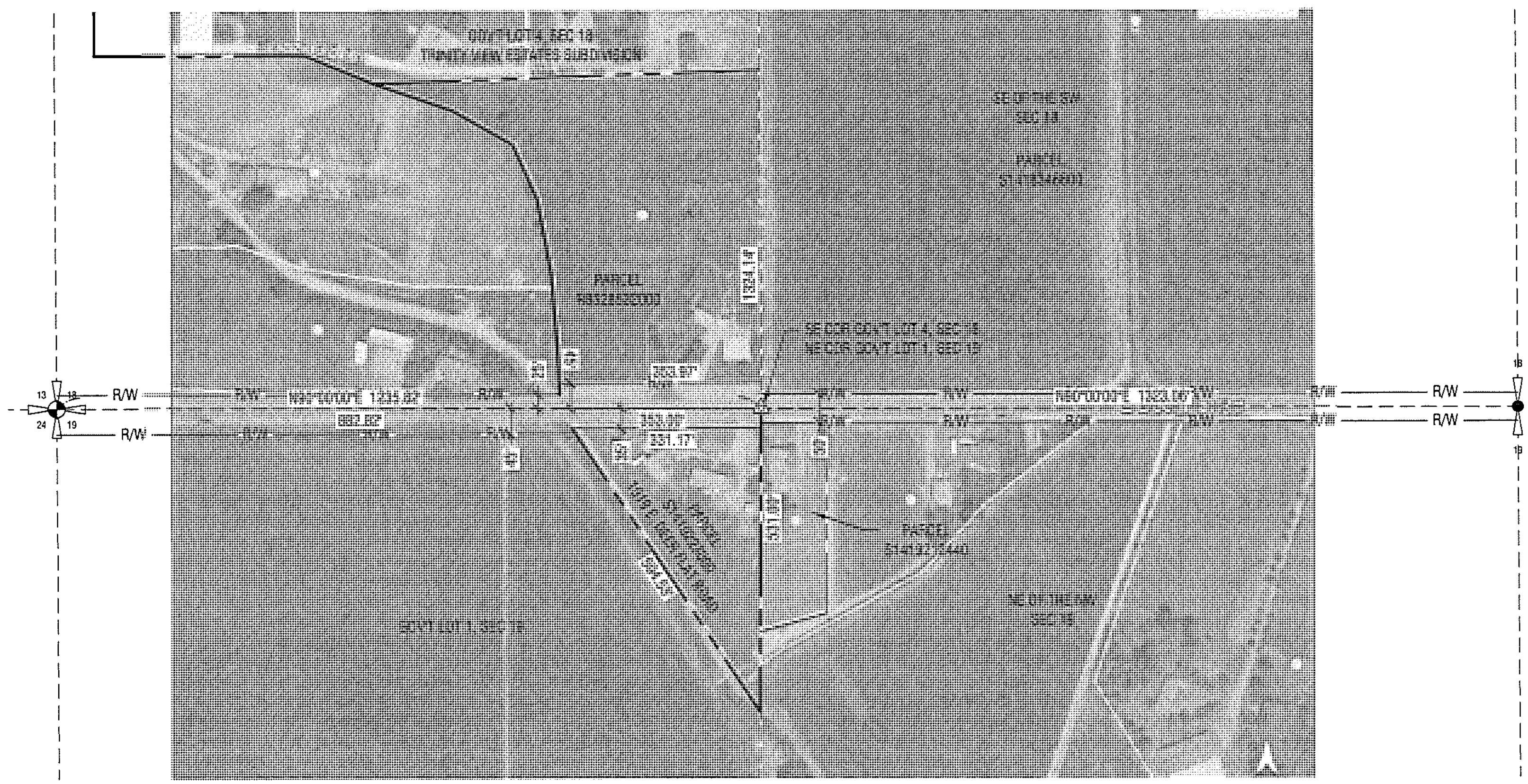
E. DEER FLAT ROAD, KUNA, ID 83634

SE ¼ , SW ¼, SEC-18, T-2N, R-1E, B.M



ROCK SOLID CIVIL

Civil Engineering and Land Development Consulting



Survey Notes:

1. THE PROPERTY BOUNDARIES DEPICTED ON THIS EXHIBIT HAVE BEEN DETERMINED FROM DATA OF RECORD ONLY. NO FIELD TIES OR DETERMINATIONS HAVE BEEN COMPLETED.

Exhibit

HORIZONTAL SCALE: 1" = 200'

0 200' 400'

Project Name: **Deer Flat-40**

Kuna Idaho

Sheet Title: **Boundary Exhibit**

THE LAND GROUP INCORPORATED
462 East Shore Drive, Suite 100
Eagle, Idaho 83616
Ph. 208.939.4041 Fax 208.939.4445
www.thelandgroupinc.com

Project No.:	117152
Date of Issuance:	November 27, 2017
Designed by:	MSF
Checked by:	STAFF
Sheet No.:	1

City of Kuna
P.O. Box 13
Kuna, Idaho 83634

Phone: (208) 922-5274
Fax: (208) 922-5989
Web: www.kunacity.id.gov

City of Kuna

COMMITMENT TO PROPERTY POSTING

Per City Code 5-1A-8, the applicant for all applications requiring a public hearing shall post the subject property not less than ten (10) days prior to the hearing. The applicant shall post a copy of the public hearing notice or the application(s) on the property under consideration.

The applicant shall submit proof of property posting in the form of a notarized statement and a photograph of the posting to the City no later than seven (7) days prior to the public hearing attesting to where and when the sign(s) were posted. Unless such Certificate is received by the required date, the hearing will be continued.

The sign(s) shall be removed no later than three (3) days after the end of the public hearing for which the sign(s) had been posted.

I am aware of the above requirements and will comply with the posting requirements as stated in Kun a City Code 5-1A-8.

William T. Edwards Digitally signed by William T. Edwards DN: C=US, E=wedwards@selectmanagment.com, O=Select Development, OU=Project Manager, CN=William T. Edwards Date: 2018.06.27 10:40:24-06'00'

Applicant/agent signature:

06.27.2018

Date:

Exhibit A2h

Sawtooth Land Surveying, LLC

2030 S. Washington Ave.
Emmett, ID 83617
P: (208) 398-8104
F: (208) 398-8105

1044 Northwest Blvd., Ste. G
Coeur d'Alene, ID 83814
P: (208) 714-4544
F: (208) 292-4453

141 1st Avenue East
Jerome, ID 83338
P: (208) 329-5303
F: (208) 324-3821

June 18, 2018
12.00 Acre Parcel Description

BASIS OF BEARINGS for this description is South 89°35'05" East, between an illegible aluminum cap marking the NW Corner of Section 19, and a brass cap PLS 8575, marking the North 1/4 Corner of said Section 19, both in T. 2 N., R. 1 E., B.M., Ada County, Idaho.

A parcel of land lying within Government Lot 1, Section 19, T. 2 N., R. 1 E., B.M., Ada County, Idaho, more particularly described as follows:

COMMENCING at an illegible aluminum cap marking the NW Corner of said Section 19;

Thence South 89°35'05" East, coincident with the north line of said Government Lot 1, Section 19, a distance of 1235.78 feet to the W1/16 of said Section 19;

Thence leaving said north line of Government Lot 1, Section 19, South 0°48'10" West, coincident with the east line of said Government Lot 1, Section 19, a distance of 35.00 feet to the south right of way of E. Deer Flat Road, and the **POINT OF BEGINNING**;

Thence continuing, South 0°48'10" West, coincident with the east line of said Government Lot 1, Section 19, a distance of 499.53 feet;

Thence leaving said east line of Government Lot 1, Section 19, North 47°20'47" West, 60.21 feet to the east bank of the Kuna Canal;

Thence North 31°15'28" West, coincident with said east bank of said Kuna Canal, 539.38 feet to the south right of way of E. Deer Flat Road;

Thence leaving said east bank of the Kuna Canal, South 89°35'05" East, coincident with said south right of way of E. Deer Flat Road, 331.17 feet to the **POINT OF BEGINNING.**

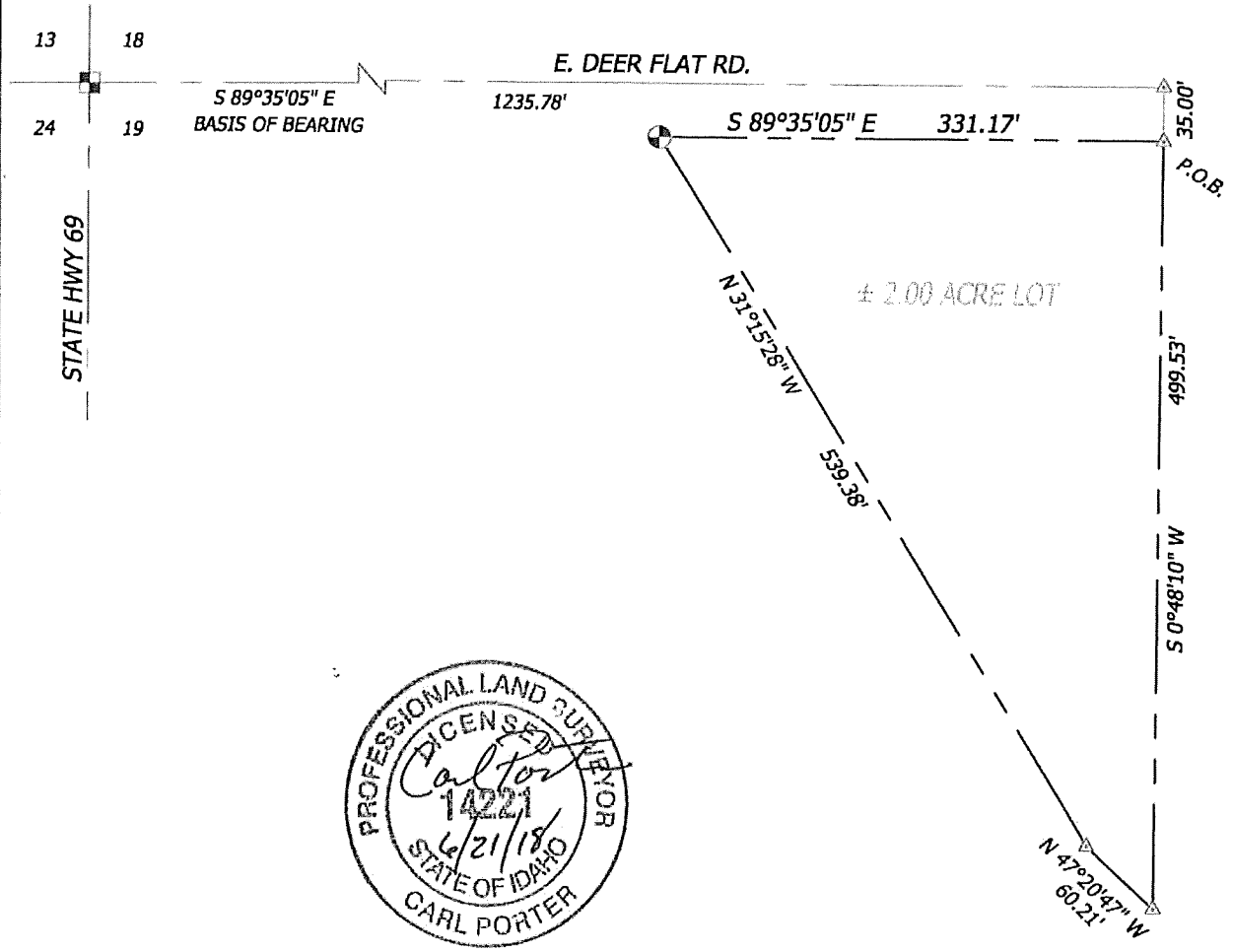
The above described parcel of land contains 2.00 acres, more or less.

PROFESSIONAL LAND SURVEYOR
LICENSED
Carl Porter
14221
6/21/18
STATE OF IDAHO
CARL PORTER

Exhibit
A2e

SECTION 19, T. 2 N., R. 1 E.,
B.M., ADA COUNTY, IDAHO

NTS



PROJECT:	CLIENT		DWG #
LUGARNO SUBDIVISION ADA COUNTY, IDAHO	ROCK SOLID CIVIL DERRITT KERNER	SAWTOOTH Land Surveying, LLC 2030 S. WASHINGTON AVE. EMMETT, ID 83617 P: (208) 398-8104 F: (208) 398-8105 WWW.SAWTOOTHLS.COM	18050-EX
	DATE: 6/2018		PROJECT# 18050
			SHEET 1 OF 1

Neighborhood Meeting Certification

CITY OF KUNA PLANNING & ZONING * 763 W. Avalon, Kuna, Idaho, 83634 * www.kunacity.id.gov * (208) 922-5274 * Fax: (208) 922-5989

GENERAL INFORMATION:

You must conduct a neighborhood meeting prior to application for variance, conditional use, zoning ordinance map amendment, expansion or extension of a nonconforming use, and/or a subdivision. Please see Section 8-7A-3 of the Kuna City Code or ask one of our planners for more information on neighborhood meetings.

The meeting must be held either on a weekend between 10 a.m. and 7 p.m., or a weekday between 6 p.m. and 8 p.m. Meetings cannot be conducted on holidays, holiday weekends, or the day before or after a holiday or holiday weekend. The meeting must be held at one of the following locations:

- The Subject Property;
- The nearest available public meeting place (Examples include fire stations, libraries and community centers);
- An office space within a 1-mile radius of the subject property.

The meeting cannot take place more than 2 months prior to acceptance of the application and the application will not be accepted before the neighborhood meeting is conducted. You are required to send written notification of your meeting, allowing a reasonable amount of time before your meeting for property owners to plan to attend. Contacting and/or meeting individually with residents will not fulfill Neighborhood Meeting requirements.

You may request a list of the people you need to invite to the neighborhood meeting from our department. This list includes property owners within 300 feet of the subject property. Once you have held your neighborhood meeting, please complete this certification form and include it with your application.

Please Note: The neighborhood meeting must be conducted in one location for attendance by all neighboring residents. Contacting and/or meeting individually with residents does not comply with the neighborhood meeting requirements.

Please include a copy of the sign-in sheet for your neighborhood meeting, so we have written record of who attended your meeting and the letter of intent sent to each recipient. In addition, provide any concerns that may have been addressed by individuals that attended the meeting.

Description of proposed project: Annexation of two properties into the City of Kuna; Stark TBD and Bennett Property Single Family Subdivision

Date and time of neighborhood meeting: Wednesday May 30, 2018 @ 6:00pm

Location of neighborhood meeting: Kuna Public Library, Meeting Room

SITE INFORMATION:

Location: Quarter: ____ Section: 19 & 18 Township: 2N Range: 1E Total Acres: 40

Subdivision Name: Lugarno Terra Lot: ____ Block: ____

Site Address: 1919 E. Deer Flat Rd. Township/Range/Section 2N1E19 Tax Parcel Number(s): S1419223000

Farm Land No Address Township/Range/Section 2N1E18 S1418346600

Please make sure to include **all** parcels & addresses included in your proposed use.

CURRENT PROPERTY OWNER:

Name: Select Development & Contracting, LLC.

Address: P.O. Box 1030 City: Meridian State: Idaho Zip: 83680

CONTACT PERSON (Mail recipient and person to call with questions):

Name: Billy Edwards, Project Manager Business (if applicable): Select Development

Address: P.O. Box 1030 City: Meridian State: Idaho Zip: 83680

Exhibit A2.1

PROPOSED USE:

I request a neighborhood meeting list for the following proposed use of my property (check all that apply):

Application Type	*Brief Description*
Annexation	Annex two parcels into City of Kuna
Re-zone	
Subdivision (Sketch Plat and/or Prelim. Plat)	Stark Property future development TBD; Bennett Property Single Family Subdivision
Special Use	
Variance	
Expansion of Extension of a Nonconforming Use	
Zoning Ordinance Map Amendment	Stark Property R-6; Bennett Property R-4

APPLICANT:

Name: Billy Edwards, Project Manager with Select Development

Address: P.O. Box 1030

City: Meridian State: Idaho Zip: 83680

Telephone: 208-288-0700 Fax: 208-898-9527

I certify that a neighborhood meeting was conducted at the time and location noted on this form and in accord with Section 5-1A-2 of the Kuna City Code

Signature: (Applicant) William T. Edwards Digitally signed by William T. Edwards DN: C=US, E=wedwards@selectmanagment.com, O=Select Development, OU=Project Manager, CN=William T. Edwards Date: 2018.06.25 12:26:36-06'00' Date 06.25.2018

SIGN IN SHEET

PROJECT NAME: LUGARNO VILLAGE

Date: 5.30.18

	Name	Address	Zip	Phone
1	Larry Hansen	622 N. Mustang	83634	208-866-0546
2	Danny Cottle	410 S. Orchard		208-344-1980
3	Rod Wiens	2329 E Deer Flat Rd	83634	661-345-6333
4	DAN & SHIRLEY GROTHAUS	2404 E. DEER FLAT	83634	208-890-2234
5	Clay Kelly	2311 E. Deer Flat	83634	208 922 3454
6	Dave & Roslyn Andrus	1928 E Deer Flat	83634	208 484 3680
7	Austin Manning	280 E. Deer Flat	83634	208-421-1377
8	Debbie Doll	1920 E. Lazy D B Ln	83634	406-799-5058
9	Paul Abbott	4255 E. Deer Flat	83634	208 861-1091
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SELECT
DEVELOPMENT &
CONTRACTING

Billy Edwards
P.O. Box 1030
Meridian, ID 83680
208-288-0700

22 May 2018

RE: Lugarno Village (East Deer Flat Road)

Dear Property Owners,

Kuna City Code requires an opportunity for a meeting between applicant of the proposed development and the property owners located within 300 feet of the proposed project. Please come to a neighborhood meeting for the property located ¼ & ½ mile east of Meridian Road along East Deer Flat Road. The site and location of the meeting is shown below.

Lugarno Village is proposed to be 114 single family residential lots and 17 common lots on 40.24 acre site. The applications applied for are Annexation, Comprehensive Plan Amendment, and Preliminary Plat. The purpose of this neighborhood meeting is to provide you with information about the proposed subdivision. Parcel located at 1919 East Deer Flat Road is a part of these applications and will be developed at a later time.

Meeting Location:	Kuna Public Library, Meeting Room 457 North Locust Avenue Kuna, ID 83634
Meeting Date & Time:	Wednesday May 30, 2018 @ 6:00pm
Project Applications:	Annexation, Comprehensive Plan Amendment, Preliminary Plat
Attachments:	Vicinity Map

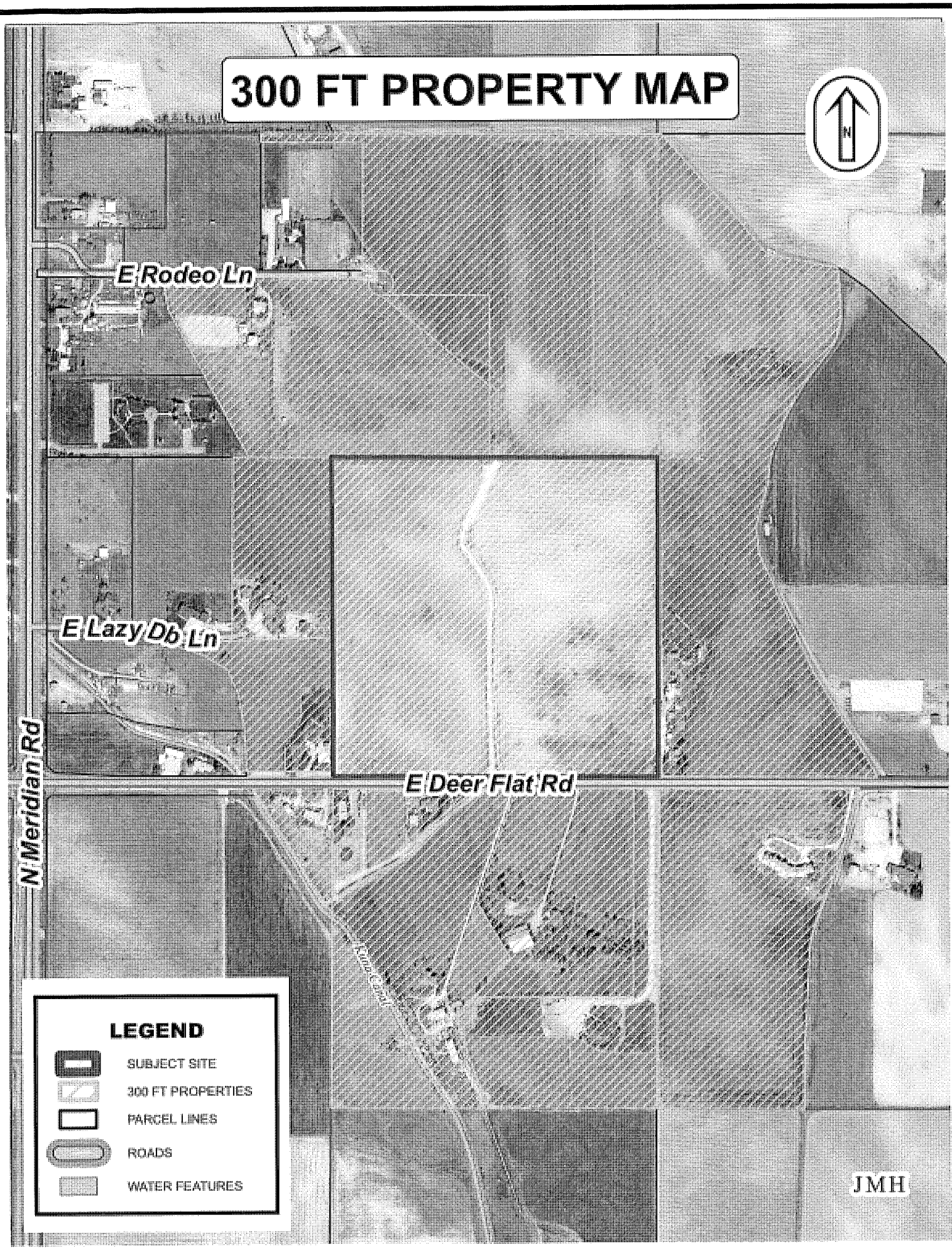
Representatives of the applicant will be present at the meeting to answer any questions you have about the proposed subdivision. Please contact me if you have any questions. I can be reached at (208) 288-0700 or at wedwards@selectdev.com.

Thank you in advance for your interest.

Sincerely,

Billy Edwards
Project Manager

300 FT PROPERTY MAP



PRIMOWNER	SECOWNER	ADDCONCAT	STATCONCAT
ANDRUS DAVID L	ANDRUS ROSLYN	1928 E DEER FLAT RD	KUNA, ID 83634-1324
DOLL FAMILY REVOCABLE TRUST DATED 12/8/11	DOLL DEBRA A TRUSTEE	PO BOX 56	KUNA, ID 83634-0000
GOLDEN JANE C		1863 E RODEO LN	KUNA, ID 83634-0000
GROTHAUS DANIEL LEE &	GROTHAUS SHIRLEY LOUISE	2404 DEER FLAT	KUNA, ID 83634-0000
KOHN CHRISTOPHER WILLIAM	KOHN DANNELLE	2095 E DEER FLAT RD	KUNA, ID 83634-0000
KOHN HARRY C	KOHN PENNY L	2211 E DEER FLAT RD	KUNA, ID 83634-0000
PERRY RICHARD S	PERRY TERESA R	2151 E DEER FLAT RD	KUNA, ID 83634-1325
SANDSTONE FARMS LLC		1888 E RODEO LN	KUNA, ID 83634-0000
SCHENK DEBORAH K		PO BOX 721	JOSEPH, OR 97846-0000
SELECT DEVELOPMENT & CONTRACTING LLC		PO BOX 1030	MERIDIAN, ID 83680-0000
TANG SANH D	TANG MIMI	2725 E DEER FLAT RD	KUNA, ID 83634-0000
WIENS RODNEY & KAREN FAMILY TRUST	WIENS RODNEY H TRUSTEE	2329 E DEER FLAT RD	KUNA, ID 83634-0000

Sawtooth Land Surveying, LLC

2030 S. Washington Ave.
Emmett, ID 83617
P: (208) 398-8104
F: (208) 398-8105

1044 Northwest Blvd., Ste. G
Coeur d'Alene, ID 83814
P: (208) 714-4544
F: (208) 292-4453

141 1st Avenue East
Jerome, ID 83338
P: (208) 329-5303
F: (208) 324-3821

June 18, 2018
40 Acre Parcel Description

BASIS OF BEARINGS for this description is South 89°35'05" East, between an illegible aluminum cap marking the SW Corner of Section 18, and a brass cap PLS 8575, marking the South 1/4 Corner of said Section 18, both in T. 2 N., R. 1 E., B.M., Ada County, Idaho.

A parcel of land lying within the SE1/4 of the SW1/4 of Section 18, T. 2 N., R. 1 E., B.M., Ada County, Idaho, more particularly described as follows:

COMMENCING at an illegible aluminum cap marking the SW Corner of said Section 18;

Thence South 89°35'05" East, coincident with the south line of the SW1/4 of said Section 18, a distance of 1235.78 feet to the W1/16 corner of said Section 18, the **POINT OF BEGINNING;**

Thence leaving said south line of said SW1/4 of Section 18, North 0°09'26" East, coincident with the west line of the SE1/4 of the SW1/4 of said Section 18, a distance of 1324.14 feet to the SW1/16 corner of said Section 18;

Thence leaving said west line of the SE1/4 of the SW1/4 of Section 18, South 89°32'05" East, coincident with the north line of said the SE1/4 of the SW1/4 of Section 18, a distance of 1325.47 feet to the CS1/16 corner of said Section 18;

Thence leaving said north line of the SE1/4 of the SW1/4 of Section 18, South 0°15'37" West, coincident with the east line of said the SE1/4 of the SW1/4 of Section 18, a distance of 1322.97 feet to the brass cap PLS 8575, marking the S1/4 corner of said Section 18;

Thence leaving said east line of the SE1/4 of the SW1/4 of Section 18, North 89°35'05" West, coincident with said south line of the SW1/4 of Section 18, a distance of 1323.09 feet to the **POINT OF BEGINNING.**

The above described parcel of land contains 40.24 acres, more or less.

Exhibit
A2f

SECTION 18, T. 2 N., R. 1 E.,
B.M., ADA COUNTY, IDAHO

NTS

PROJECT:	CLIENT		DWG #
LUGARNO SUBDIVISION ADA COUNTY, IDAHO	ROCK SOLID CIVIL DERRITT KERNER	SAWTOOTH Land Surveying, LLC 2030 S. WASHINGTON AVE. EMMETT, ID 83617 P: (208) 398-8104 F: (208) 398-8105 WWW.SAWTOOTHLS.COM	18050-EX
	DATE: 6/2018		PROJECT# 18050
			SHEET 1 OF 1

2

ADA COUNTY RECORDER Christopher D. Rich
BOISE IDAHO Pgs=2 NIKOLA OLSON
FIRST AMERICAN TITLE INSURANCE COMPANY

2018-001545
01/05/2018 11:33 AM
$15.00

AFTER RECORDING MAIL TO:

Select Development & Contracting, LLC
PO Box 1030
Meridian, ID 83680

ELECTRONICALLY RECORDED - DO NOT REMOVE THE COUNTY STAMPED FIRST PAGE AS IT IS NOW INCORPORATED AS PART OF THE ORIGINAL DOCUMENT

WARRANTY DEED

File No.: **4103-2974647 (DS)** Date: **December 28, 2017**

For Value Received, **Dave Stark and Brittany Stark, husband and wife who acquired title as Dave Stark and Brittany Stark, a married couple,** hereinafter referred to as Grantor, does hereby grant, bargain, sell and convey unto **Select Development & Contracting, LLC, an Idaho limited liability company,** hereinafter referred to as Grantee, whose current address is **PO Box 1030, Meridian, ID 83680,** the following described premises, situated in **Ada** County, **Idaho,** to wit:

LEGAL DESCRIPTION: Real property in the County of Ada, State of Idaho, described as follows:

ALL THAT PORTION OF LOT 1 OF SECTION 19, TOWNSHIP 2 NORTH, RANGE 1 EAST, BOISE, MERIDIAN, ADA COUNTY, IDAHO, LYING NORTH AND EAST OF KUNA CANAL. EXCEPT THAT PORTION CONVEYED TO ADA COUNTY HIGHWAY DISTRICT ON AUGUST 27, 2002 AS INSTRUMENT NO. 102097128.

APN: **S1419223000**

TO HAVE AND TO HOLD the said premises, with their appurtenances, unto said Grantee, and to the Grantee's heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that the Grantor is the owner in fee simple of said premises; that said premises are free from all encumbrances except current years taxes, levies, and assessments, and except U.S. Patent reservations, restrictions, easements of record and easements visible upon the premises, and that Grantor will warrant and defend the same from all claims whatsoever.

Exhibit
A29

AFTER RECORDING MAIL TO:

Select Development & Contracting, LLC
PO Box 1030
Meridian, ID 83680

ELECTRONICALLY RECORDED - DO NOT REMOVE THE COUNTY STAMPED FIRST PAGE AS IT IS NOW INCORPORATED AS PART OF THE ORIGINAL DOCUMENT

WARRANTY DEED

File No.: **4103-2974647 (DS)** Date: **December 28, 2017**

For Value Received, **Dave Stark and Brittany Stark, husband and wife who acquired title as Dave Stark and Brittany Stark, a married couple**, hereinafter referred to as Grantor, does hereby grant, bargain, sell and convey unto **Select Development & Contracting, LLC, an Idaho limited liability company**, hereinafter referred to as Grantee, whose current address is **PO Box 1030, Meridian, ID 83680**, the following described premises, situated in **Ada** County, **Idaho**, to wit:

LEGAL DESCRIPTION: Real property in the County of Ada, State of Idaho, described as follows:

ALL THAT PORTION OF LOT 1 OF SECTION 19, TOWNSHIP 2 NORTH, RANGE 1 EAST, BOISE, MERIDIAN, ADA COUNTY, IDAHO, LYING NORTH AND EAST OF KUNA CANAL. EXCEPT THAT PORTION CONVEYED TO ADA COUNTY HIGHWAY DISTRICT ON AUGUST 27, 2002 AS INSTRUMENT NO. 102097128.

APN: **S1419223000**

TO HAVE AND TO HOLD the said premises, with their appurtenances, unto said Grantee, and to the Grantee's heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that the Grantor is the owner in fee simple of said premises; that said premises are free from all encumbrances except current years taxes, levies, and assessments, and except U.S. Patent reservations, restrictions, easements of record and easements visible upon the premises, and that Grantor will warrant and defend the same from all claims whatsoever.

Dave Stark

Brittany Stark

STATE OF Idaho)
SS.
COUNTY OF Ada)

On this 4 day of **January, 2018** , before me, a Notary Public in and for said State, personally appeared **Dave Stark and Brittany Stark**, known or identified to me to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

ALEC CINDRICH
NOTARY
PUBLIC
STATE OF IDAHO

Notary Public for the State of Idaho
Residing at: ~~Eagle, ID~~ Ac
My Commission Expires: ~~9-29-23~~

Residing at: Meridian, ID
My Commission Expires: 2/27/2021

AFTER RECORDING MAIL TO:

Select Development & Contracting, LLC
PO Box 1030
Meridian, ID 83680

ELECTRONICALLY RECORDED - DO NOT REMOVE THE COUNTY STAMPED FIRST PAGE AS IT IS NOW INCORPORATED AS PART OF THE ORIGINAL DOCUMENT.

WARRANTY DEED

File No.: **4103-2956488 (DS)** Date: **December 28, 2017**

For Value Received, **Bennett Properties, L.P., an Idaho limited partnership**, hereinafter referred to as Grantor, does hereby grant, bargain, sell and convey unto **Select Development & Contracting, LLC, an Idaho limited liability company**, hereinafter referred to as Grantee, whose current address is **PO Box 1030, Meridian, ID 83680**, the following described premises, situated in **Ada** County, **Idaho**, to wit:

LEGAL DESCRIPTION: Real property in the County of Ada, State of Idaho, described as follows:

The Southeast Quarter of the Southwest Quarter of Section 18, Township 2 North, Range 1 East, Boise Meridian, Ada County, Idaho.

APN: **S1418346600**

TO HAVE AND TO HOLD the said premises, with their appurtenances, unto said Grantee, and to the Grantee's heirs and assigns forever. And the said Grantor does hereby covenant to and with the said Grantee, that the Grantor is the owner in fee simple of said premises; that said premises are free from all encumbrances except current years taxes, levies, and assessments, and except U.S. Patent reservations, restrictions, easements of record and easements visible upon the premises, and that Grantor will warrant and defend the same from all claims whatsoever.

Bennett Properties, L.P., an Idaho limited partnership

By: Bennett Investments, LLC, an Idaho limited liability company, as General Partner

By: _____

Name: Aundria E Bailey

Title: Managing Member

STATE OF Idaho)
SS.
COUNTY OF Ada)

On this 31st **day of January, 2018**, before me, a Notary Public in and for said State, personally appeared **Aundria E. Bailey**, known or identified to me to be the person whose name is subscribed to the within instrument as **Managing Member** of the **Bennett Investments, LLC as General Partner of Bennett Properties, L.P.**, limited liability company, and acknowledged to me that such limited company executed same.

In witness whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

DEEDRA STITH NOTARY PUBLIC STATE OF IDAHO

_____

Notary Public for the State of Idaho
Residing at: Eagle, ID
My Commission Expires: 9-29-23

City of Kuna
P.O. Box 13
Kuna, Idaho 83634

Phone: (208) 922-5274
Fax: (208) 922-5989
Web: www.kunacity.id.gov

City of Kuna

AFFIDAVIT OF LEGAL INTEREST

State of Idaho)
) ss
County of Ada)

I, SELECT DEVELOPMENT AND CONTRACTING, LLC
Name Address

PO BOX 1030, MERIDIAN, ID 83680
City State Zip Code

BY: RANDY FULLMER, MANAGER

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 _____ _____ 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 25th day of JUNE, 2018

Signature _____

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

Notary Public for Idaho

Residing at: MERIDIAN, ID

My commission expires: 2/21/19

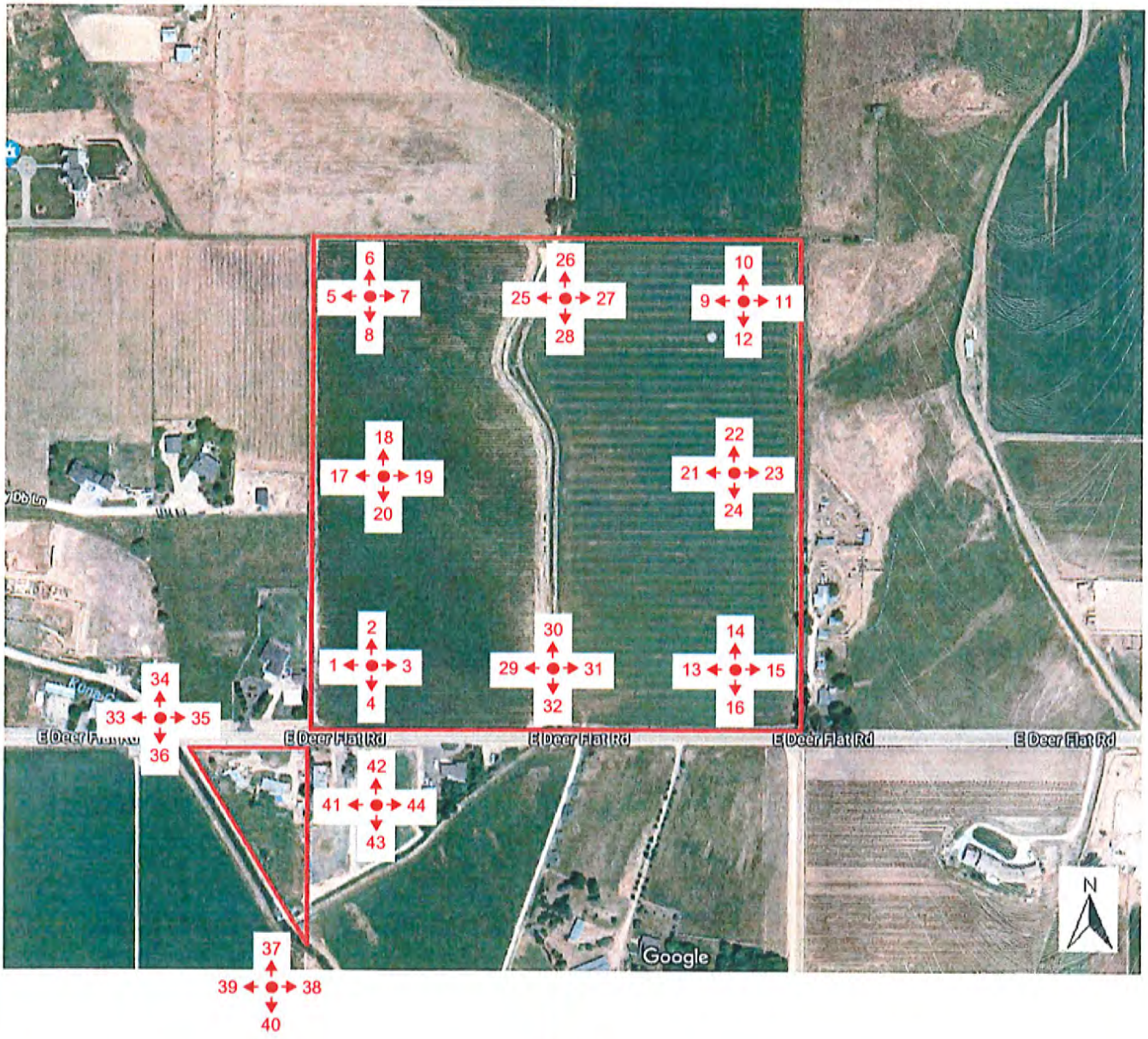
ALAN C. NOBLE
NOTARY PUBLIC
STATE OF IDAHO

AERIAL PHOTO

LUGARNO TERRA SUBDIVISION

E. DEER FLAT ROAD, KUNA, ID 83634

SE ¼ , SW ¼, SEC-18, T-2N, R-1E, B.M



ROCK SOLID CIVIL
Civil Engineering and Land Development Consulting

Exhibit
A3

Bennett Property – 40 Acres – Pictures

#1

#2

#3

#4

#5

#6

#7

#8

#9

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#11

#12

#13

#14

#15

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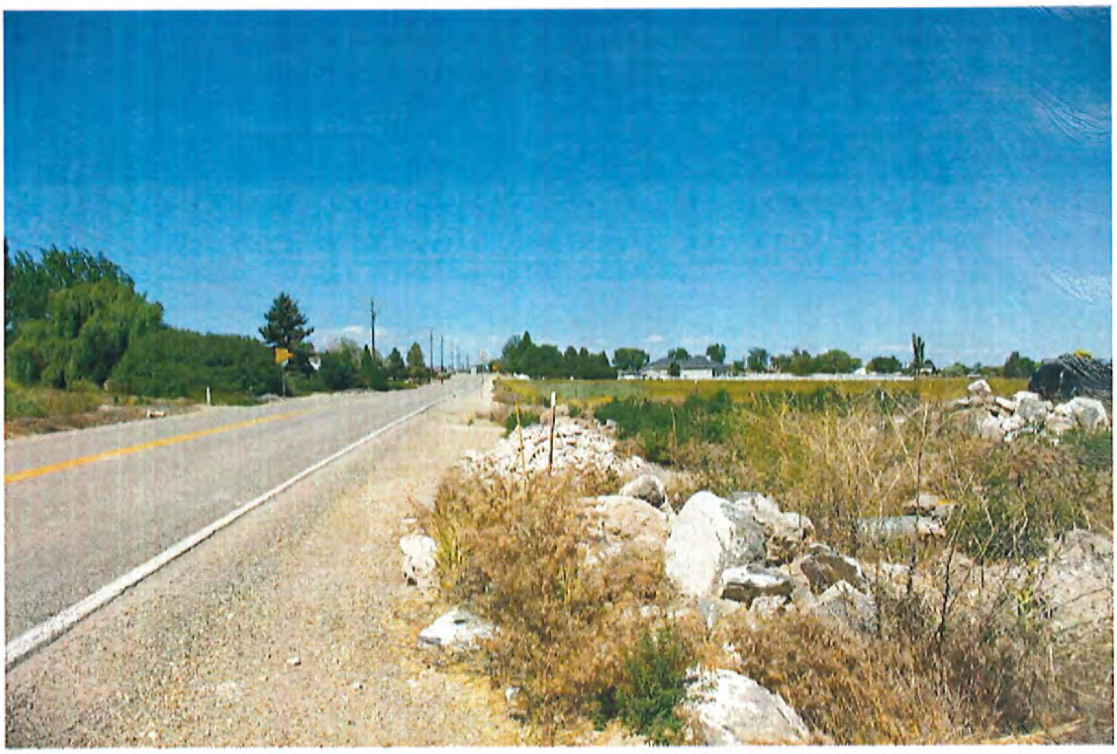

#29

#30

#31

#32

Stark Property – 1.725 Acres – Pictures

#33

#34

#35

#36

#37

#38

#39

#40

#41

#42

#43

#44

William Edwards

From: Derritt Kerner <dkerner@rocksolidcivil.com>
Sent: Wednesday, June 06, 2018 3:51 PM
To: William Edwards
Cc: Jon Seel; Randy Fullmer; Randy Carpenter
Subject: FW: Lugarno Village / Terra Subdivision Name Change

All – Below is the official name reservation for Lugarno Terra Subdivision. Thanks,

Derritt Kerner, EIT

ROCK SOLID CIVIL

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING

270 N 27th Street Suite 100
Boise, Idaho 83702-4741
(208) 342-3277 Office Main
(208) 391-7682 Direct
(208) 376-1821 Fax
dkerner@rocksolidcivil.com
www.rocksolidcivil.com

From: Sub Name Mail <subnamemail@adaweb.net>
Sent: Wednesday, June 6, 2018 3:41 PM
To: Derritt Kerner <dkerner@rocksolidcivil.com>
Subject: RE: Lugarno Village / Terra Subdivision Name Change

Derritt;

The name has been changed in our reservations from Lugarno Village to LUGARNO TERRA SUB.

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

Exhibit A23

From: Derritt Kerner [mailto:dkerner@rocksolidcivil.com]
Sent: Wednesday, June 06, 2018 3:30 PM
To: Sub Name Mail
Subject: [EXTERNAL] RE: Lugarno Village Subdivision Name Reservation

Glen – Either way. I'll use your email as proof of the authorized name change. Thank you Sir,

Derritt Kerner, EIT

ROCK SOLID CIVIL

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING

270 N 27th Street Suite 100
Boise, Idaho 83702-4741
(208) 342-3277 Office Main
(208) 391-7682 Direct
(208) 376-1821 Fax
dkerner@rocksolidcivil.com
www.rocksolidcivil.com

From: Sub Name Mail <subnamemail@adaweb.net>
Sent: Wednesday, June 6, 2018 2:43 PM
To: Derritt Kerner <dkerner@rocksolidcivil.com>
Subject: RE: Lugarno Village Subdivision Name Reservation

Did you need a new letter, or can we just change the name?

From: Derritt Kerner [mailto:dkerner@rocksolidcivil.com]
Sent: Monday, June 04, 2018 8:26 AM
To: Sub Name Mail
Cc: Carl Porter Carl@sawtoothls.com
Subject: [EXTERNAL] RE: Lugarno Village Subdivision Name Reservation

Glen – Sorry to be a pain. The clients would like to change our name reservation from "Lugarno Village Subdivision" to "Lugarno Terra Subdivision" and apologize for not selecting this name the first time. Would that be possible? Thank you Sir,

Derritt Kerner, EIT

ROCK SOLID CIVIL

CIVIL ENGINEERING AND LAND DEVELOPMENT CONSULTING

270 N 27th Street Suite 100
Boise, Idaho 83702-4741
(208) 342-3277 Office Main
(208) 391-7682 Direct
(208) 376-1821 Fax
dkerner@rocksolidcivil.com
www.rocksolidcivil.com

From: Sub Name Mail <subnamemail@adaweb.net>
Sent: Wednesday, May 23, 2018 2:54 PM
To: Derritt Kerner <dkerner@rocksolidcivil.com>; Sub Name Mail <subnamemail@adaweb.net>
Cc: Carl Porter Carl@sawtoothls.com <Carl@sawtoothls.com>
Subject: RE: Lugarno Village Subdivision Name Reservation

Derritt;

The title of the plat must state "Lugarno Village Subdivision", as stated in the reservation letter.

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

From: Derritt Kerner [mailto:dkerner@rocksolidcivil.com]
Sent: Wednesday, May 23, 2018 1:24 PM
To: Sub Name Mail
Cc: Carl Porter Carl@sawtoothls.com
Subject: [EXTERNAL] RE: Lugarno Village Subdivision Name Reservation

Glen & Jerry – Just to clarify, the final plat can simply state "Lugarno Village" and not "Lugarno Village Subdivision", correct? It seem redundant and out of place (like using the word "Estates"). Let me know. Thank you both,

Derritt Kerner, EIT

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dkerner@rocksolidcivil.com
www.rocksolidcivil.com

From: Sub Name Mail <subnamemail@adaweb.net>
Sent: Tuesday, May 22, 2018 3:34 PM
To: Derritt Kerner <dkerner@rocksolidcivil.com>
Cc: Carl Porter Carl@sawtoothls.com <Carl@sawtoothls.com>
Subject: Lugarno Village Subdivision Name Reservation

May 22, 2018

Carl Porter, Sawtooth Land Surveying
Derritt Kerner, Rock Solid Civil

RE: Subdivision Name Reservation: **LUGARNO VILLAGE SUBDIVISION**

At your request, I will reserve the name **Lugarno Village 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,

Jerry L. Hastings, PLS 5359
County Surveyor
Deputy Clerk Recorder
Ada County Development Services
200 W. Front St., Boise, ID 83702
(208) 287-7912 *office*
(208) 287-7909 *fax*

From: Derritt Kerner [mailto:dkerner@rocksolidcivil.com]
Sent: Monday, May 21, 2018 12:52 PM
To: Sub Name Mail

Cc: Carl Porter
Subject: Lugarno Village Subdivision Name Reservation

Glen – Carl Porter will be the surveyor of record for this one. Thank you Sir,

Derritt Kerner, EIT

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IDAHO / CALIFORNIA / OREGON / WASHINGTON / MONTANA / WYOMING / UTAH / NORTH DAKOTA

From: Sub Name Mail <subnamemail@adaweb.net>
Sent: Monday, May 21, 2018 10:16 AM
To: Derritt Kerner <dkerner@rocksolidcivil.com>
Subject: RE: Subdivision Name Reservation

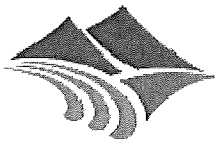
Derritt;
I also need a surveyor of record for this project.

Glen Smallwood

From: Derritt Kerner [mailto:dkerner@rocksolidcivil.com]
Sent: Friday, May 18, 2018 11:52 AM
To: Sub Name Mail
Cc: William Edwards; Randy Fullmer
Subject: Subdivision Name Reservation

Jerry & Glen - I'd like to reserve the name "Lugarno Village" on behalf Billy and Randy with Select Development for a subdivision of parcel # S1418346600 (40 acres) in Kuna. I don't believe Randy or Billy reserved this name yet. Let us know if that will work. Thank you both,

Derritt Kerner, EIT



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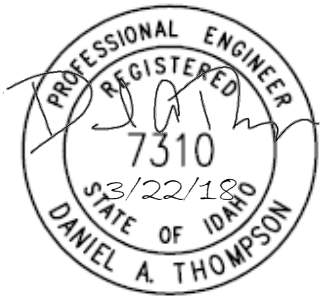
Traffic Impact Study

Deer Flat Subdivision

Kuna, Idaho



Prepared For:

Select Development & Contracting, LLC
P.O. Box 1030
Meridian, ID 83680

March 1, 2018
Revised March 22, 2018

Thompson Engineers
Traffic and Civil Inc.

181 East 50th St
Garden City, ID 83714
(208) 484-4410

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EXECUTIVE SUMMARY

Introduction

Thompson Engineers, Inc. has been retained to prepare a traffic impact study for the proposed Deer Flat Subdivision located on Deer Flat Road between Meridian Road and Locust Grove Road in Kuna, Idaho, as shown in **Figure 1**. The TIS evaluates the potential traffic impacts resulting from the development and make recommendations for mitigation of the impacts. The scope of this report was determined through coordination with the Ada County Highway District (ACHD) and was prepared in accordance with ACHD Policy, Section 7106 – Traffic Impact Studies.

Proposed Development

1. Deer Flat Subdivision is a proposed residential development containing 122 single-family dwelling units with an expected 2025 build-out year.

2. Based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition), the development is estimated to generate approximately 1,152 trips per day, 91 trips during the AM peak hour and 121 trips during the PM peak hour.
   - The development is not expected to retain internal capture trips within the site or generate pass-by trips.
   - All trips generated by the development are assumed to be made by personal or commercial vehicles for the traffic analysis.
   - The estimated site traffic distribution patterns are:
     - 55% north of the site
     - 20% south of the site
     - 10% west of the site
     - 15% east of the site

3. The proposed driveway locations on Deer Flat Road meet ACHD's access spacing:
   - None of the proposed driveway intersections are expected to warrant turn lanes.
   - Intersection sight distances at both driveway intersections are estimated to exceed ACHD minimum requirement of 555 feet for a 50 mph posted speed. Building setback and landscaping should be located and designed to ensure adequate intersection sight distance.

4. All proposed internal roadways are projected to carry less than 1,000 vehicles per day (vpd), except for the East access approach with an estimated ADT of 1,076 vpd.

Improvements Needed to Mitigate 2018 Existing Traffic

5. All study area intersections meet ACHD's minimum operational thresholds with 2018 existing traffic conditions analyzed with the existing intersection control and lane configurations. No improvements are needed to mitigate 2018 existing traffic.

Improvements Needed to Mitigate 2025 (Build-Out Year) Background Traffic

6. The Winfield Springs Subdivision, a proposed off-site development located in the northwest quadrant of the Meridian Road and Deer Flat Road intersection, is required to construct a southbound right-turn lane and signal modifications at the Meridian Road and Deer Flat Road intersection. According to the Engineer for the project, these improvements are currently under design and awaiting ITD's review and approval. Therefore, these improvements are expected to be constructed by 2025 and were included in the 2025 background traffic analysis.

7. All study area intersections are projected to meet ACHD's minimum operational thresholds with 2025 background traffic conditions analyzed with the existing intersection control and lane configurations or with the required improvements at the Meridian Road and Deer Flat Road intersection needed to mitigate the Winfield Springs Subdivision impacts. As a result, no additional improvements are needed to mitigate 2025 background traffic.

Improvements Needed to Mitigate 2025 (Build-Out Year) Total Traffic

8. All study area intersections are projected to meet ACHD's minimum operational thresholds with 2025 total traffic conditions analyzed with the existing intersection control and lane configurations or with the required improvements at the Meridian Road and Deer Flat Road intersection needed to mitigate the Winfield Springs Subdivision impacts. As a result, no additional improvements are needed to mitigate 2025 total traffic.

PROPOSED DEVELOPMENT

The proposed Deer Flat Subdivision is located on Deer Flat Road between Meridian Road and Locust Grove Road in Kuna, Idaho. **Figure 1** shows the site location and its vicinity. Deer Flat Subdivision will be annexed into the City of Kuna limits.

Figure 1 – Site Location and Vicinity

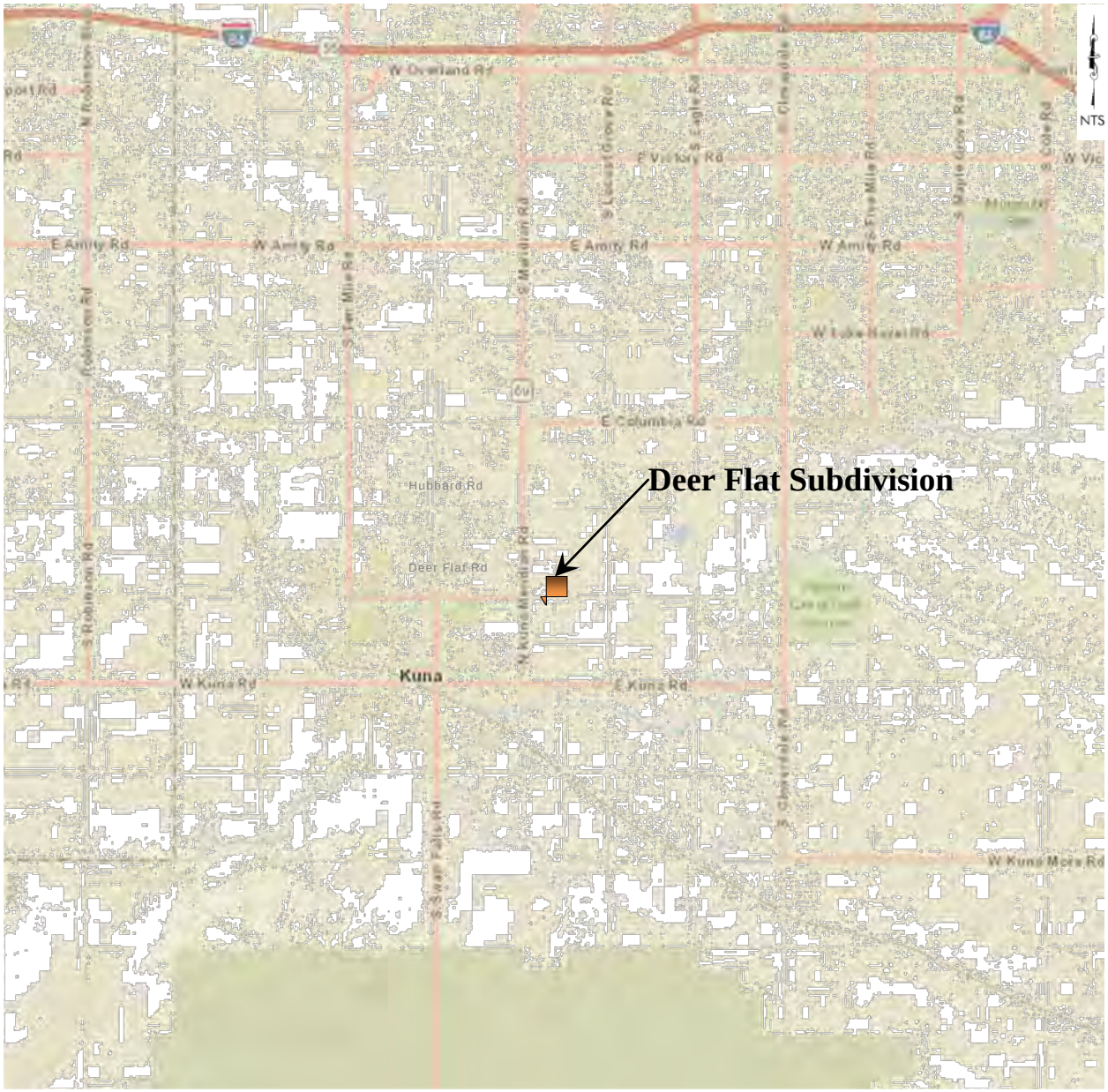
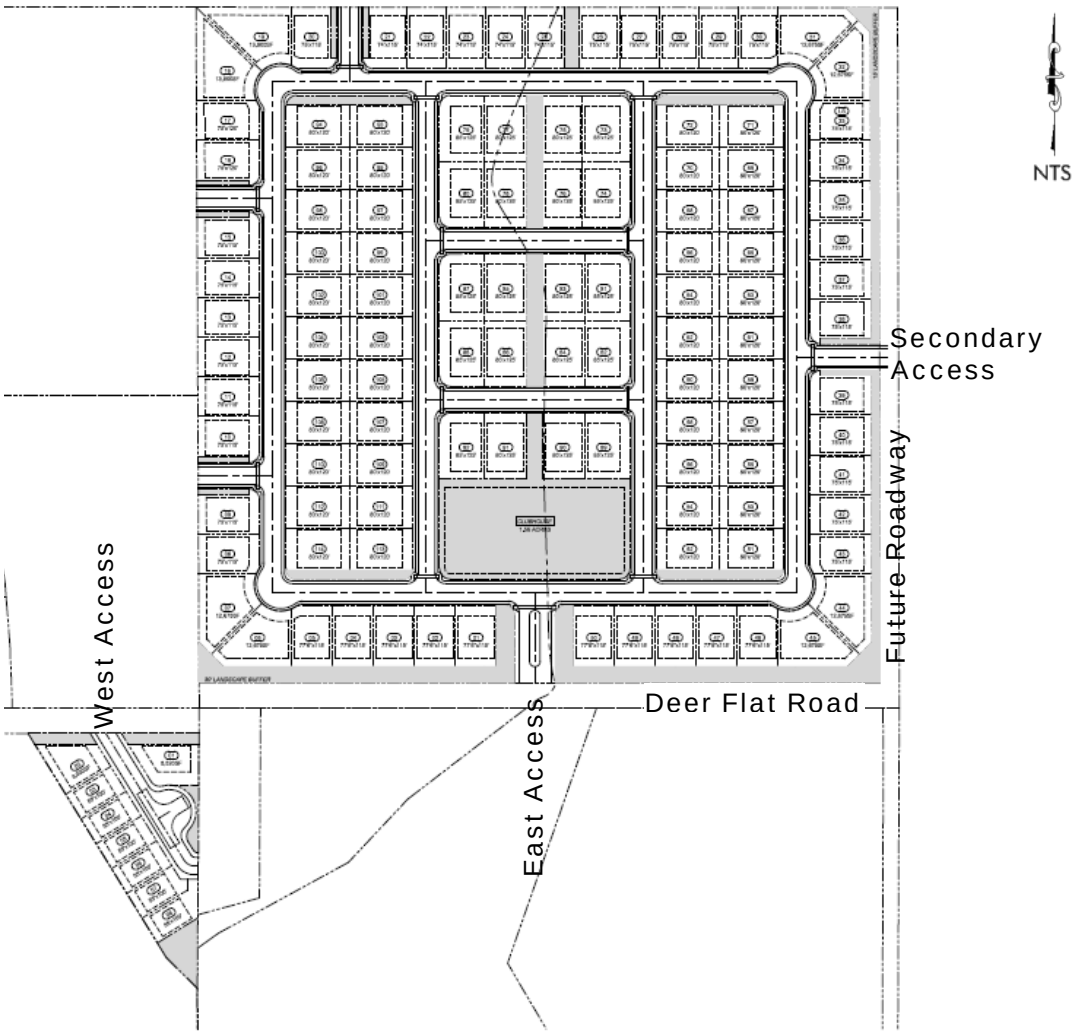


Figure 2 shows the preliminary site plan with proposed access locations. Deer Flat Subdivision is a proposed residential development containing 122 single-family lots, with 8 lots south of Deer Flat Road and 114 lots north of Deer Flat Road. The expected build-out year is 2025. The development is proposing one full access point on Deer Flat Road for the northern portion. For the southern portion, the development is consolidating three existing driveways into one full access approach.

Figure 2 – Preliminary Site Plan



STUDY APPROACH

This study follows the ACHD's requirements for transportation impact studies. The study area, specific parameters and requirements for the study were coordinated with ACHD's staff. Scoping results from the Community Planning Association of Southwest Idaho (COMPASS) area of influence model runs are included in the appendix.

Study Area

The following study area intersections were identified by ACHD for collecting peak hour turning movement counts and traffic impact analysis:

- Locust Grove Road and Hubbard Road
- Meridian Road and Deer Flat Road
- Locust Grove Road and Deer Flat Road
- Proposed access points on Deer Flat Road

The following study area roadway segments were identified by ACHD for collecting daily traffic counts and traffic impact analysis:

- Deer Flat Road between Meridian Road and Locust Grove Road
- Locust Grove Road between Hubbard Road and Deer Flat Road

Study Period

The analysis peak periods will be the AM and PM peak hours of operation of the adjacent transportation system. The analysis years are:

- 2018 existing traffic
- 2025 build-out year background traffic
- 2025 build-out year total traffic

EXISTING CONDITIONS

Road System

A brief description of the existing roadways and intersections within the study area is described below. The roadway functional classification is based on COMPASS 2040 Functional Classification Map, which does not include collector or local streets. **Figure 3** summarizes the existing intersection control and lane configuration.

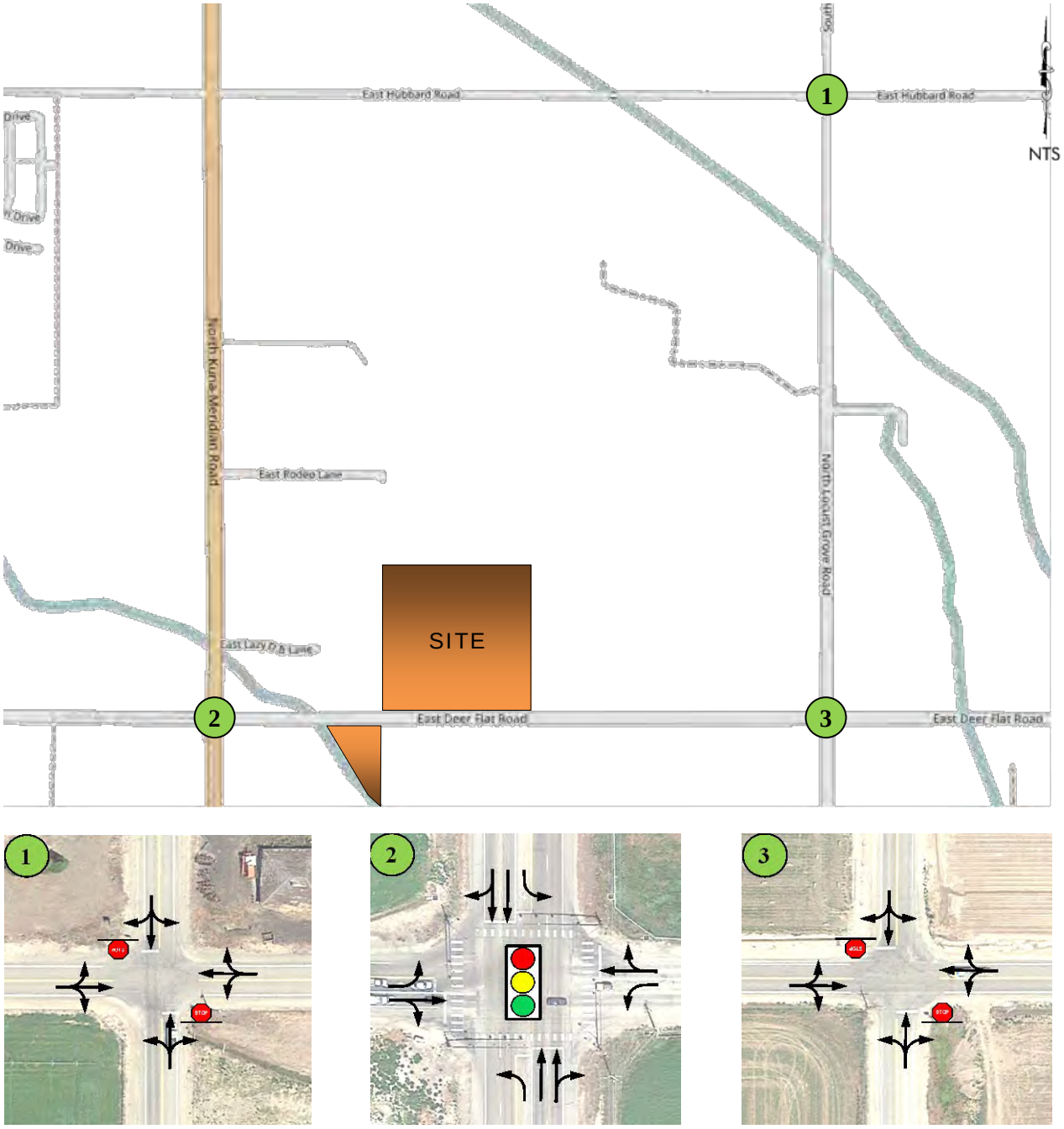
Meridian Road is a state highway (SH 69) functionally classified as a principal arterial with a posted speed limit of 55 miles per hour (mph). Meridian Road is under the ITD's jurisdiction and designated as a District Rout under IDAPA access and signal spacing policy. It has two travel lanes in each direction with a continuous center turn lane. It has a rural section without curb, gutter, sidewalk, or designated bike lane, except for a segment of sidewalk and gutter constructed along the Merrell Town Centre and Ensign Subdivision No. 1 developments.

Deer Flat Road is functionally classified as a minor arterial with a posted limit of 45 mph west of Meridian Road and 50 mph east of Meridian Road. It has one travel lane in each direction with a center turn lane west of Meridian Road and one travel lane in each direction east of Meridian Road. It has a rural section without curb, gutter, sidewalk or bike lane.

Hubbard Road is functionally classified as a minor arterial with a posted speed limit of 50 mph. It has one travel lane in each direction with a rural section without curb, gutter, sidewalk or bike lane.

Locust Grove Road is functionally classified as a minor arterial with a posted speed limit of 50 mph. It has one travel lane in each direction with a rural section without curb, gutter, sidewalk or bike lane.

Figure 3 – Existing Intersection Control and Lane Configuration



Existing Traffic Volumes

AM and PM peak hour traffic counts were obtained at the study intersections on January 23, 2018. Peak hour traffic counts for the Meridian Road and Deer Flat Road intersection was collected on February 6, 2018. The peak our intersection turning movement counts were collected on a weekday for a 2-hour period at 15-minute intervals between 7:00 and 9:00 during the AM peak travel period hour and between 4:00 and 6:00 during the PM peak travel period, which are included in the appendix. Existing peak hour traffic volumes are summarized in **Figure 4**.

24-hour counts were also obtained for the study area roadway segments on January 23-24, 2018 – summarized in **Table 1**.

Table 1 – 2018 Existing ADT Summary

Roadway Segment	ADT
Locust Grove Road – north of Deer Flat Road	542
Deer Flat Road – east of Meridian Road	1,750

Intersection Crash Data

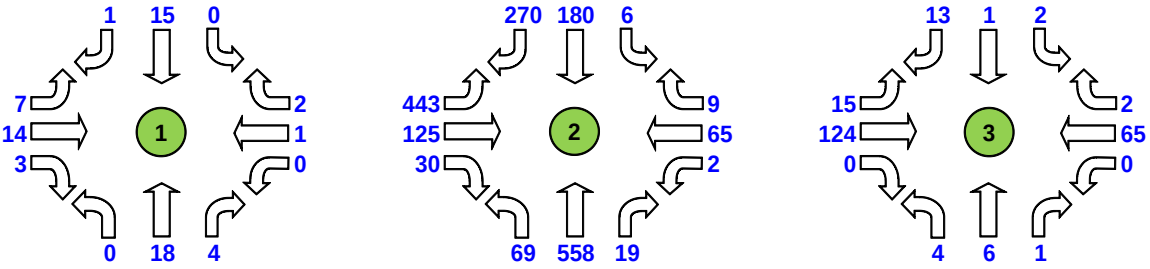
The most current five-year crash data (2012-2016) was obtained from the Local Highway Technical Assistance Council (LHTAC) website (http://gis.lhtac.org/safety/). **Table 2** summarizes the crash data statistics for the study area intersections and roadway segments. The following bullets summarize the crash statistics for the five years period between 2021 and 2016:

- **Locust Grove Road and Hubbard Road intersection** – There were three reported intersection related crashes.
- **Meridian Road and Deer Flat Road intersection** – There were 17 reported intersection related crashes. Sixteen out of the 17 reported crashes are rear-end crashes or angle/turning crashes. With the 2016 existing traffic volumes, the estimated existing crash rate is 0.41 crashes per million entering vehicles (ACC/MV), which is lower than the base rate.
- **Locust Grove Road and Deer Flat Road intersection** – There were five reported intersection related crashes. All five crashes were angle crashes resulting from failure to obey stop sign.
- **Deer Flat Road between Meridian Road and Locust Grove Road** – There were four reported intersection related crashes**.**
- **Locust Grove Road between Hubbard Road and Deer Flat Road** – There were one reported intersection related crash.

There were no reported crashes that resulted in fatalities or involved pedestrian or bicycle. Based on these crash statistics, the study area roadways and intersections do not have safety issues to warrant mitigations.

Figure 4 – 2018 Existing Peak Hour Traffic

AM Peak Hour



PM Peak Hour

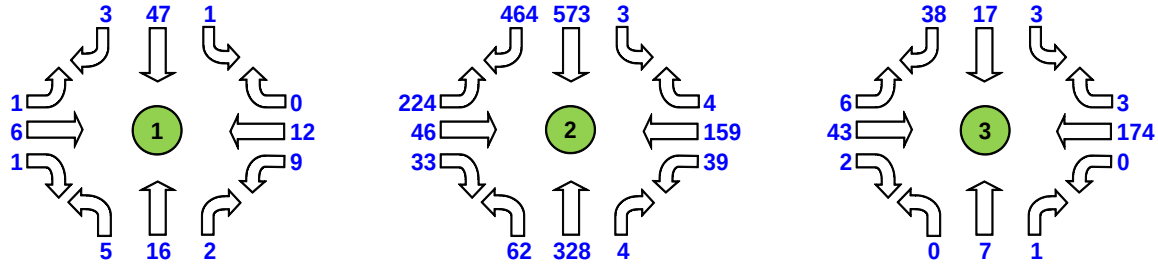


Table 2 – Intersection Crash Data (2012-2016)

Intersection or Roadway Segment		Total Crashes	Crash Severity			Base[1] Crash Rate (ACC/MV)	Existing Crash Rate (ACC/MV)
			Property Damage Only	*Injury*	*Fatal*		
1	Locust Grove Road and Hubbard Road	3	*1*	*2*	*0*	Existing crash rate is expected to be lower than the base rate	
2	Meridian Road and Deer Flat Road	17	*7*	*10*	*0*	0.56 (Type=72)	0.41
3	Locust Grove Road and Deer Flat Road	5	*3*	*2*	*0*	Existing crash rate is expected to be lower than the base rate	
Deer Flat Road (between Meridian Rd and Locust Grove Rd)		4	*3*	*1*	*0*	Existing crash rate is expected to be lower than the base rate	
Locust Grove Road (between Deer Flat Rd and Hubbard Rd)		1	*1*	*0*	*0*	Existing crash rate is expected to be lower than the base rate	

[1] Based on similar roadway type, width, and volume.

Roadway Network Improvements

Future roadway network within the study area is expected to remain the same as existing, except for the required improvements at the Meridian Road and Deer Flat Road intersection for mitigating the impacts generated by the proposed Winfield Springs Subdivision. These improvements are:

- Construct a southbound right-turn lane on Meridian Road
- Modify the signal

These improvements are currently being designed and awaiting ITD's review and approval. As a result, these improvements were included in the build-out year analysis.

There are also planned improvements on Deer Flat Road and the Meridian Road and Deer Flat Road intersection according the ACHD's Capital Improvement Plan (CIP), which are:

- Reconstruct/widen Deer Flat Road from 3 to 5 lanes from Linder Road to Meridian Road (2026-2030)
- Replace/modify signal at Meridian Road and Deer Flat Road intersection (2031-2035)

ACHD has included the construction of a traffic signal at the intersection of Meridian Road and Hubbard Road in the current Five Year Work Plan. This signal will improve the capacity of the intersection and could impact traffic patterns at the intersection of Meridian Road and Deer Flat Road.

PROJECTED TRAFFIC

2025 Build-Out Year Background Traffic

2025 background traffic was estimated by expanding the existing traffic counts at a 1.5% annual growth rate. This growth rate is based on historical traffic counts at Automatic Traffic Recorder (ATR) No. 110 located on Meridian Road approximately one mile north of Deer Flat Road. In addition to the traffic growth, traffic generated by five off-site development located in the vicinity of the site is included in the 2025 background traffic volumes:

- Merrell Town Centre (Profile Ridge Phase 1)
- Ensign Subdivision No. 1
- Ensign Subdivision No. 2
- Winfield Springs Subdivision
- Ashton Subdivision

Traffic data for these off-site developments was obtained from their traffic impact study reports. **Figure 5** summarizes the 2025 build-out year peak hour background turning movement traffic.

Site Traffic

Trip Generation

Site trip generation is usually estimated using the procedures recommended in the latest edition of the Trip Generation Manual (10th edition), published by the Institute of Transportation Engineers, in the absence of site-specific data. The site trip generation is obtained by applying the trip generation rates obtained from the manual for the proposed land use within the development. **Table 3** summarizes the site trip generation. At full build-out, the development is estimated to generate approximately 1,152 trips per day, 91 trips during the AM peak hour and 121 trips during the PM peak hour.

Table 3 – Build-Out Site Trip Generation Summary

Land Use	ITE Code	Size	Unit	Period	Trip Rate per Unit	Total Trips	Entering		Exiting	
Single-Family Detached Housing	210	122	Dwelling Unit	Weekday Daily (vpd)	9.44	1,152	50%	576	50%	576
				AM Peak Hour (vph)	0.74	91	25%	23	75%	68
				PM Peak Hour (vph)	0.99	121	63%	76	37%	45

Trip Capture, Pass-by Trips, and Modal Split

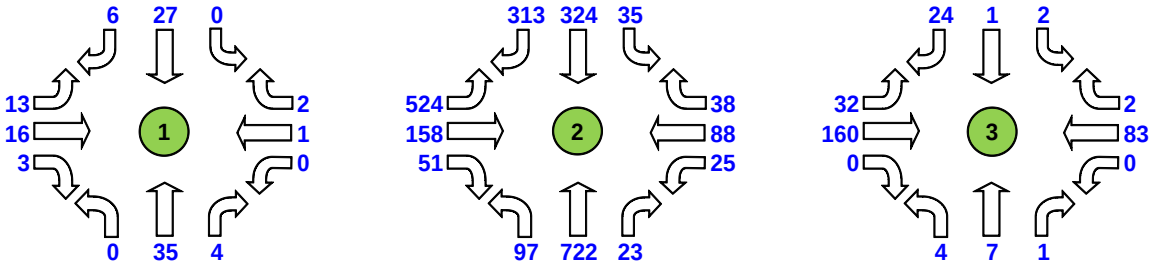
Based on the proposed land use, the development is not expected to retain trips within the site at full build-out. No trip reduction for internal capture trip was assumed in the traffic impact analysis.

The development is residential and is not expected to attract pass-by trips. No pass-by trips were assumed in the traffic impact analysis.

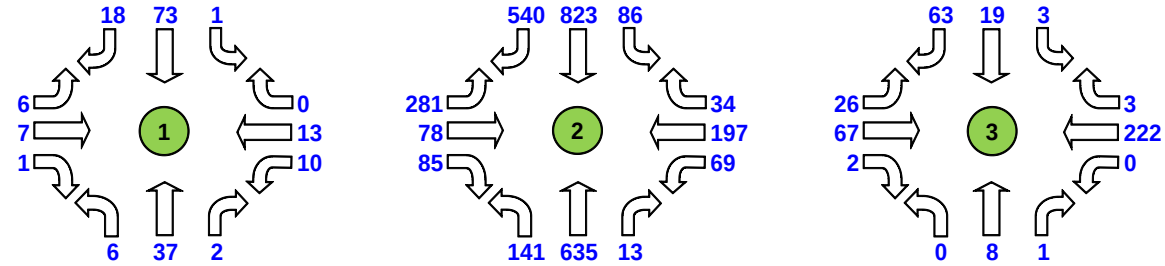
All trips generated by the development were assumed to be made by personal and commercial vehicles for the traffic analysis purposes.

Figure 5 – 2025 Build-Out Year Peak Hour Background Traffic

AM Peak Hour



PM Peak Hour



Trip Distribution and Assignment

Site traffic was distributed and assigned to the external roadway system based on the current travel patterns, site layout and the general location of the site within the area. **Figure 6** shows site traffic distribution patterns. **Figure 7** and **Figure 8** summarize the estimated build-out site traffic.

Total Traffic

The site traffic is then added to the background traffic as determined above. **Figure 9** and **Figure 10** show the total traffic at each intersection for AM and PM peak hour traffic conditions for the 2025 build-out year.

Figure 6 – Site Traffic Distribution Patterns

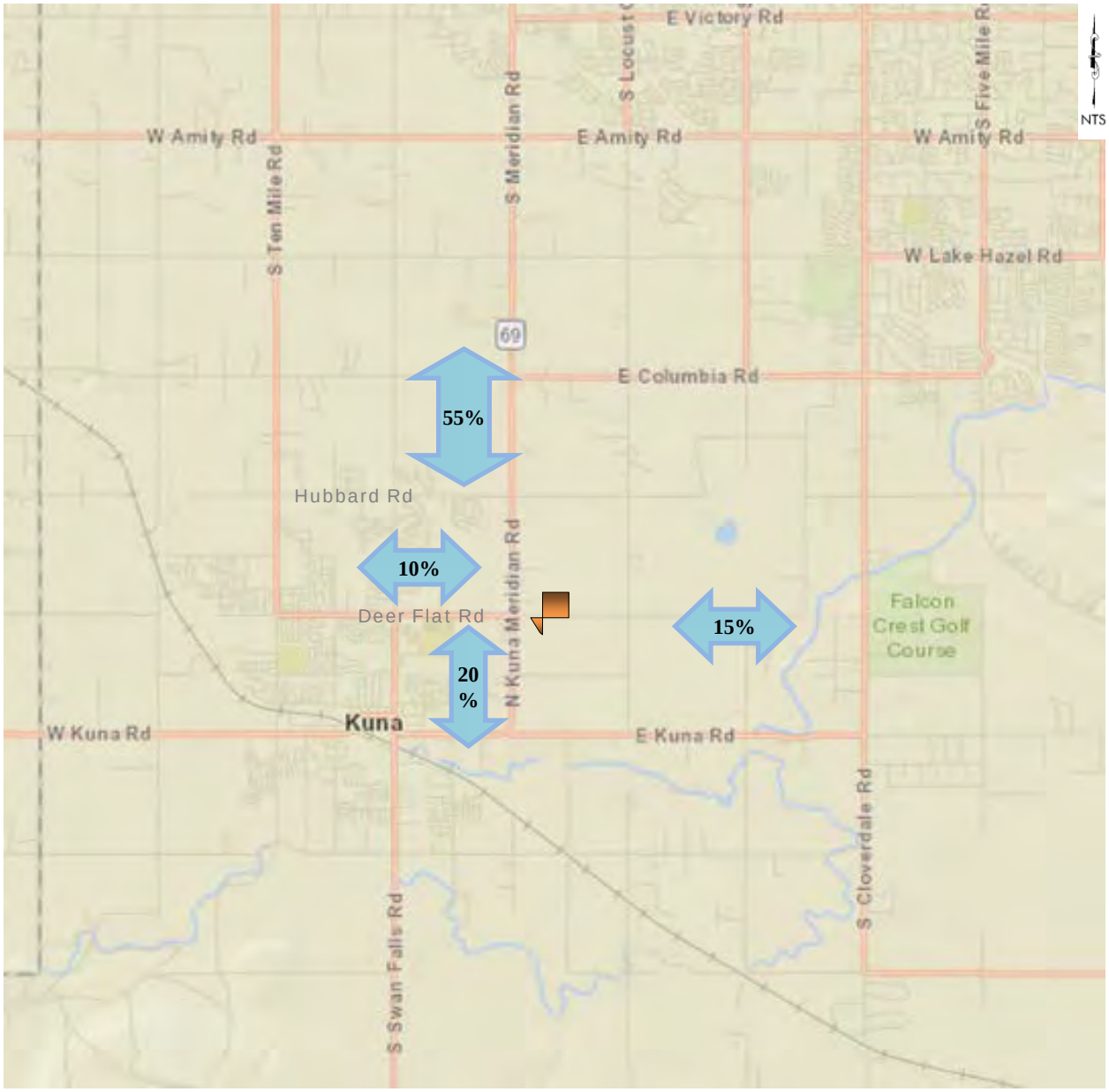


Figure 7 – Build-Out AM Peak Hour Site Traffic

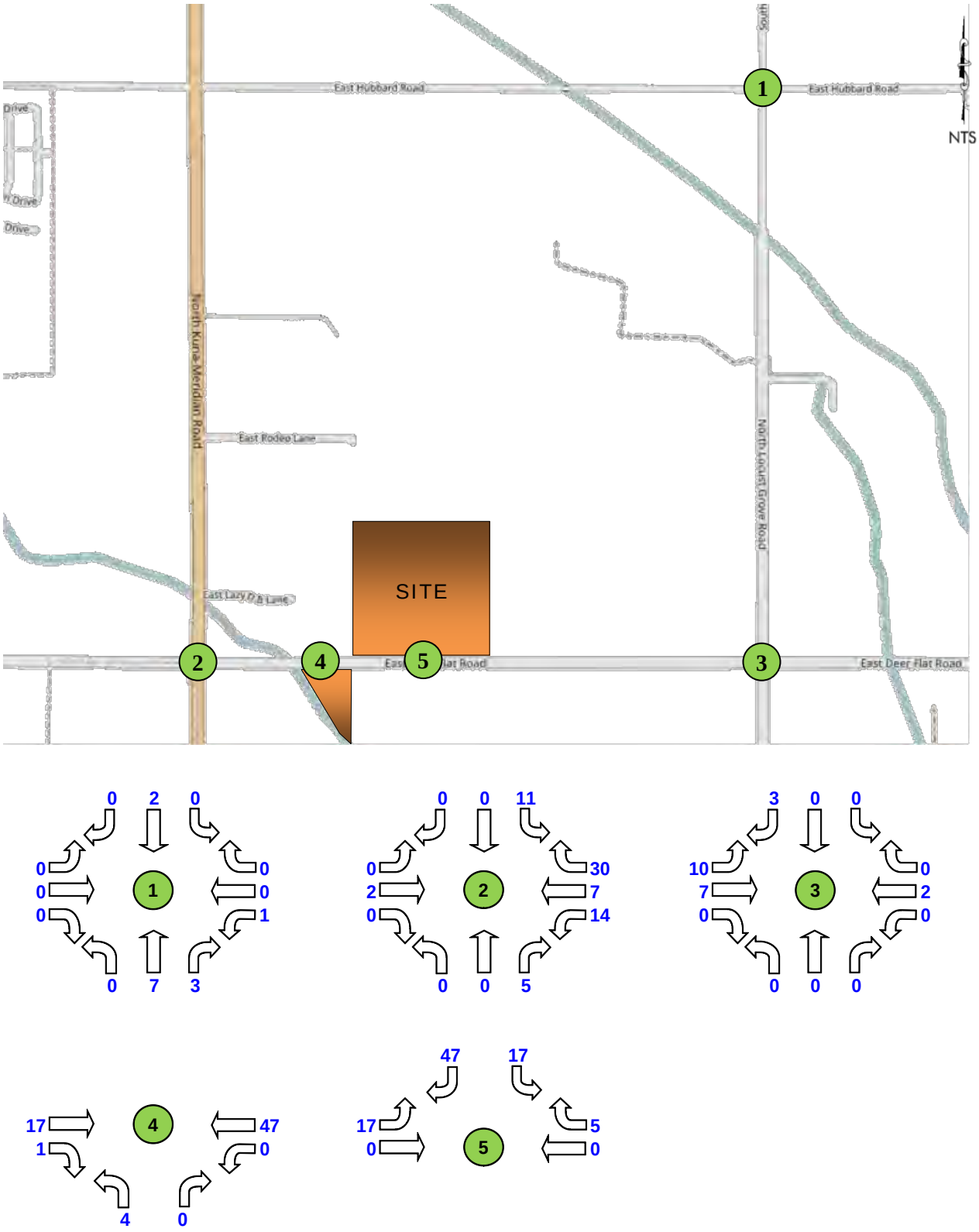


Figure 8 – Build-Out PM Peak Hour Site Traffic

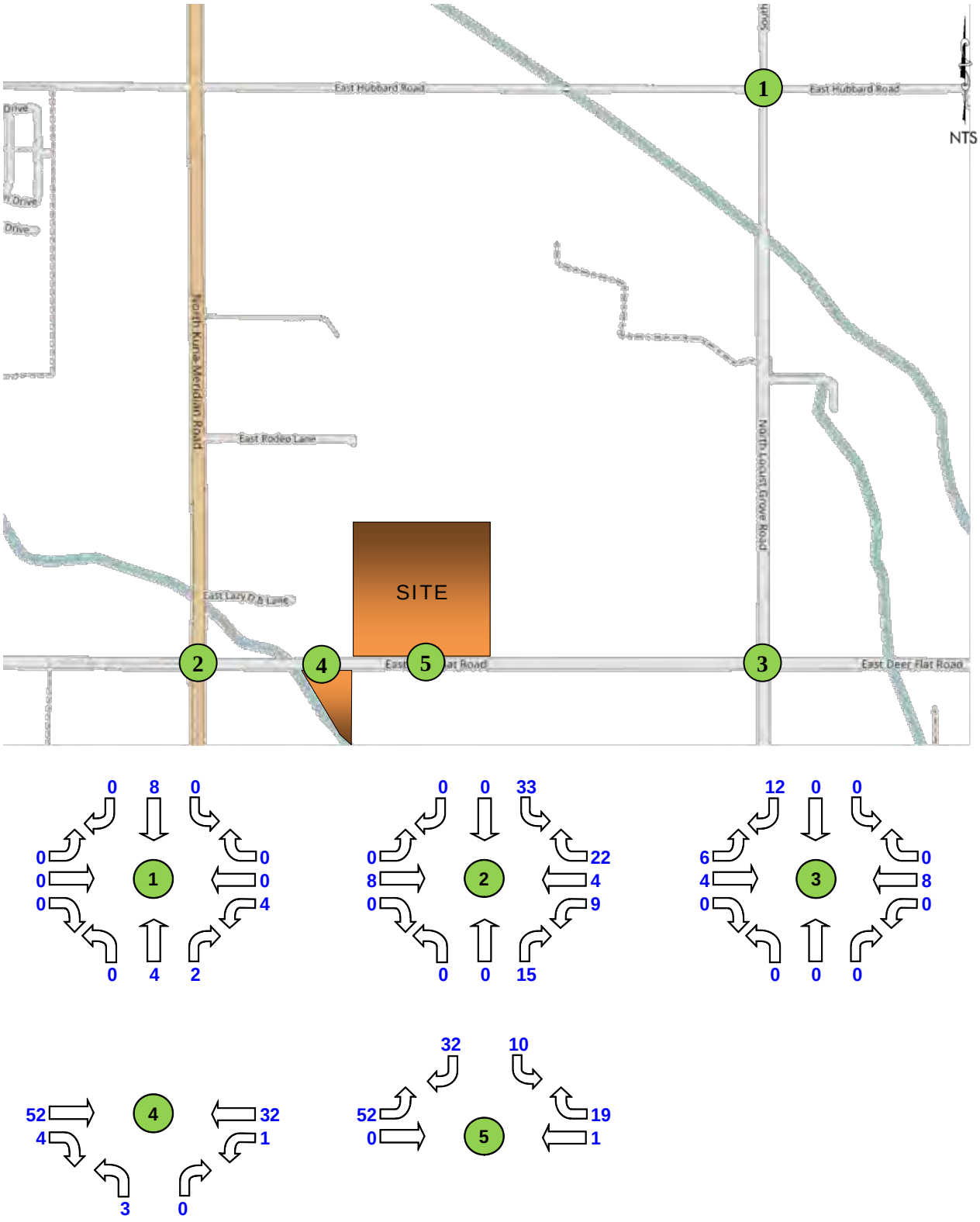


Figure 9 – 2025 Build-out Year AM Peak Hour Total Traffic

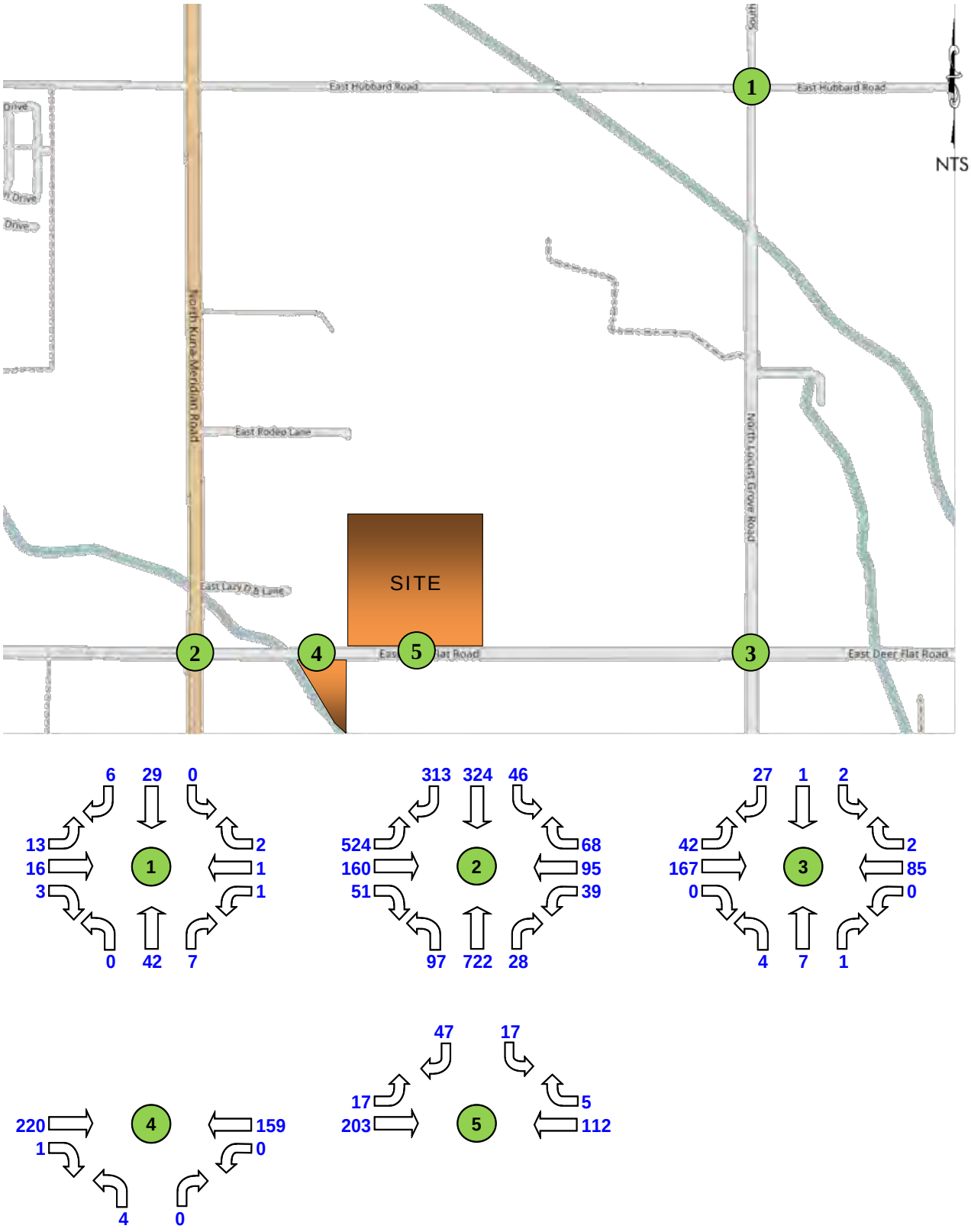
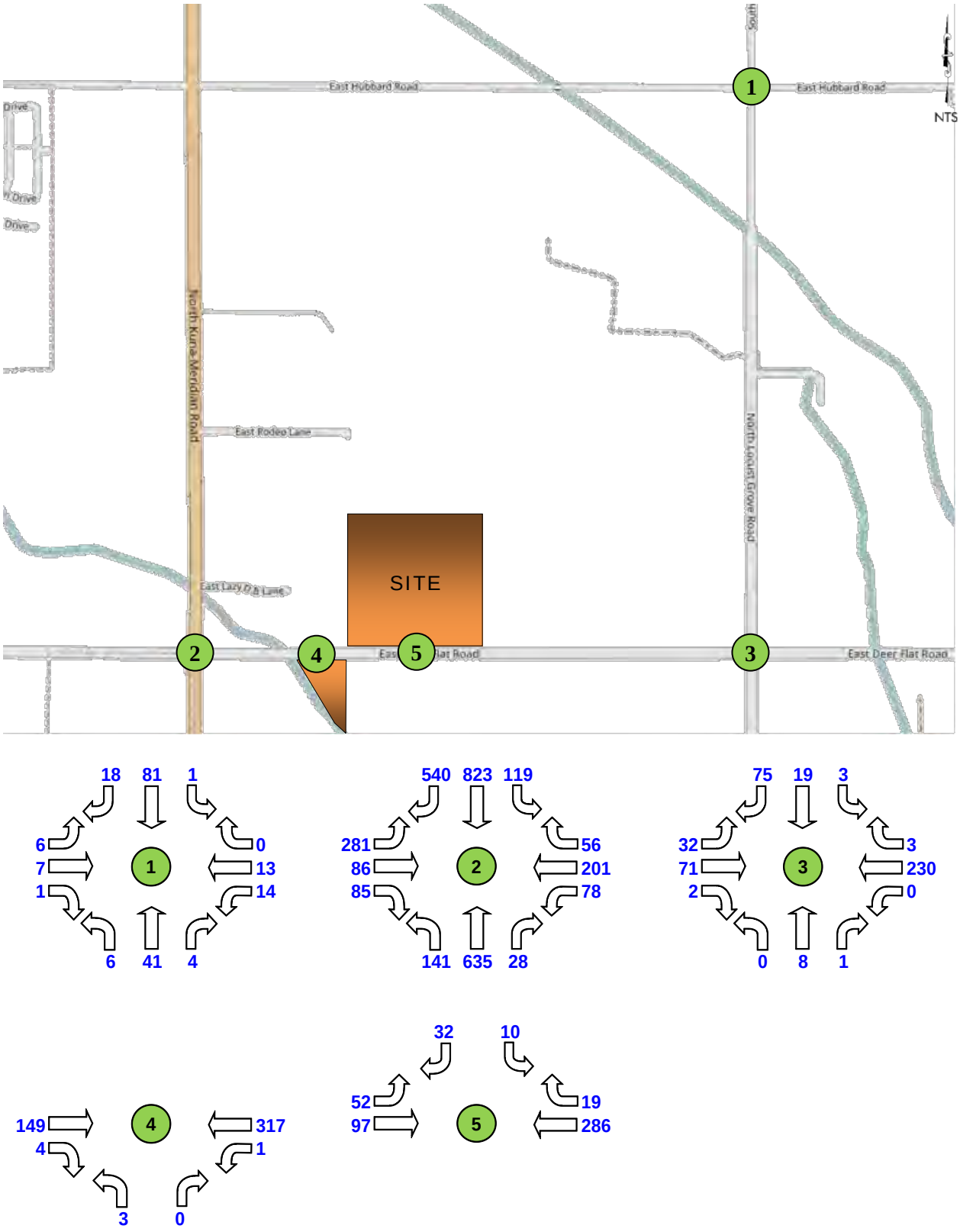


Figure 10 – 2025 Build-Out Year PM Peak Hour Total Traffic



TRAFFIC ANALYSIS

Roadway segment was evaluated based on ACHD level of service standards in accordance with Table C-4 of the 2016 Capital Improvement Plan Exhibit C. The roadway segment level of service is based on the maximum peak hour directional volume for different roadway functional classifications, number of through lanes, and left-turn type. The minimum acceptable level of service for arterials is LOS E.

Intersection capacity analysis was performed using the Synchro 10 (Version 10.1.2.20), which utilizes the 2010 Highway Capacity Manual methodologies. All parameters used in the analysis were based on existing data when available or Synchro default values, when not available. Level of service for intersection is based on the average delay of vehicles traveling through the intersection. According to ACHD policy, the minimum acceptable level of service is LOS D with a v/c ratio of 0.90 for the intersection and 1.00 for a lane group. The HCM 2010 methodology does not include an overall intersection v/c ratio as a measure of effectiveness (MOE) for signalized intersection. For this study, the overall intersection v/c ratio was estimated based on HCM 2000 methodology.

2018 Existing Traffic

Roadway Segment Level of Service

The study area roadway segments level of service were evaluated with 2018 existing traffic. **Table 4** summarizes the results. All study area roadway segments currently meets minimum operational thresholds with the existing lane configuration. No roadway capacities improvements are needed to mitigate 2018 existing traffic.

Table 4 – Roadway Segment Level of Service – 2018 Existing Traffic

Roadway Segment	Functional Classification	Left-Turn Lane Type	LOS E Directional Volume Threshold (vph)	Peak Hour Directional Volume (vph)		Meet Minimum Acceptable LOS?
				AM Peak	PM Peak	
Deer Flat Road East of Meridian Road	Minor Arterial	None	575	150	212	Yes
Locust Grove Road North of Deer Flat Road	Minor Arterial	None	575	23	58	Yes

Intersection Capacity Analysis and Level of Service

To determine the existing traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration and 2018 peak hour traffic. Copies of the calculations are included in the appendix. **Table 5** and **Table 6** summarize the MOE from the intersection capacity analysis. All study area intersections meet minimum operational thresholds with 2018 existing traffic during peak hour traffic:

- Locust Grove Road and Hubbard Road intersection
  - The northbound and southbound approaches are operating at LOS A with a v/c ratio of 0.08 or less.
- Meridian Road and Deer Flat Road intersection
  - The intersection is expected to operate at LOS C with an overall intersection v/c ratio of *0.69* or less.
  - All lane groups are expected to operate at LOS E or better with a v/c ratio of *0.84* or less.
- Locust Grove Road and Deer Flat Road intersection
  - The northbound and southbound approaches are operating at LOS B or better with a v/c ratio of 0.09 or less

Mitigation

All study area roadway segments and intersections meet minimum operational thresholds with 2018 existing traffic. As a result, no roadway or intersection improvements are needed to mitigate 2018 existing traffic. Turn lane warrant was evaluated using ACHD guidelines – see the appendix for turn lane warrant worksheets. None of the study area intersections meet warrant for turn lanes with 2018 existing traffic.

Table 5 – Intersection Level of Service – 2018 Existing Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
1	Locust Grove Road and Hubbard Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	A / A	A / A
			Delay (s/v) (NB / SB)	9 / 9	9 / 10
			Worst Lane Group LOS	A (SBTR)	A (SBTR)
2	Meridian Road and Deer Flat Road	Signal	Intersection LOS	C	C
			Intersection Delay (s/v)	*29*	31
			Intersection v/c	*0.68*	0.69
			Worst Lane Group LOS	D (WBTR)	E (WBTR)
3	Locust Grove Road and Deer Flat Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	B / A	B / B
			Delay (s/v) (NB / SB)	11 / 9	10 / 10
			Worst Lane Group LOS	B (NBTR)	B (NBTR)

Table 6 – Lane Group v/c Ratio – 2018 Existing Traffic

Intersection		Approach	AM Peak Hour			PM Peak Hour		
			LT	THRU	RT	LT	THRU	RT
1	Locust Grove Road and Hubbard Road	NB	0.04			0.04		
		SB	0.03			0.08		
		EB	0.01			< 0.01		
		WB	--			0.01		
2	Meridian Road and Deer Flat Road	NB	0.23	0.46	0.46	0.28	0.19	0.19
		SB	0.02	*0.32*	*0.54*	0.01	0.69	0.69
		EB	*0.84*	0.28		*0.75*	0.22	
		WB	0.01	*0.69*		0.16	*0.83*	
3	Locust Grove Road and Deer Flat Road	NB	0.02			0.01		
		SB	0.02			0.09		
		EB	0.01			0.01		
		WB	--			--		

2025 Build-Out Year Background Traffic

Roadway Segment Level of Service

The study area roadway segments level of service were evaluated with 2025 background traffic. **Table 7** summarizes the results. All study area roadway segments are expected to meet minimum operational thresholds with the existing lane configuration. No roadway capacities improvements are needed to mitigate 2025 background traffic.

Table 7 – Roadway Segment Level of Service – 2025 Build-Out Year Background Traffic

Roadway Segment	Functional Classification	Left-Turn Lane Type	LOS E Directional Volume Threshold (vph)	Peak Hour Directional Volume (vph)		Meet Minimum Acceptable LOS?
				AM Peak	PM Peak	
Deer Flat Road East of Meridian Road	Minor Arterial	None	575	215	301	Yes
Locust Grove Road North of Deer Flat Road	Minor Arterial	None	575	41	85	Yes

Intersection Capacity Analysis and Level of Service

To determine the 2025 background traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration or with the required improvements at the Meridian Road and Deer Flat Road intersection needed to mitigate the Winfield Springs Subdivision impacts. Copies of the calculations are included in the appendix. **Table 8 and Table 9** summarize the intersection capacity analysis results. All study area intersections are projected to meet minimum operational thresholds with 2025 background traffic during peak hour traffic:

- Locust Grove Road and Hubbard Road intersection
  - The northbound and southbound approaches are operating at LOS B or better with a v/c ratio of 0.15 or less.
- Meridian Road and Deer Flat Road intersection
  - The intersection is expected to operate at LOS *D* with an overall intersection v/c ratio of *0.85* or less.
  - All lane groups are expected to operate at LOS E or better with a v/c ratio of *0.93* or less.
- Locust Grove Road and Deer Flat Road intersection
  - The northbound and southbound approaches are operating at LOS B or better with a v/c ratio of 0.14 or less

Mitigation

All study area roadway segments and intersections meet minimum operational thresholds with 2025 background traffic. As a result, no roadway or intersection improvements are needed to mitigate 2025 background traffic. Turn lane warrant was evaluated using ACHD guidelines – see the appendix for turn lane warrant worksheets. None of the study area intersections meet warrant for turn lanes with 2025 background traffic.

Table 8 – Intersection Level of Service – 2025 Build-Out Year Background Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
1	Locust Grove Road and Hubbard Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	A / A	A / B
			Delay (s/v) (NB / SB)	10 / 10	10 / 10
			Worst Lane Group LOS	A (NBTR)	B (SBTR)
2	Meridian Road and Deer Flat Road	Signal	Intersection LOS	*D*	C
			Intersection Delay (s/v)	*37*	*32*
			Intersection v/c	*0.85*	*0.74*
			Worst Lane Group LOS	E (WBTR)	D (WBTR)
3	Locust Grove Road and Deer Flat Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	B / A	B / B
			Delay (s/v) (NB / SB)	11 / 9	12 / 11
			Worst Lane Group LOS	B (NBTR)	B (NBTR)

Table 9 – Lane Group v/c Ratio – 2025 Build-Out Year Background Traffic

Intersection		Approach	AM Peak Hour			PM Peak Hour		
			LT	THRU	RT	LT	THRU	RT
1	Locust Grove Road and Hubbard Road	NB	0.07			0.08		
		SB	0.06			0.15		
		EB	0.01			0.01		
		WB	--			0.01		
2	Meridian Road and Deer Flat Road	NB	*0.31*	*0.67*	*0.67*	*0.62*	*0.48*	*0.48*
		SB	*0.18*	*0.32*	*0.36*	*0.27*	*0.66*	*0.69*
		EB	*0.93*	*0.35*		*0.83*	0.38	
		WB	0.12	*0.81*		0.22	*0.87*	
3	Locust Grove Road and Deer Flat Road	NB	0.02			0.02		
		SB	0.04			0.14		
		EB	0.03			0.02		
		WB	--			--		

2025 Build-Out Year Total Traffic

Roadway Segment Level of Service

The study area roadway segments level of service were evaluated with 2025 total traffic. **Table 10** summarizes the results. All study area roadway segments are expected to meet minimum operational thresholds with the existing lane configuration. No roadway capacities improvements are needed to mitigate 2025 total traffic.

Table 10 – Roadway Segment Level of Service – 2025 Build-Out Year Total Traffic

Roadway Segment	Functional Classification	Left-Turn Lane Type	LOS E Directional Volume Threshold (vph)	Peak Hour Directional Volume (vph)		Meet Minimum Acceptable LOS?
				AM Peak	PM Peak	
Deer Flat Road East of Meridian Road	Minor Arterial	None	575	233	336	Yes
Locust Grove Road North of Deer Flat Road	Minor Arterial	None	575	51	97	Yes

Intersection Capacity Analysis and Level of Service

To determine the 2025 total traffic impacts, the study area intersections were analyzed with the existing intersection control and lane configuration or with the above mentioned mitigations. Copies of the calculations are included in the appendix. **Table 11 and Table 12** summarize the intersection capacity analysis results. All study area intersections are projected to meet minimum operational thresholds with 2025 total traffic during peak hour traffic:

- Locust Grove Road and Hubbard Road intersection
  - The northbound and southbound approaches are operating at LOS B or better with a v/c ratio of 0.17 or less.
- Meridian Road and Deer Flat Road intersection
  - The intersection is expected to operate at LOS D or better with an overall intersection v/c ratio of *0.87* or less.
  - All lane groups are expected to operate at LOS E or better with a v/c ratio of *0.96* or less.
- Locust Grove Road and Deer Flat Road intersection
  - The northbound and southbound approaches are operating at LOS B or better with a v/c ratio of 0.16 or less

Mitigation

All study area roadway segments and intersections meet minimum operational thresholds with 2025 total traffic. As a result, no roadway or intersection improvements are needed to mitigate 2025 total traffic. Turn lane warrant was evaluated using ACHD guidelines – see the appendix for turn lane warrant worksheets. None of the study area intersections meet warrant for turn lanes with 2025 total traffic.

Table 11 – Intersection Level of Service – 2025 Build-Out Year Total Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
1	Locust Grove Road and Hubbard Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	A / A	B / B
			Delay (s/v) (NB / SB)	10 / 10	10 / 10
			Worst Lane Group LOS	A (NBTR)	B (SBTR)
2	Meridian Road and Deer Flat Road	Signal	Intersection LOS	D	C
			Intersection Delay (s/v)	*39*	*0.34*
			Intersection v/c	*0.87*	*0.76*
			Worst Lane Group LOS	E (WBTR)	E (WBTR)
3	Locust Grove Road and Deer Flat Road	2-Way Stop (Locust Grove Rd)	LOS (NB / SB)	B / A	B / B
			Delay (s/v) (NB / SB)	12 / 9	12 / 11
			Worst Lane Group LOS	B (NBTR)	B (NBTR)

Table 12 – Lane Group v/c Ratio – 2025 Build-Out Year Total Traffic

Intersection		Approach	AM Peak Hour			PM Peak Hour		
			LT	THRU	RT	LT	THRU	RT
1	Locust Grove Road and Hubbard Road	NB	0.09			0.09		
		SB	0.06			0.17		
		EB	0.01			0.01		
		WB	< 0.01			0.01		
2	Meridian Road and Deer Flat Road	NB	*0.33*	*0.71*	*0.71*	*0.64*	*0.53*	*0.53*
		SB	*0.26*	*0.34*	*0.37*	*0.38*	*0.68*	*0.71*
		EB	*0.96*	*0.34*		*0.84*	*0.39*	
		WB	0.17	*0.85*		0.23	*0.88*	
3	Locust Grove Road and Deer Flat Road	NB	0.03			0.02		
		SB	0.04			0.16		
		EB	0.03			0.03		
		WB	--			--		

Site Access and Circulation

Figure 11 summarizes the estimated ADTs on the internal roadways and proposed access locations. All proposed internal roadways are projected to carry less than 1,000 vpd except for the proposed East access approach. The East access approach segment is expected to carry approximately 1,076 vpd at the Deer Flat Road intersection. This road does not have front on housing.

Deer Flat Road is functionally classified as a minor arterial with a posted speed limit of 50 mph, which requires the following access spacing per ACHD Policy, Section 7205, Table 1a:

- 1,320 feet minimum separation for unsignalized collector streets
- 660 feet minimum separation for local streets
- 425 feet minimum driveways separation
- 330 feet from a signalized intersection with a single or dual left-turn lanes for a RIRO driveway
- 660 feet from a signalized intersection with a single left-turn lane for a full-movement driveway
- 710 feet from a signalized intersection with dual left-turn lanes for a full-movement driveway

The proposed access locations on Deer Flat Road generally meet ACHD's access spacing. It should be noted that there are numerous existing single-family driveways on Deer Flat Road within the study area.

According to ACHD policy per AASHTO guidelines, the minimum sight distance for a 50 mph posted speed limit is 555 feet. The proposed driveways are located within a generally flat and straight segment of Deer Flat Road alignment and are expected to have adequate intersection sight distance. However, building setback and landscaping should be located and designed to ensure adequate intersection sight distance.

Turn lane warrant was evaluated for the proposed site access intersections using ACHD guidelines – see the appendix for turn lane warrant worksheets. None of the site access intersections are expected to warrant turn lanes.

Table 13 and Table 14 summarize site access intersections capacity analysis results. All site access intersections are expected to operate at LOS B or better with a lane group v/c of 0.09 or less during the peak hours with 2025 total traffic.

Figure 11 – Proposed Access Locations and Internal Roadway ADTs

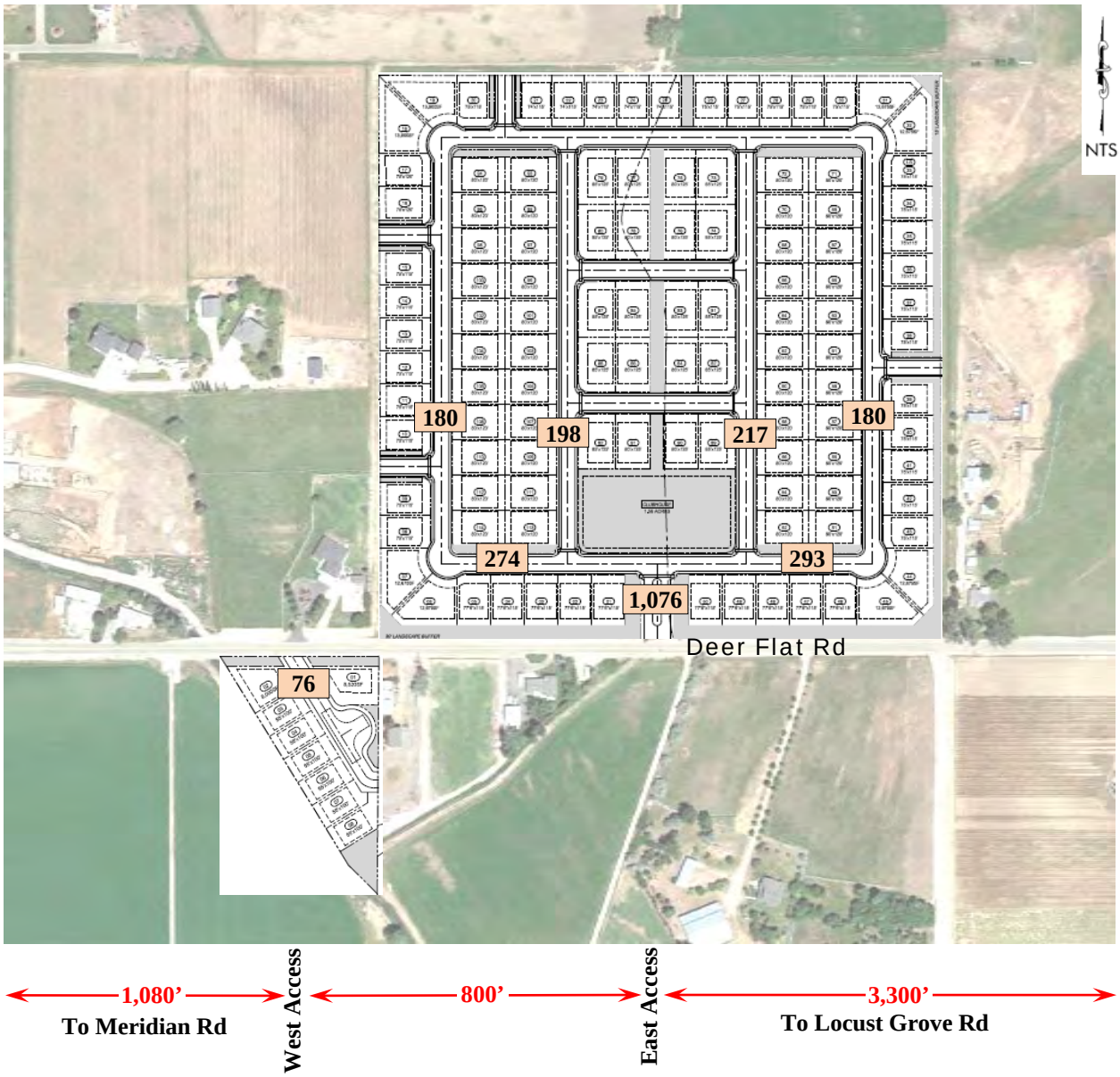


Table 13 – Site Access Intersection Level of Service – 2025 Build-Out Year Total Traffic

Intersection		Control	MOEs	AM Peak Hour	PM Peak Hour
4	West Access and Deer Flat Road	Stop (NB Approach)	LOS (NB)	B	B
			Delay (s/v) (NB)	11	12
			Worst Lane Group LOS	B (NB)	B (NB)
5	East Access and Deer Flat Road	Stop (SB Approach)	LOS (SB)	A	B
			Delay (s/v) (SB)	10	11
			Worst Lane Group LOS	A (SB)	B (SB)

Table 14 – Site Access Intersection Lane Group v/c Ratio – 2025 Build-Out Year Total Traffic

Intersection		Approach	AM Peak Hour			PM Peak Hour		
			LT	THRU	RT	LT	THRU	RT
4	West Access and Deer Flat Road	NB	0.01			0.01		
		EB	--			--		
		WB	--			< 0.01		
5	East Access and Deer Flat Road	SB	0.09			0.07		
		EB	0.01			0.05		
		WB	--			--		

APPENDIX

SCOPE AND COMPASS AREA OF INFLUENCE RESULTS
TRAFFIC COUNTS
CRASH RATES
SYNCHRO REPORTS
TURN LANE WARRANT WORKSHEETS

Deer Flat Property, TAZ 1184

The following summarizes the results of an area of influence model run for a proposed development located northwest of SH 69 and Deer Flat Road. The proposed development will consist of 126 single family units with an anticipated build out by 2025. See figure 1.

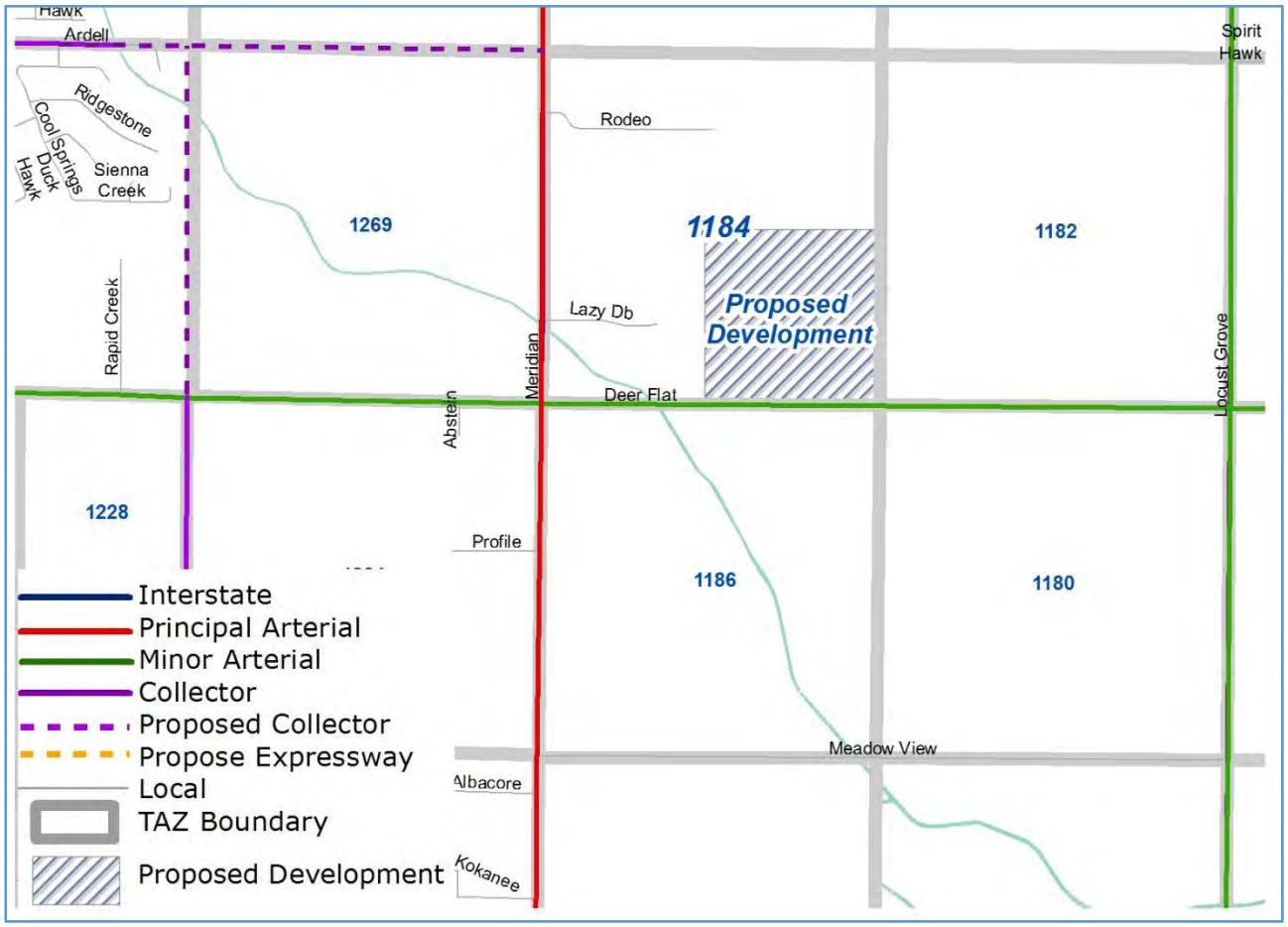


Figure 1: TAZ 1184

Table 1 provides the existing demographics for TAZ 1184 and the demographics for the proposed development that were used for the area of influence model run.

Table 1

	2017		2025 with proposal		2040	
	HH	Jobs	HH	Jobs	HH	Jobs
TAZ 1184	5	14	131	33	21	109

The area of influence results for the proposed development are shown in figures 2. The 2040 peak hour results are shown in figures 3 and 4.

A cumulative development model run was also completed for this area. See Table 2 for the demographics, figure 5 for the vicinity map and figures 6 and 7 for the peak hour results.

Figure 2: Area of Influence, Peak hour demand contribution to the total peak hour demand for 2025

Figure 3: 2025 Peak Hour Demand with Proposed Development

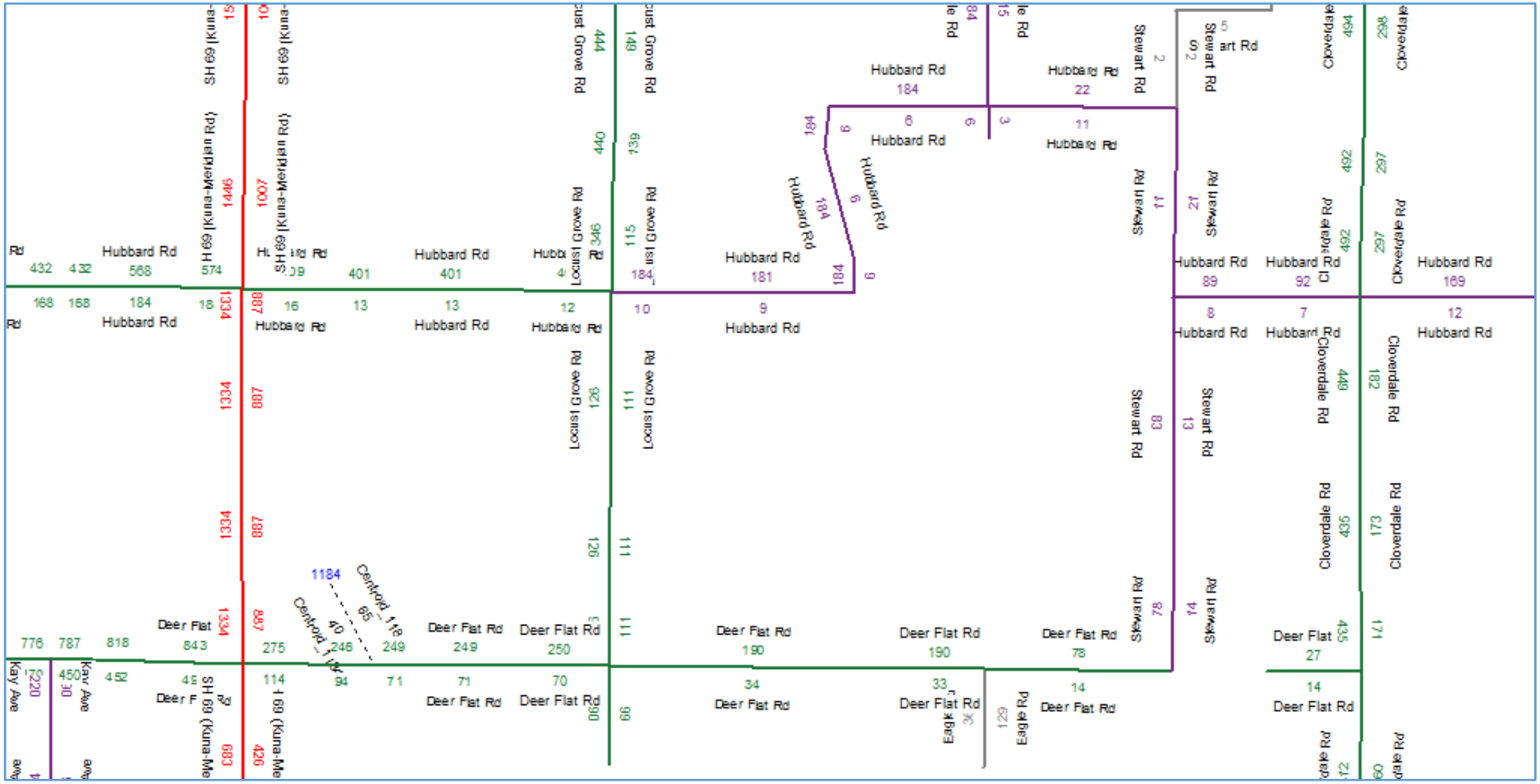


Figure 4: 2025 Peak Hour Demand without Proposed Development

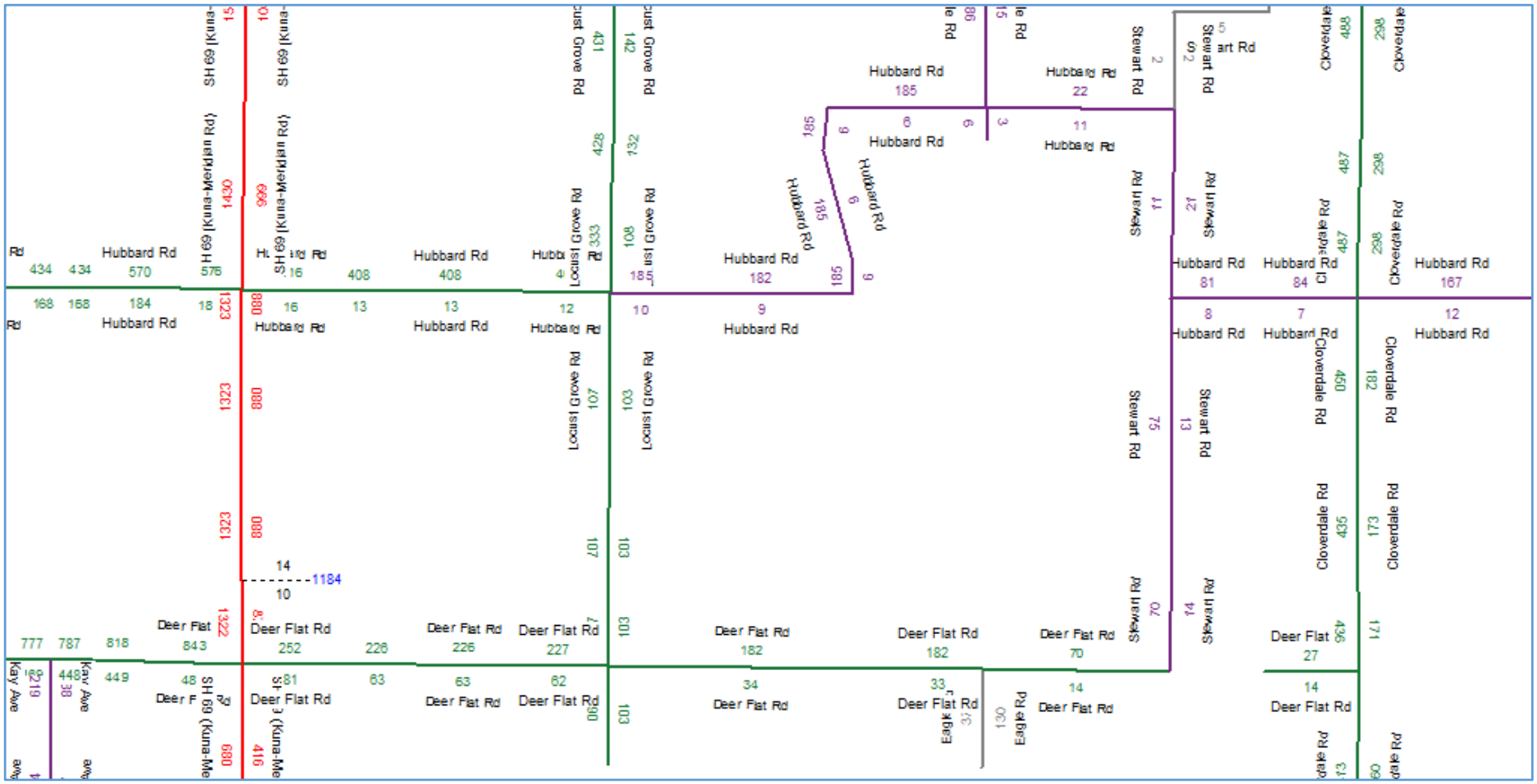


Table 2

TAZ	2017		2025 with proposals		2040	
	HH	Jobs	HH	Jobs	HH	Jobs
1184	5	14	131	33	21	109
1186*	8	2	310	175	310	175
1269	4	36	357	180	407	450

*Ashton Estates had an anticipated build out by year 2030 however, the area of influence included 100% of the development.

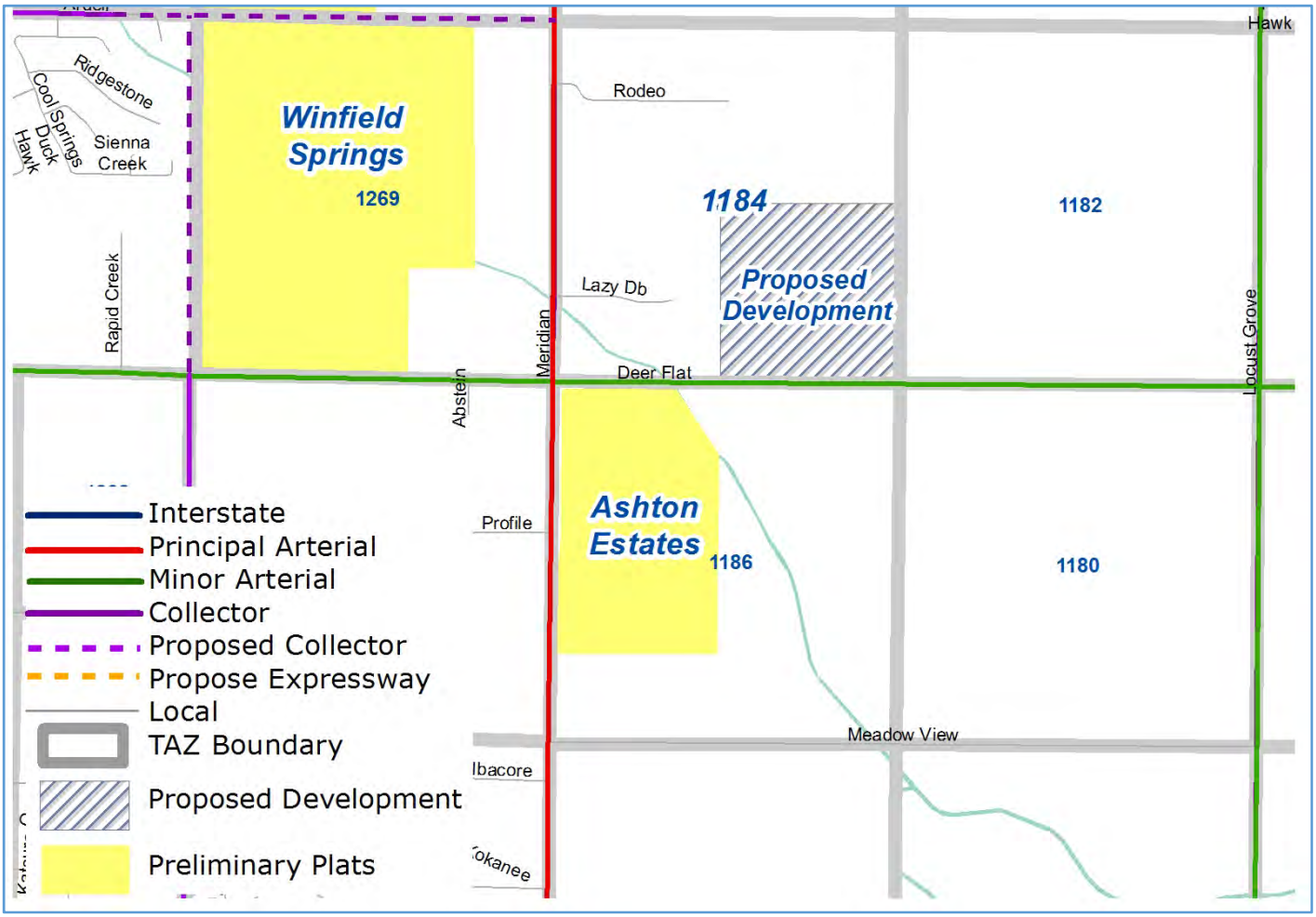


Figure 5: Proposed development, Winfield Springs and Ashton Estates

Figure 6: 2025 Cumulative Peak Hour results

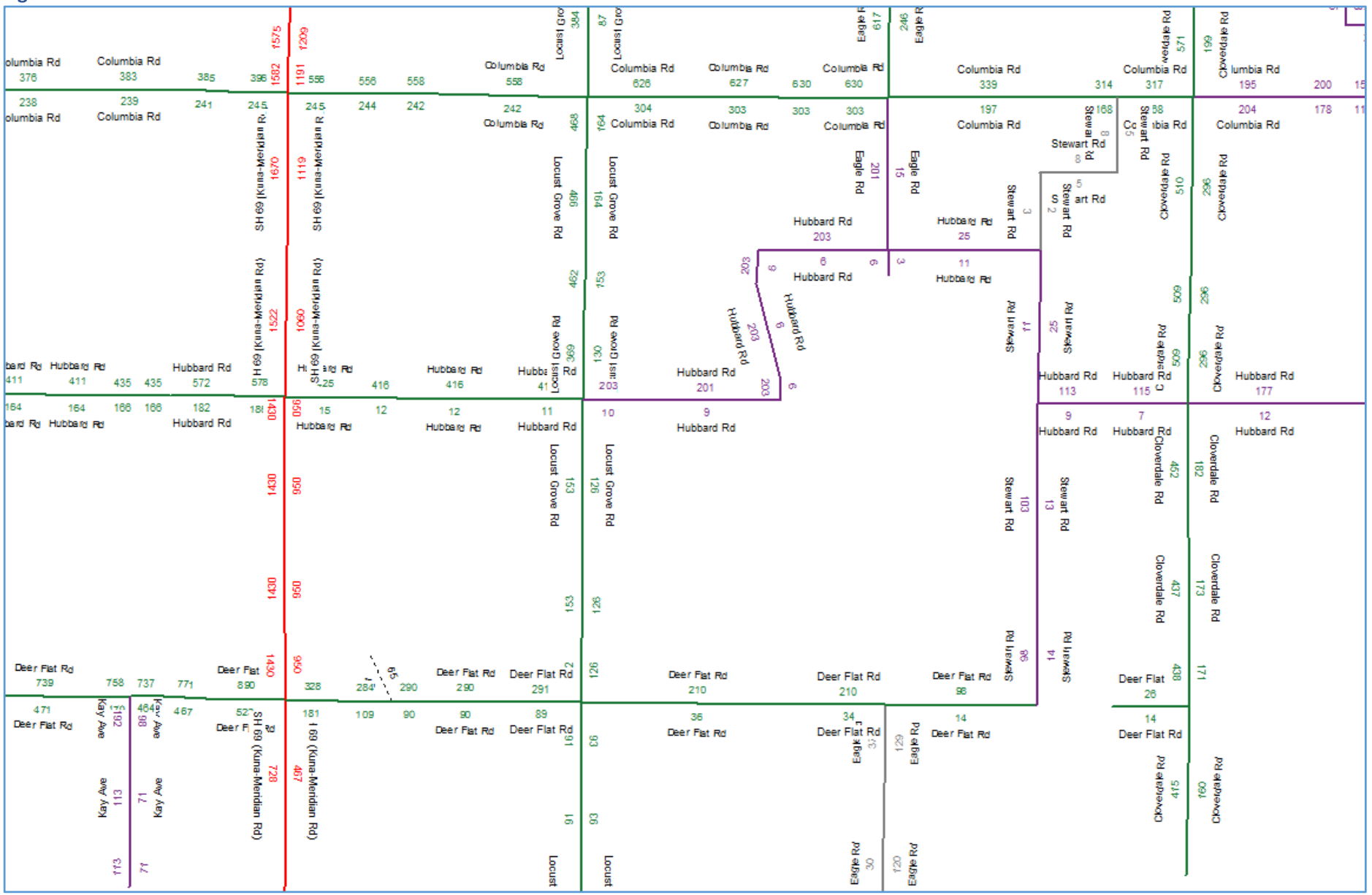
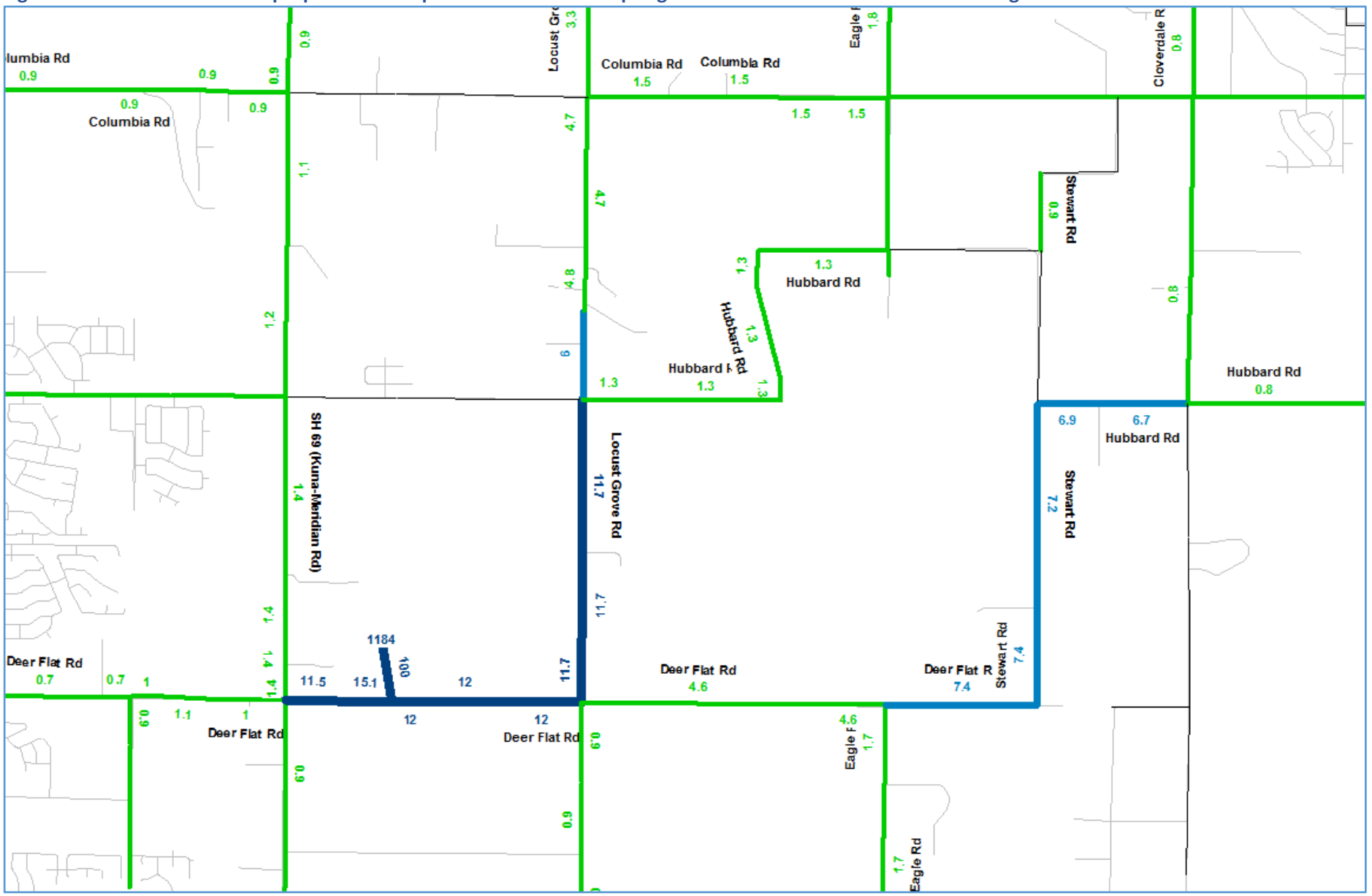


Figure 7: Area of Influence for proposed development with Winfield Springs and Ashton Estates included in "background traffic"



Fwd: TAZ1184.docx

From : Mary Ann Waldinger <MWaldinger@compassidaho.org> Wed, Nov 15, 2017 02:09 PM
Subject : Fwd: TAZ1184.docx
To : thompsonengineers@cableone.net

Hi Dan
Here you go.
Do you need/use the write up I send to ACHD? I'll forward it if so.
M

Sent from my iPhone

Begin forwarded message:

From: Aimee Loudenslager <Aloudenslager@achdidaho.org>
Date: November 15, 2017 at 1:07:18 PM CST
To: 'Mary Ann Waldinger' <MWaldinger@compassidaho.org>, Mindy Wallace <Mwallace@achdidaho.org>, Shona Tonkin <Shona.Tonkin@itd.idaho.gov>
Cc: Shawn Martin <smartin@achdidaho.org>
Subject: RE: TAZ1184.docx

Hi Mary Ann,

ACHD recommends the following segments and intersections to be included in the TIS for the residential development northwest of SH 69 and Deer Flat Road.

Intersections:
- SH 69 and Deer Flat Road
- Deer Flat Road and Locust Grove Road
- Locust Grove Road and Hubbard Road
- All site access points

Segments:
- Deer Flat Road from SH 69 to Locust Grove Road
- Locust Grove Road from Deer Flat Road to Hubbard Road
- All internal collector roadways

Let me know if you have any questions.

Thanks,

Aimee Loudenslager, P.E.
Traffic Engineer
Ada County Highway District
(208) 387-6339

From: Mary Ann Waldinger [mailto:MWaldinger@compassidaho.org]
Sent: Monday, November 13, 2017 10:43 AM
To: Mindy Wallace; Aimee Loudenslager; Shona Tonkin

Cc: Shawn Martin
Subject: TAZ1184.docx

Good morning,
A ached in an area of influence for 126 unit subdivision north of Deer Flat and east of SH 69. The write up also includes an cumula ve model run and an area of influence with the addi onal developments as “background” traffic.

This was requested by Dan T. and I a ached the site plan he provided.

Thank you,
MaryAnn

L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 1

Groups Printed- General Traffic

	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	5	0	0	5	1	0	0	0	1	1	4	0	0	5	1	3	1	0	5	16
07:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	1	5	0	0	6	10
07:30 AM	1	8	0	0	9	0	1	0	0	1	3	7	0	0	10	0	2	3	0	5	25
07:45 AM	0	1	0	0	1	1	0	0	0	1	0	4	0	0	4	1	4	3	0	8	14
Total	1	15	0	0	16	2	1	0	0	3	4	18	0	0	22	3	14	7	0	24	65
08:00 AM	2	1	0	0	3	0	0	0	0	0	1	5	0	0	6	0	1	0	0	1	10
08:15 AM	1	0	0	0	1	0	1	0	0	1	0	4	0	0	4	0	2	0	0	2	8
08:30 AM	1	3	0	0	4	0	3	0	0	3	0	3	0	0	3	0	4	0	0	4	14
08:45 AM	2	6	0	0	8	0	2	2	0	4	1	5	0	0	6	1	3	0	0	4	22
Total	6	10	0	0	16	0	6	2	0	8	2	17	0	0	19	1	10	0	0	11	54

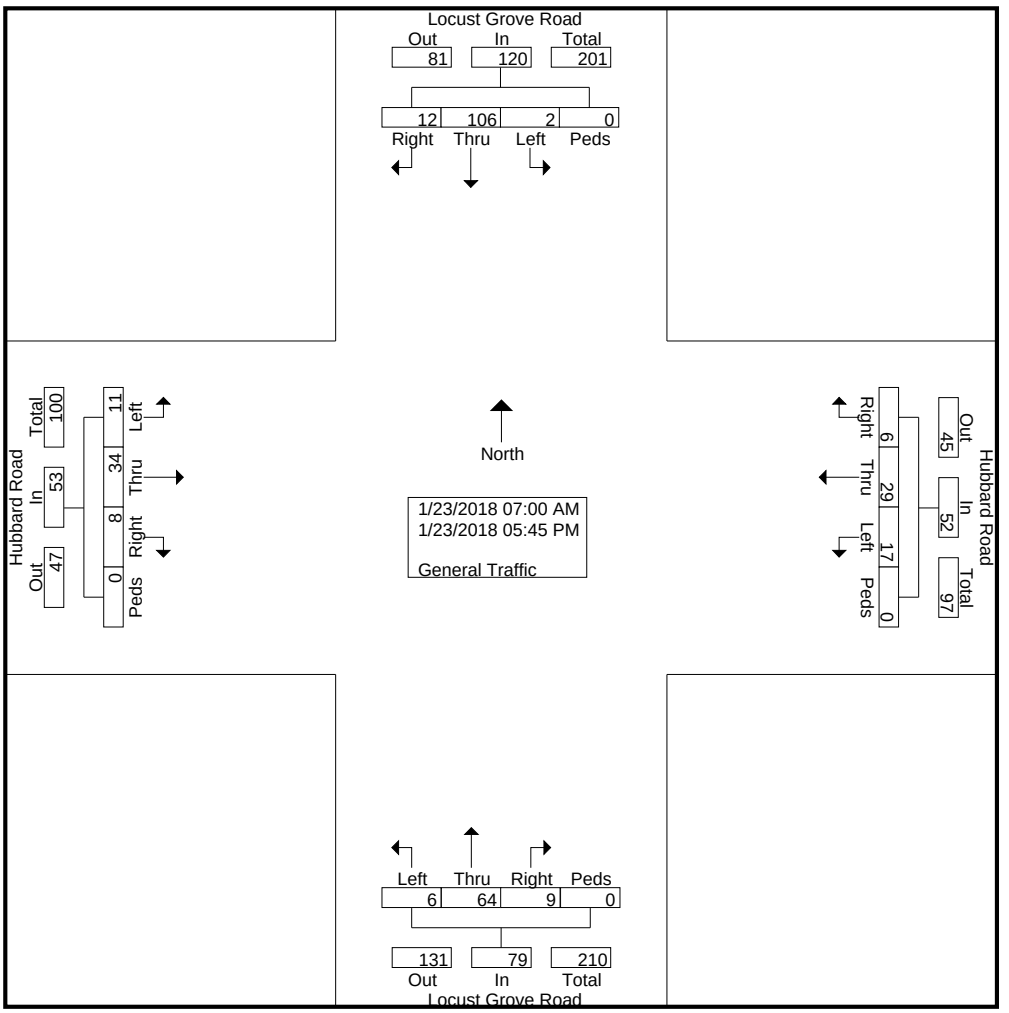
04:00 PM	1	7	0	0	8	1	2	1	0	4	0	7	0	0	7	0	0	2	0	2	21
04:15 PM	0	11	1	0	12	0	2	2	0	4	1	3	1	0	5	1	0	0	0	1	22
04:30 PM	0	8	0	0	8	1	0	3	0	4	0	1	0	0	1	0	1	0	0	1	14
04:45 PM	0	18	0	0	18	0	4	1	0	5	0	4	0	0	4	0	2	0	0	2	29
Total	1	44	1	0	46	2	8	7	0	17	1	15	1	0	17	1	3	2	0	6	86
05:00 PM	0	8	0	0	8	0	3	3	0	6	0	2	2	0	4	1	0	1	0	2	20
05:15 PM	2	15	1	0	18	0	2	3	0	5	1	6	3	0	10	0	3	0	0	3	36
05:30 PM	1	6	0	0	7	0	3	2	0	5	1	4	0	0	5	0	1	0	0	1	18
05:45 PM	1	8	0	0	9	2	6	0	0	8	0	2	0	0	2	2	3	1	0	6	25
Total	4	37	1	0	42	2	14	8	0	24	2	14	5	0	21	3	7	2	0	12	99
Grand Total	12	106	2	0	120	6	29	17	0	52	9	64	6	0	79	8	34	11	0	53	304
Apprch %	10	88.3	1.7	0		11.5	55.8	32.7	0		11.4	81	7.6	0		15.1	64.2	20.8	0		
Total %	3.9	34.9	0.7	0	39.5	2	9.5	5.6	0	17.1	3	21.1	2	0	26	2.6	11.2	3.6	0	17.4	

L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 2



L2 Data Collection

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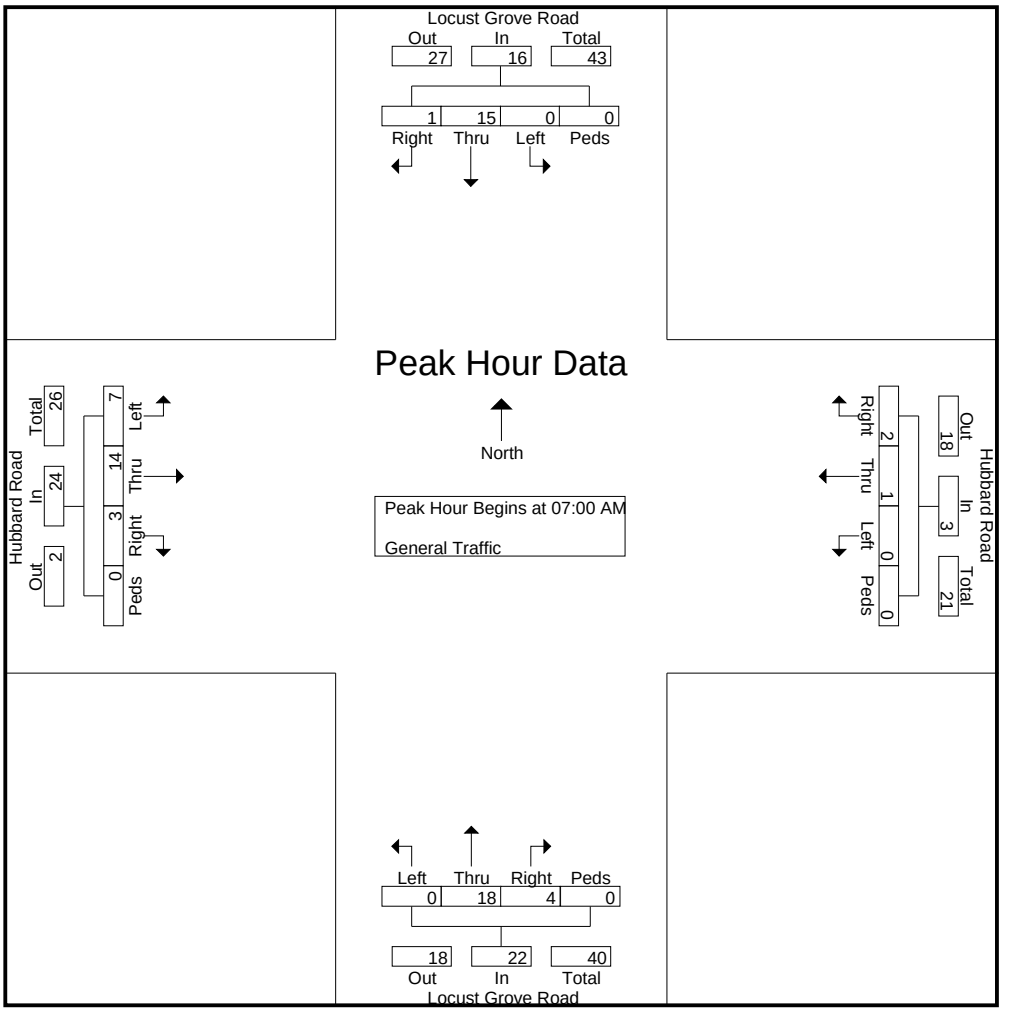
Idaho (208) 860-7554 Utah (801) 431-2993

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 3

	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. 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	5	0	0	5	**1**	0	0	0	**1**	1	4	0	0	5	**1**	3	1	0	5	16
07:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	1	**5**	0	0	6	10
07:30 AM	**1**	**8**	0	0	**9**	0	**1**	0	0	1	**3**	**7**	0	0	**10**	0	2	**3**	0	5	**25**
07:45 AM	0	1	0	0	1	1	0	0	0	1	0	4	0	0	4	1	4	3	0	**8**	14
Total Volume	1	15	0	0	16	2	1	0	0	3	4	18	0	0	22	3	14	7	0	24	65
% App. Total	6.2	93.8	0	0		66.7	33.3	0	0		18.2	81.8	0	0		12.5	58.3	29.2	0		
PHF	.250	.469	.000	.000	.444	.500	.250	.000	.000	.750	.333	.643	.000	.000	.550	.750	.700	.583	.000	.750	.650



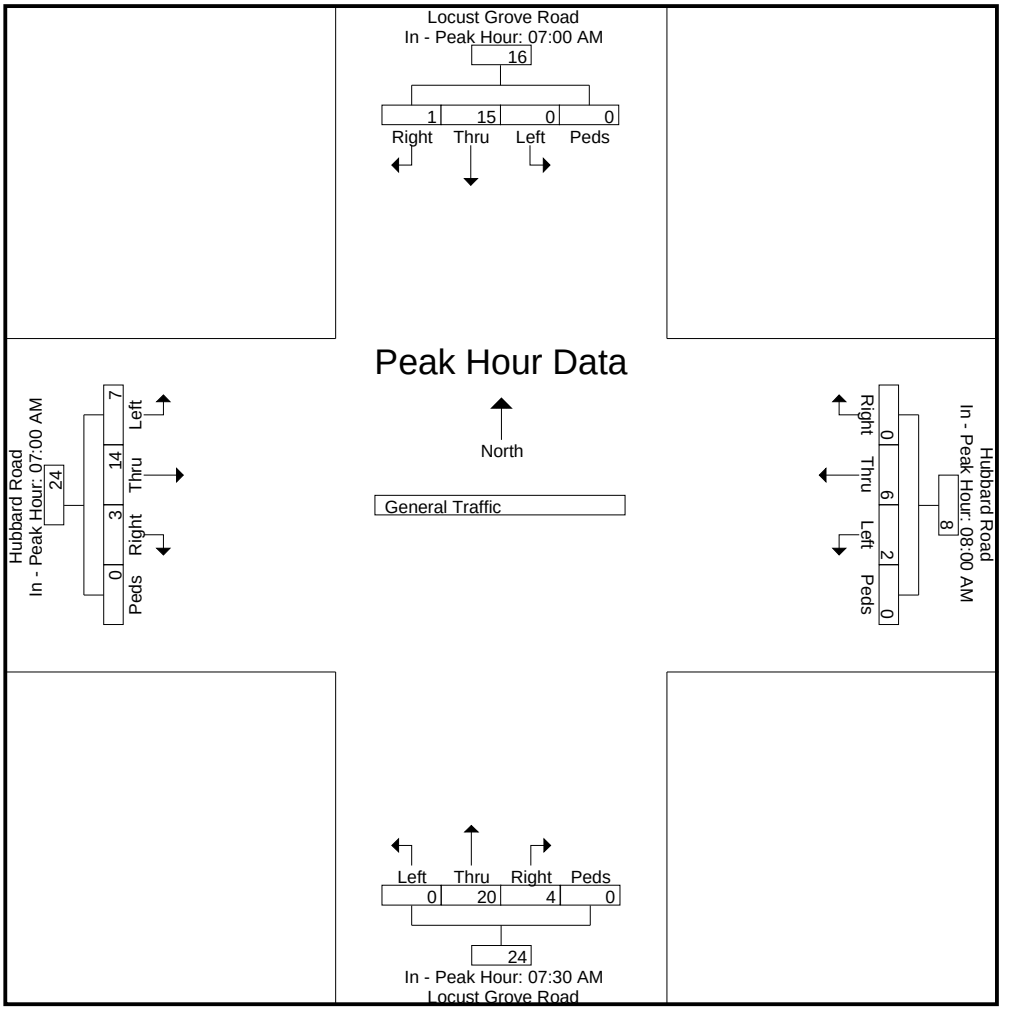
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 4

	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. Total**
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	07:00 AM					08:00 AM					07:30 AM					07:00 AM					
+0 mins.	0	5	0	0	5	0	0	0	0	0	**3**	**7**	0	0	**10**	**1**	3	1	0	5	
+15 mins.	0	1	0	0	1	0	1	0	0	1	0	4	0	0	4	1	**5**	0	0	6	
+30 mins.	**1**	**8**	0	0	**9**	0	**3**	0	0	3	1	5	0	0	6	0	2	**3**	0	5	
+45 mins.	0	1	0	0	1	0	2	**2**	0	**4**	0	4	0	0	4	1	4	3	0	**8**	
Total Volume	1	15	0	0	16	0	6	2	0	8	4	20	0	0	24	3	14	7	0	24	
% App. Total	6.2	93.8	0	0		0	75	25	0		16.7	83.3	0	0		12.5	58.3	29.2	0		
PHF	.250	.469	.000	.000	.444	.000	.500	.250	.000	.500	.333	.714	.000	.000	.600	.750	.700	.583	.000	.750	



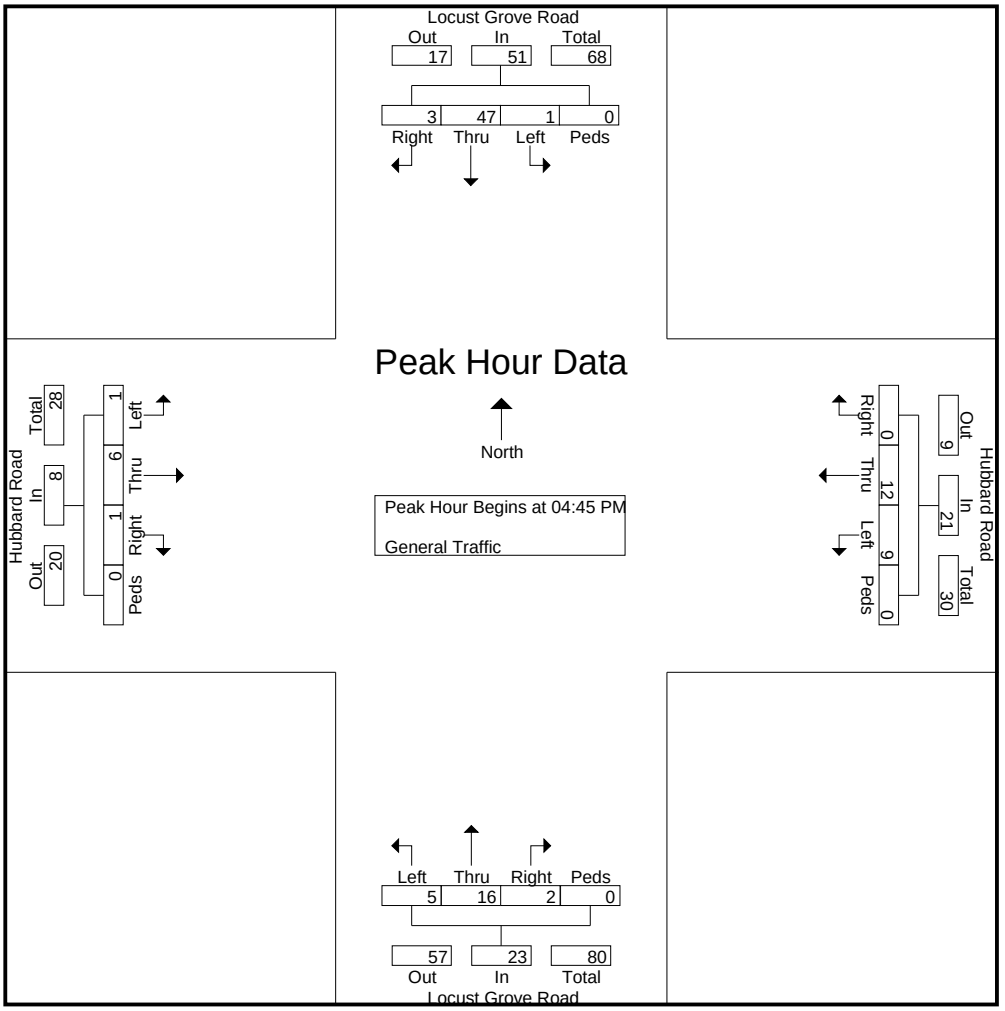
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 5

	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. 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	0	**18**	0	0	**18**	0	**4**	1	0	5	0	4	0	0	4	0	2	0	0	2	29
05:00 PM	0	8	0	0	8	0	3	**3**	0	**6**	0	2	2	0	4	**1**	0	**1**	0	2	20
05:15 PM	**2**	15	**1**	0	18	0	2	3	0	5	**1**	**6**	**3**	0	**10**	0	**3**	0	0	**3**	**36**
05:30 PM	1	6	0	0	7	0	3	2	0	5	1	4	0	0	5	0	1	0	0	1	18
Total Volume	3	47	1	0	51	0	12	9	0	21	2	16	5	0	23	1	6	1	0	8	103
% App. Total	5.9	92.2	2	0		0	57.1	42.9	0		8.7	69.6	21.7	0		12.5	75	12.5	0		
PHF	.375	.653	.250	.000	.708	.000	.750	.750	.000	.875	.500	.667	.417	.000	.575	.250	.500	.250	.000	.667	.715



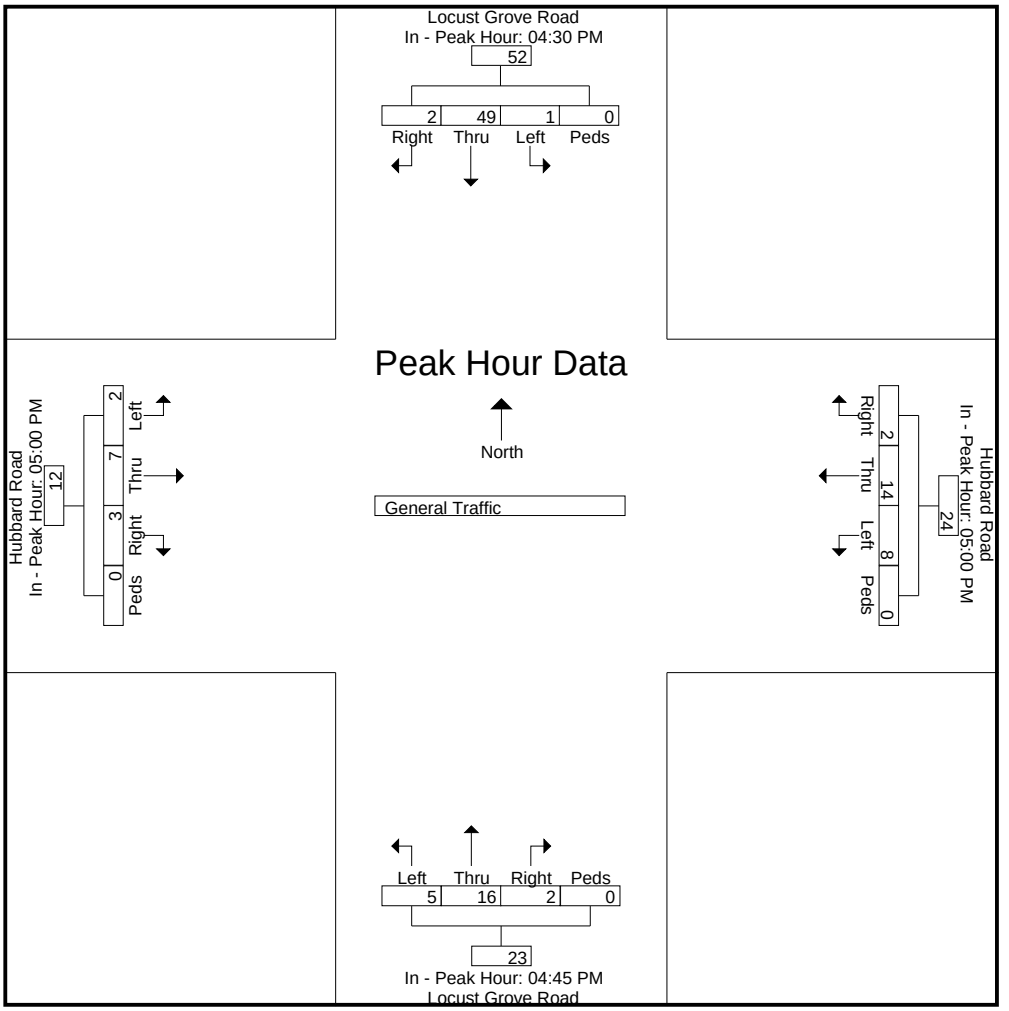
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 6

	Locust Grove Road From North					Hubbard Road From East					Locust Grove Road From South					Hubbard Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:30 PM					05:00 PM					04:45 PM					05:00 PM					
+0 mins.	0	8	0	0	8	0	3	**3**	0	6	0	4	0	0	4	1	0	**1**	0	2	
+15 mins.	0	**18**	0	0	**18**	0	2	3	0	5	0	2	2	0	4	0	**3**	0	0	3	
+30 mins.	0	8	0	0	8	0	3	2	0	5	**1**	**6**	**3**	0	**10**	0	1	0	0	1	
+45 mins.	**2**	15	**1**	0	18	**2**	**6**	0	0	**8**	1	4	0	0	5	**2**	3	1	0	**6**	
Total Volume	2	49	1	0	52	2	14	8	0	24	2	16	5	0	23	3	7	2	0	12	
% App. Total	3.8	94.2	1.9	0		8.3	58.3	33.3	0		8.7	69.6	21.7	0		25	58.3	16.7	0		
PHF	.250	.681	.250	.000	.722	.250	.583	.667	.000	.750	.500	.667	.417	.000	.575	.375	.583	.500	.000	.500	



L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove Rd / Hubbard
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 7

Image 1

L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 1

Groups Printed- General Traffic

	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	1	1	0	5	0	13	0	0	13	0	1	1	0	2	0	32	3	0	35	55
07:15 AM	2	0	0	0	2	0	21	0	0	21	0	1	1	0	2	0	40	2	0	42	67
07:30 AM	7	0	0	0	7	2	17	0	0	19	0	3	1	0	4	0	24	6	0	30	60
07:45 AM	1	0	1	0	2	0	14	0	0	14	1	1	1	0	3	0	28	4	0	32	51
Total	13	1	2	0	16	2	65	0	0	67	1	6	4	0	11	0	124	15	0	139	233
08:00 AM	0	0	1	0	1	0	6	0	0	6	0	2	0	0	2	0	19	5	0	24	33
08:15 AM	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	0	13	1	0	14	18
08:30 AM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	9	0	0	9	13
08:45 AM	2	2	1	0	5	2	7	1	0	10	1	2	0	0	3	1	5	1	0	7	25
Total	3	3	2	0	8	2	16	1	0	19	1	7	0	0	8	1	46	7	0	54	89

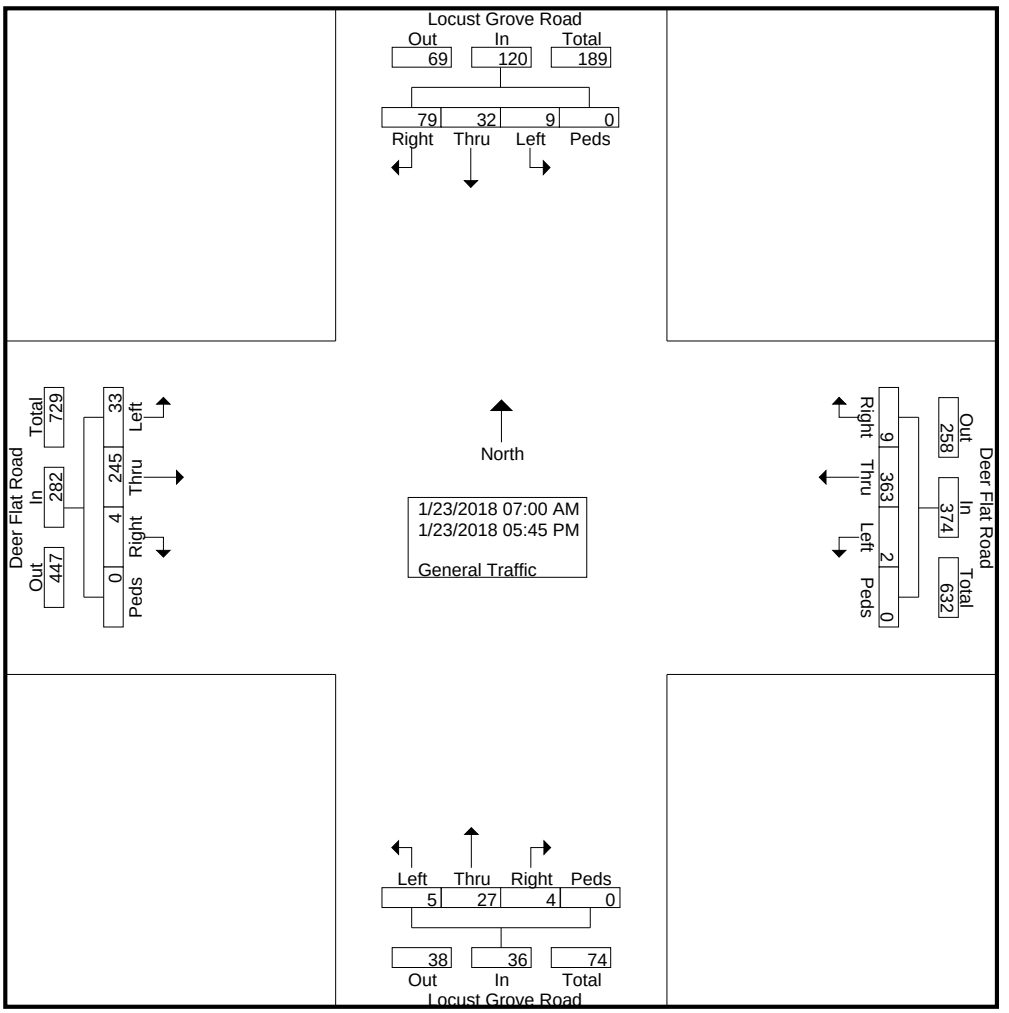
04:00 PM	7	3	0	0	10	1	22	0	0	23	0	3	0	0	3	0	9	2	0	11	47
04:15 PM	5	3	2	0	10	0	26	0	0	26	0	3	1	0	4	0	4	2	0	6	46
04:30 PM	7	2	0	0	9	1	28	1	0	30	0	0	0	0	0	0	7	0	0	7	46
04:45 PM	11	5	0	0	16	0	36	0	0	36	1	3	0	0	4	1	9	0	0	10	66
Total	30	13	2	0	45	2	112	1	0	115	1	9	1	0	11	1	29	4	0	34	205
05:00 PM	10	5	2	0	17	1	42	0	0	43	0	1	0	0	1	1	11	0	0	12	73
05:15 PM	10	3	1	0	14	2	40	0	0	42	0	1	0	0	1	0	11	4	0	15	72
05:30 PM	7	4	0	0	11	0	56	0	0	56	0	2	0	0	2	0	12	2	0	14	83
05:45 PM	6	3	0	0	9	0	32	0	0	32	1	1	0	0	2	1	12	1	0	14	57
Total	33	15	3	0	51	3	170	0	0	173	1	5	0	0	6	2	46	7	0	55	285
Grand Total	79	32	9	0	120	9	363	2	0	374	4	27	5	0	36	4	245	33	0	282	812
Apprch %	65.8	26.7	7.5	0		2.4	97.1	0.5	0		11.1	75	13.9	0		1.4	86.9	11.7	0		
Total %	9.7	3.9	1.1	0	14.8	1.1	44.7	0.2	0	46.1	0.5	3.3	0.6	0	4.4	0.5	30.2	4.1	0	34.7	

L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 2



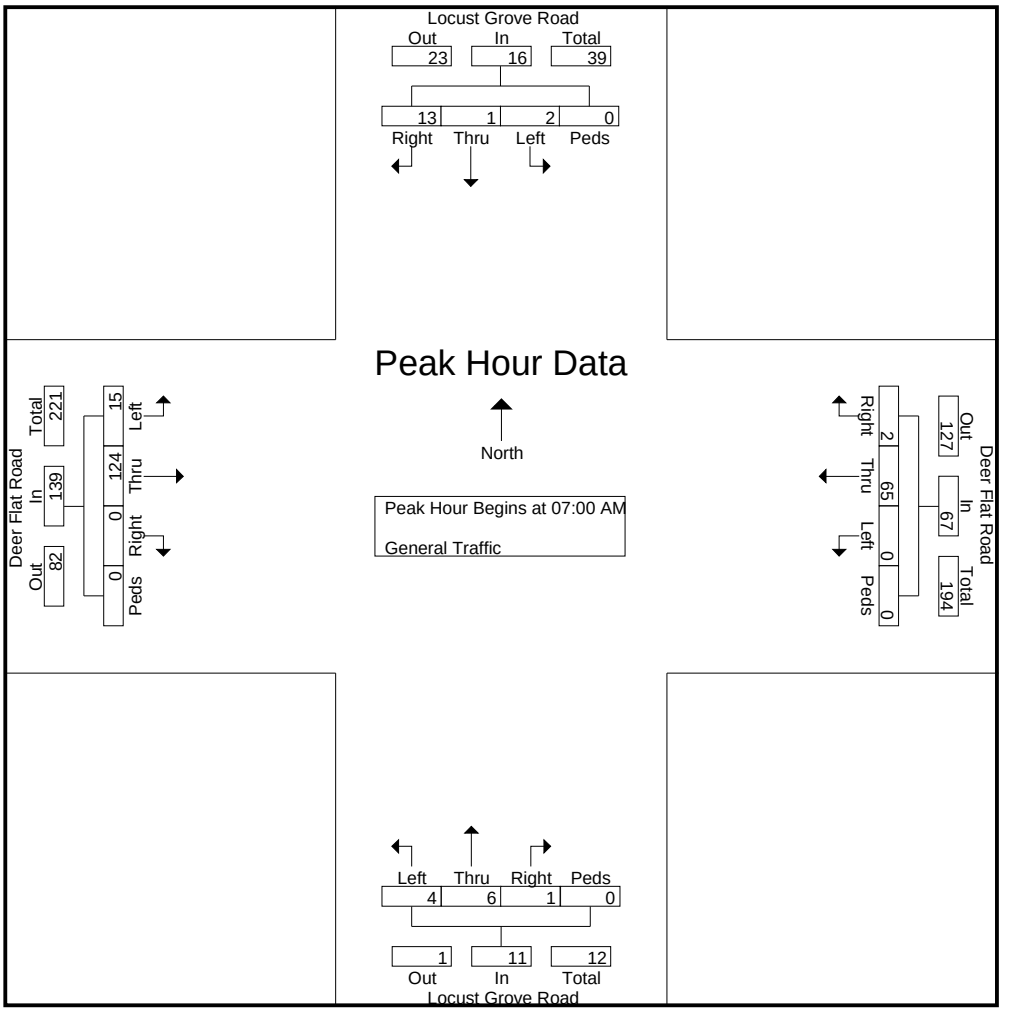
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 3

	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. 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	0	13	0	0	13	0	1	**1**	0	2	0	32	3	0	35	55
07:15 AM	2	0	0	0	2	0	**21**	0	0	**21**	0	1	1	0	2	0	**40**	2	0	**42**	**67**
07:30 AM	**7**	0	0	0	**7**	**2**	17	0	0	19	0	**3**	1	0	**4**	0	24	**6**	0	30	60
07:45 AM	1	0	1	0	2	0	14	0	0	14	**1**	1	1	0	3	0	28	4	0	32	51
Total Volume	13	1	2	0	16	2	65	0	0	67	1	6	4	0	11	0	124	15	0	139	233
% App. Total	81.2	6.2	12.5	0		3	97	0	0		9.1	54.5	36.4	0		0	89.2	10.8	0		
PHF	.464	.250	.500	.000	.571	.250	.774	.000	.000	.798	.250	.500	1.00	.000	.688	.000	.775	.625	.000	.827	.869



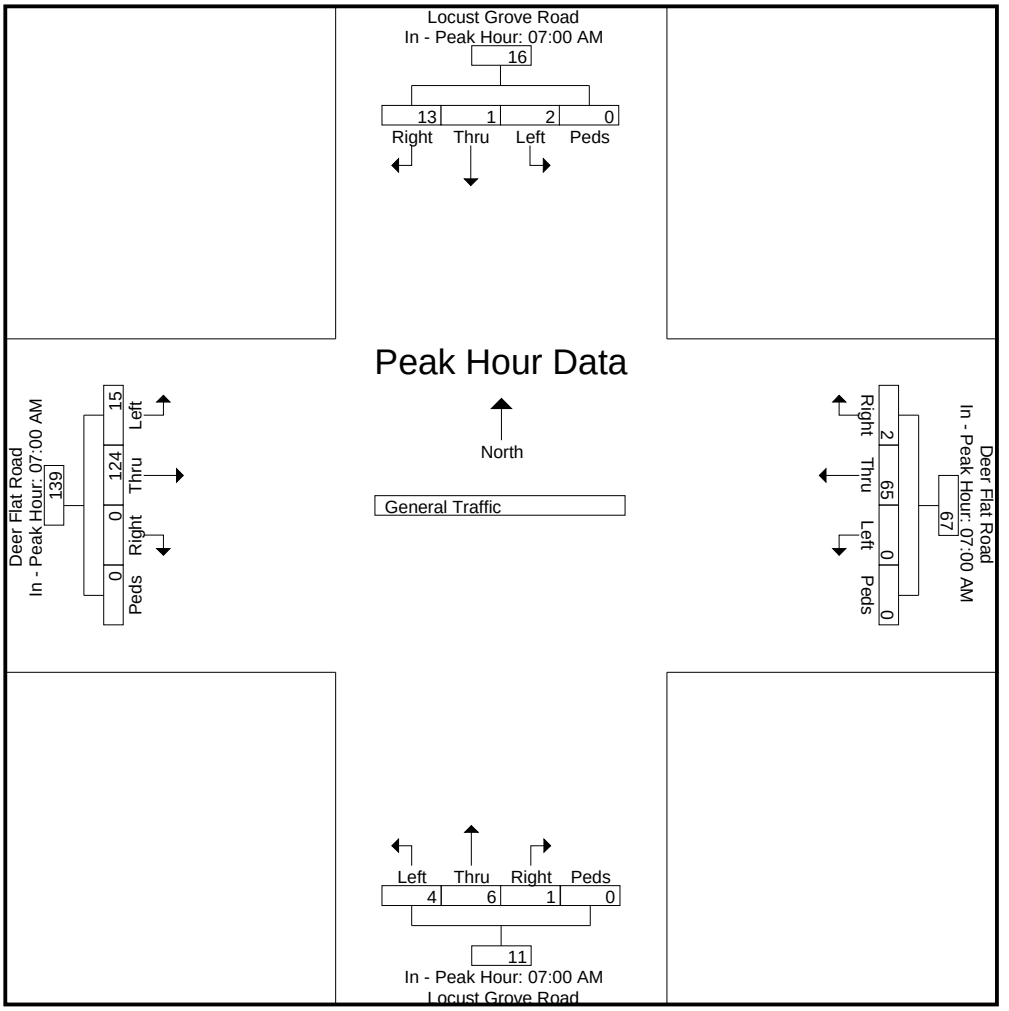
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 4

	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. Total**
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	07:00 AM					07:00 AM					07:00 AM					07:00 AM					
+0 mins.	3	**1**	**1**	0	5	0	13	0	0	13	0	1	**1**	0	2	0	32	3	0	35	
+15 mins.	2	0	0	0	2	0	**21**	0	0	**21**	0	1	1	0	2	0	**40**	2	0	**42**	
+30 mins.	**7**	0	0	0	**7**	**2**	17	0	0	19	0	**3**	1	0	**4**	0	24	**6**	0	30	
+45 mins.	1	0	1	0	2	0	14	0	0	14	**1**	1	1	0	3	0	28	4	0	32	
Total Volume	13	1	2	0	16	2	65	0	0	67	1	6	4	0	11	0	124	15	0	139	
% App. Total	81.2	6.2	12.5	0		3	97	0	0		9.1	54.5	36.4	0		0	89.2	10.8	0		
PHF	.464	.250	.500	.000	.571	.250	.774	.000	.000	.798	.250	.500	1.000								



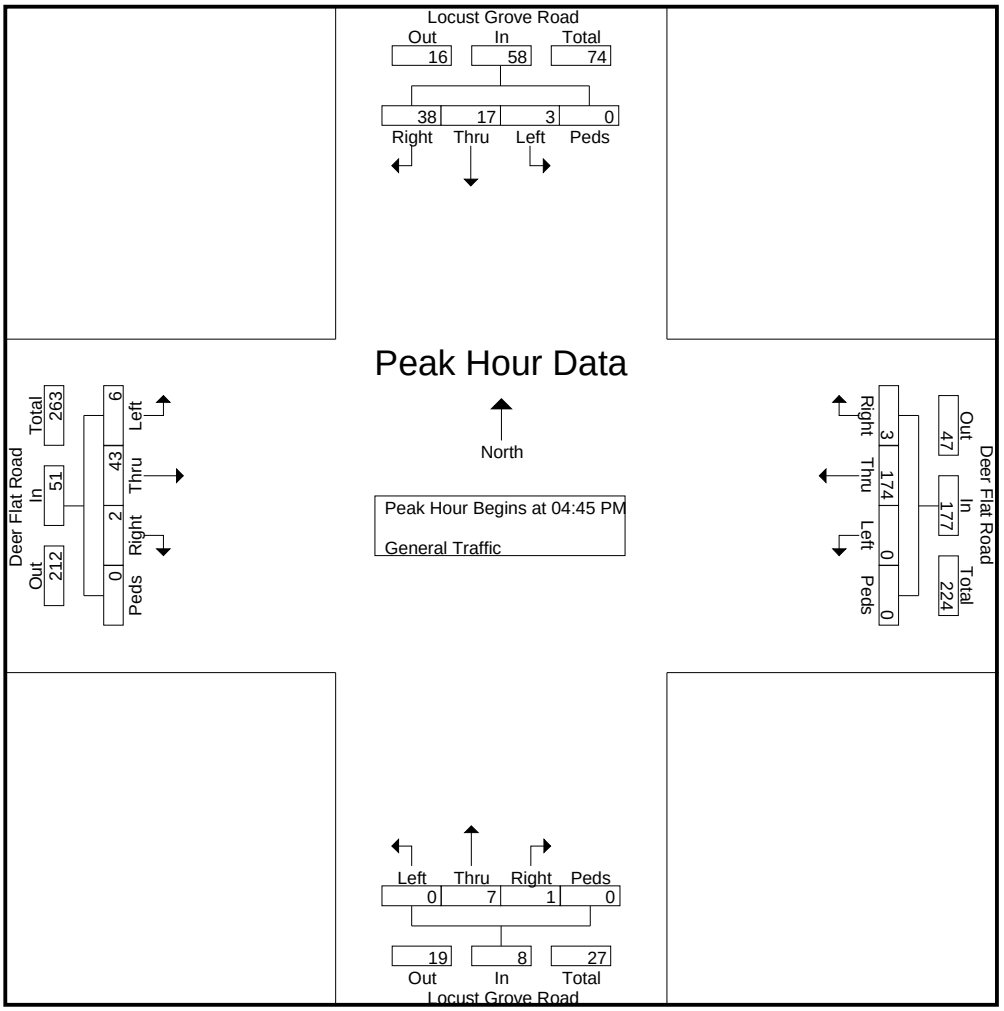
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 5

	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. 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	**11**	**5**	0	0	16	0	36	0	0	36	**1**	**3**	0	0	**4**	**1**	9	0	0	10	66
05:00 PM	10	5	**2**	0	**17**	1	42	0	0	43	0	1	0	0	1	1	11	0	0	12	73
05:15 PM	10	3	1	0	14	**2**	40	0	0	42	0	1	0	0	1	0	11	**4**	0	**15**	72
05:30 PM	7	4	0	0	11	0	**56**	0	0	**56**	0	2	0	0	2	0	**12**	2	0	14	**83**
Total Volume	38	17	3	0	58	3	174	0	0	177	1	7	0	0	8	2	43	6	0	51	294
% App. Total	65.5	29.3	5.2	0		1.7	98.3	0	0		12.5	87.5	0	0		3.9	84.3	11.8	0		
PHF	.864	.850	.375	.000	.853	.375	.777	.000	.000	.790	.250	.583	.000	.000	.500	.500	.896	.375	.000	.850	.886



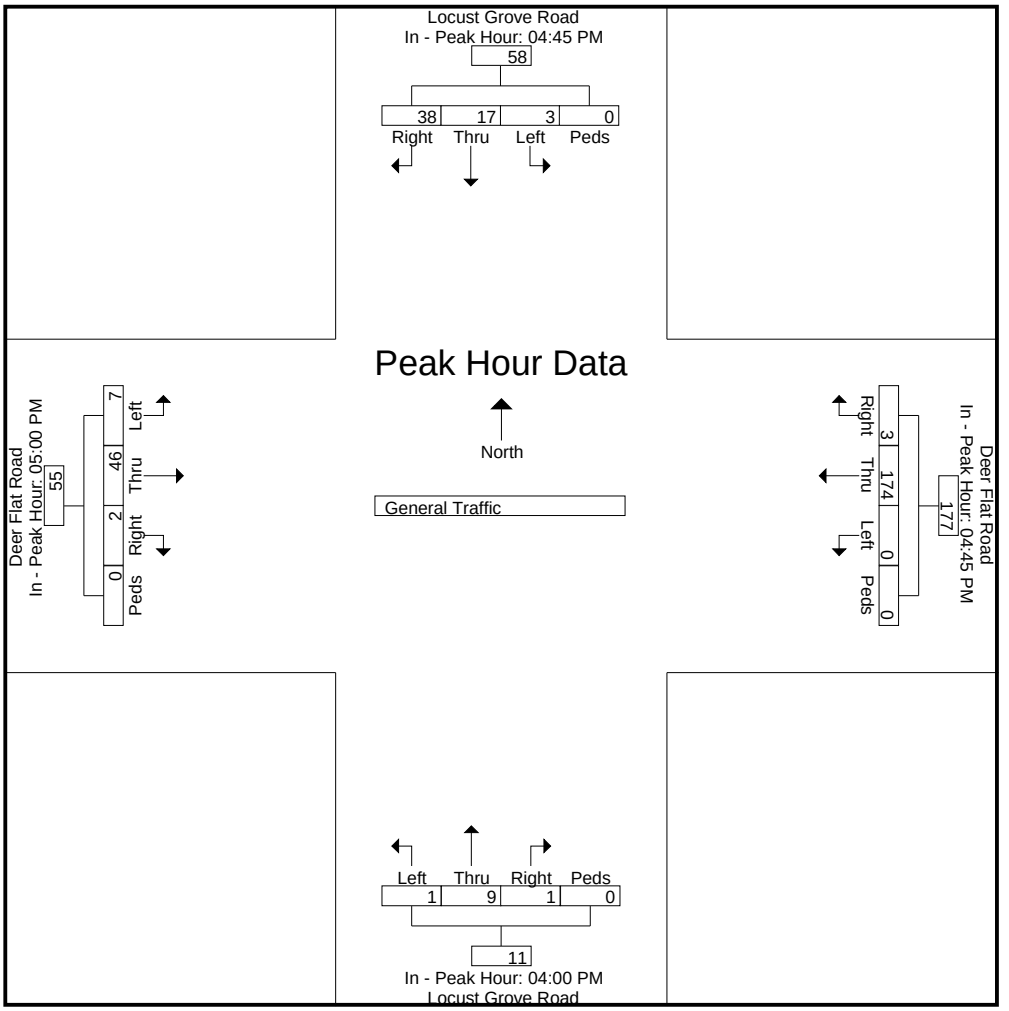
L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 6

	Locust Grove Road From North					Deer Flat Road From East					Locust Grove Road From South					Deer Flat Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. 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					05:00 PM					
+0 mins.	**11**	**5**	0	0	16	0	36	0	0	36	0	**3**	0	0	3	**1**	11	0	0	12	
+15 mins.	10	5	**2**	0	**17**	1	42	0	0	43	0	3	**1**	0	**4**	0	11	**4**	0	**15**	
+30 mins.	10	3	1	0	14	**2**	40	0	0	42	0	0	0	0	0	0	**12**	2	0	14	
+45 mins.	7	4	0	0	11	0	**56**	0	0	**56**	**1**	3	0	0	4	1	12	1	0	14	
Total Volume	38	17	3	0	58	3	174	0	0	177	1	9	1	0	11	2	46	7	0	55	
% App. Total	65.5	29.3	5.2	0		1.7	98.3	0	0		9.1	81.8	9.1	0		3.6	83.6	12.7	0		
PHF	.864	.850	.375	.000	.853	.375	.777	.000	.000	.790	.250	.750	.250	.000	.688	.500	.958	.438	.000	.917	



L2 Data Collection

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

Study: THOM0136
Intersection: Locust Grove / Deer Flat
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Locust Grove Rd & Deer Flat Rd
Site Code :
Start Date : 1/23/2018
Page No : 7

Image 1

L2 Data Collection

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

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 1

Groups Printed- General Traffic

	Meridian Road From North					Hubbard Road From East					Meridian Road From South					Hubbard Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	11	66	2	0	79	1	0	0	0	1	0	261	2	0	263	7	4	45	0	56	399
07:15 AM	15	109	2	0	126	4	0	0	0	4	0	280	7	0	287	14	4	43	0	61	478
07:30 AM	11	123	2	0	136	3	2	4	0	9	2	216	7	0	225	32	4	37	0	73	443
07:45 AM	8	103	1	0	112	1	1	0	0	2	1	203	14	0	218	7	9	46	0	62	394
Total	45	401	7	0	453	9	3	4	0	16	3	960	30	0	993	60	21	171	0	252	1714
08:00 AM	15	57	2	0	74	0	0	1	0	1	2	187	5	0	194	8	2	33	0	43	312
08:15 AM	11	65	1	0	77	4	1	1	0	6	2	150	4	0	156	3	1	27	0	31	270
08:30 AM	17	58	3	0	78	0	1	2	0	3	0	142	1	0	143	1	3	37	0	41	265
08:45 AM	8	68	7	0	83	3	3	2	0	8	0	135	5	0	140	7	2	25	0	34	265
Total	51	248	13	0	312	7	5	6	0	18	4	614	15	0	633	19	8	122	0	149	1112

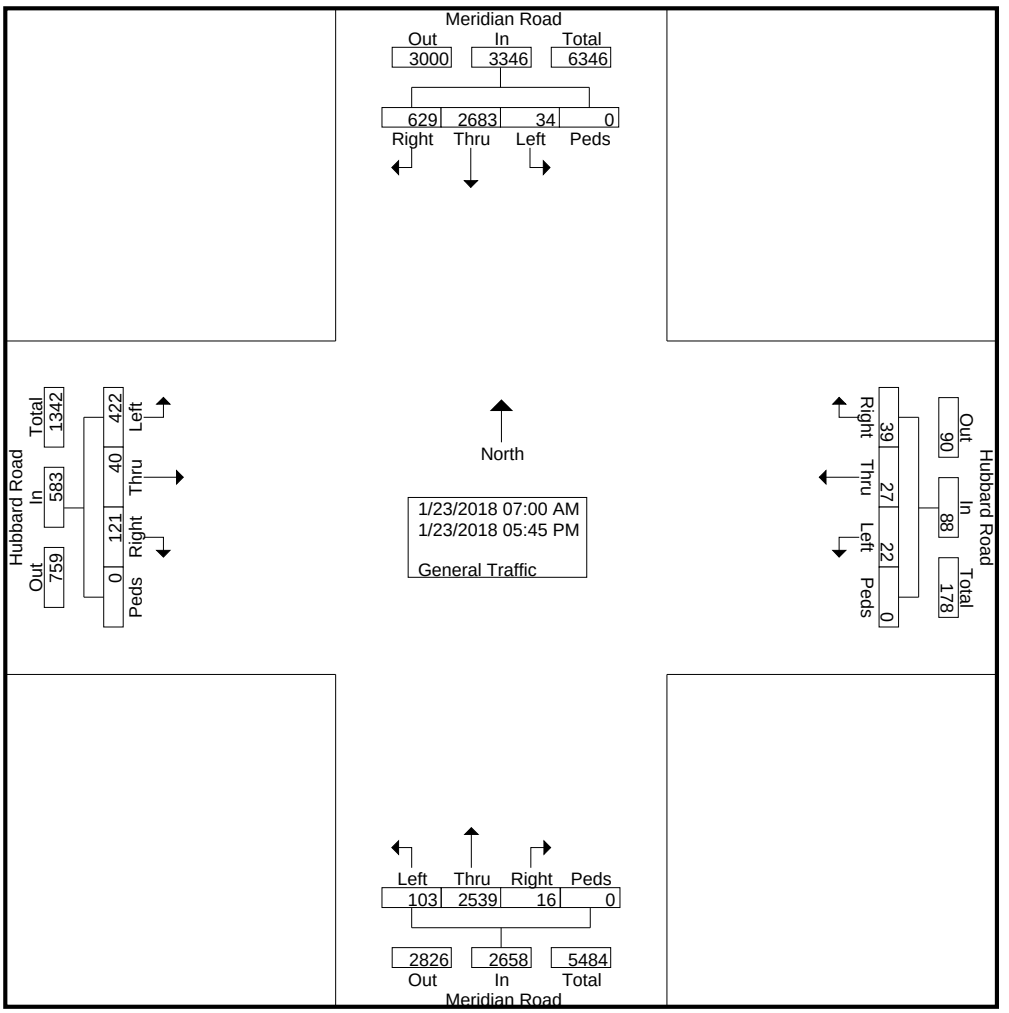
04:00 PM	54	230	0	0	284	2	4	0	0	6	1	128	9	0	138	5	1	15	0	21	449
04:15 PM	53	233	0	0	286	3	0	1	0	4	1	120	1	0	122	5	1	22	0	28	440
04:30 PM	62	237	3	0	302	1	0	1	0	2	1	146	7	0	154	3	1	15	0	19	477
04:45 PM	73	237	2	0	312	3	2	1	0	6	2	114	4	0	120	9	1	16	0	26	464
Total	242	937	5	0	1184	9	6	3	0	18	5	508	21	0	534	22	4	68	0	94	1830
05:00 PM	61	254	2	0	317	6	1	3	0	10	1	117	8	0	126	6	2	20	0	28	481
05:15 PM	81	271	0	0	352	3	5	4	0	12	2	116	12	0	130	2	0	12	0	14	508
05:30 PM	72	293	4	0	369	1	3	0	0	4	1	111	8	0	120	8	2	15	0	25	518
05:45 PM	77	279	3	0	359	4	4	2	0	10	0	113	9	0	122	4	3	14	0	21	512
Total	291	1097	9	0	1397	14	13	9	0	36	4	457	37	0	498	20	7	61	0	88	2019
Grand Total	629	2683	34	0	3346	39	27	22	0	88	16	2539	103	0	2658	121	40	422	0	583	6675
Apprch %	18.8	80.2	1	0		44.3	30.7	25	0		0.6	95.5	3.9	0		20.8	6.9	72.4	0		
Total %	9.4	40.2	0.5	0	50.1	0.6	0.4	0.3	0	1.3	0.2	38	1.5	0	39.8	1.8	0.6	6.3	0	8.7	

L2 Data Collection

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

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 2



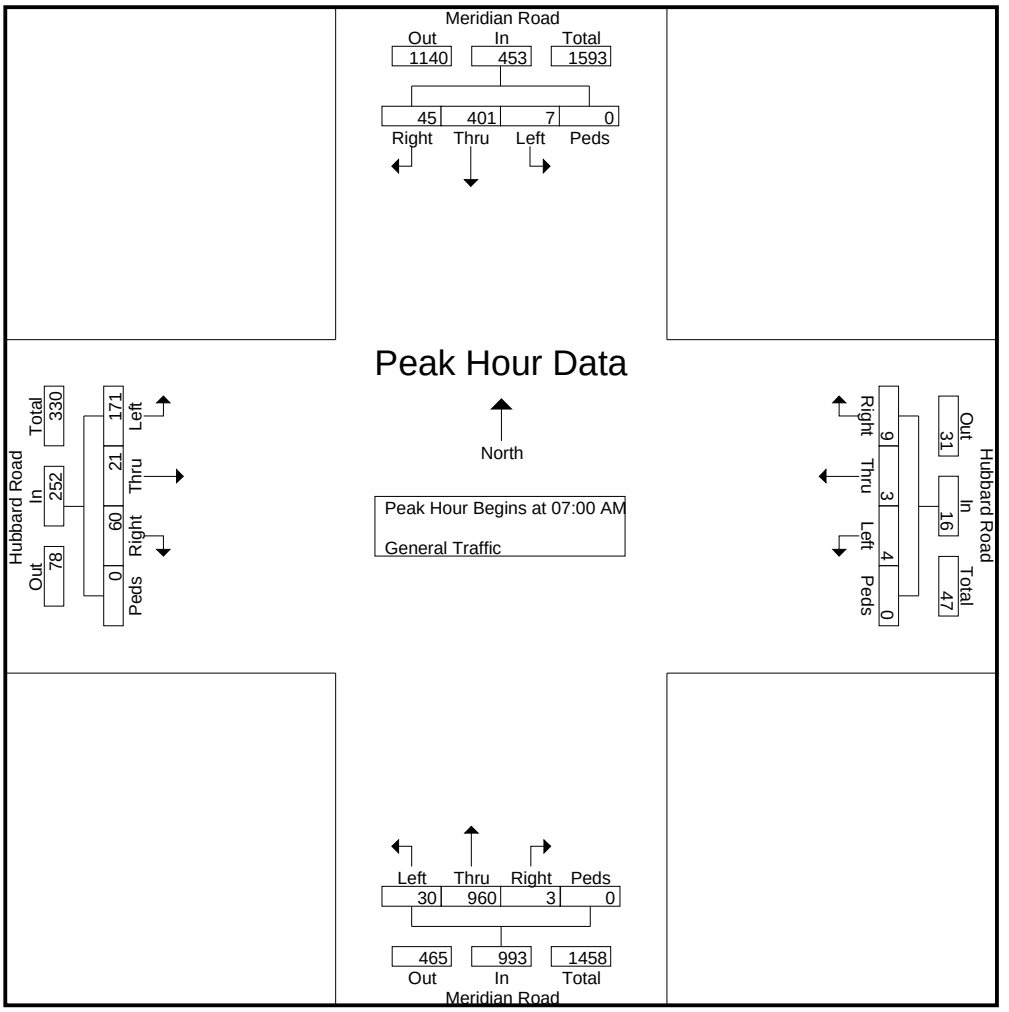
L2 Data Collection

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

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 3

	Meridian Road From North					Hubbard Road From East					Meridian Road From South					Hubbard Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. 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	11	66	**2**	0	79	1	0	0	0	1	0	261	2	0	263	7	4	45	0	56	399
07:15 AM	**15**	109	2	0	126	**4**	0	0	0	4	0	**280**	7	0	**287**	14	4	43	0	61	**478**
07:30 AM	11	**123**	2	0	**136**	3	**2**	**4**	0	**9**	**2**	216	7	0	225	**32**	4	37	0	**73**	443
07:45 AM	8	103	1	0	112	1	1	0	0	2	1	203	**14**	0	218	7	**9**	**46**	0	62	394
Total Volume	45	401	7	0	453	9	3	4	0	16	3	960	30	0	993	60	21	171	0	252	1714
% App. Total	9.9	88.5	1.5	0		56.2	18.8	25	0		0.3	96.7	3	0		23.8	8.3	67.9	0		
PHF	.750	.815	.875	.000	.833	.563	.375	.250	.000	.444	.375	.857	.536	.000	.865	.469	.583	.929	.000	.863	.896



L2 Data Collection

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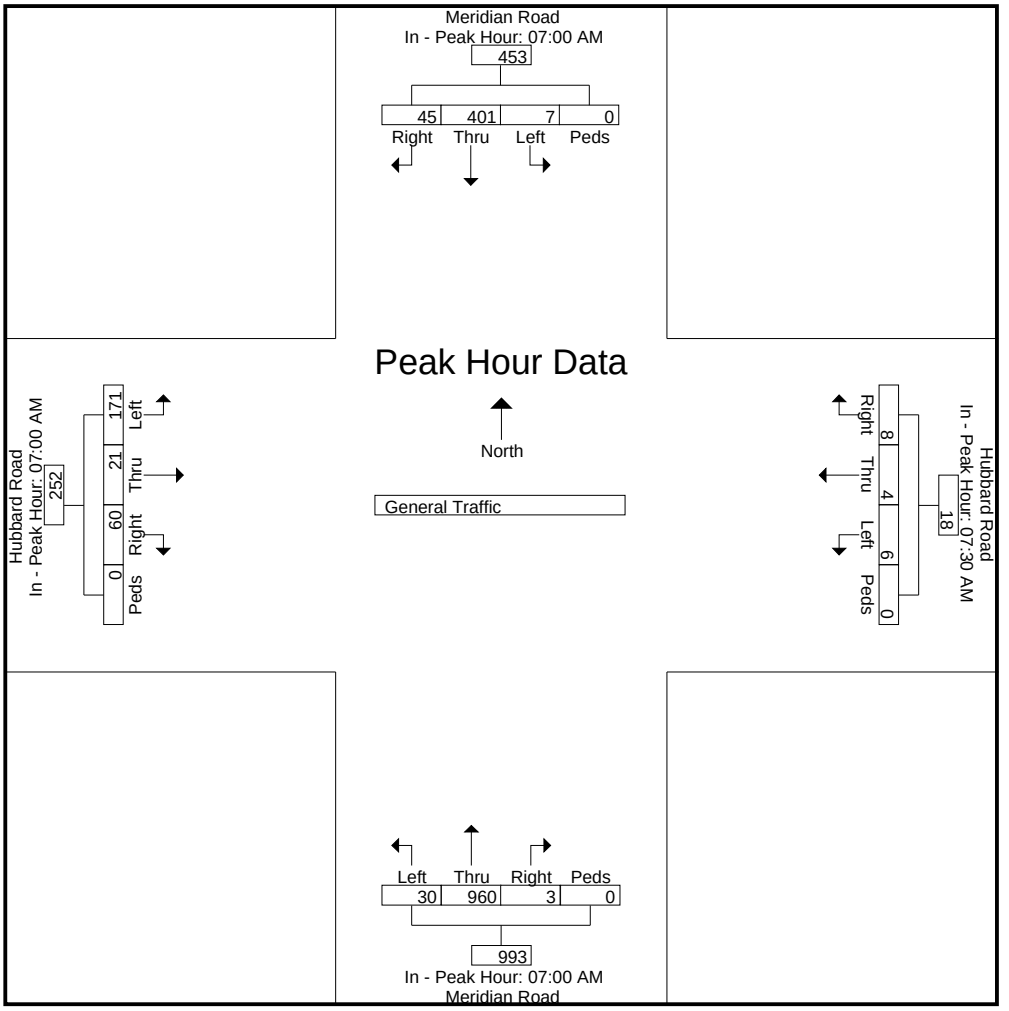
Idaho (208) 860-7554 Utah (801) 431-2993

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 4

	Meridian Road From North					Hubbard Road From East					Meridian Road From South					Hubbard Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. Total**
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	07:00 AM					07:30 AM					07:00 AM					07:00 AM					
+0 mins.	11	66	**2**	0	79	3	**2**	**4**	0	**9**	0	261	2	0	263	7	4	45	0	56	
+15 mins.	**15**	109	2	0	126	1	1	0	0	2	0	**280**	7	0	**287**	14	4	43	0	61	
+30 mins.	11	**123**	2	0	**136**	0	0	1	0	1	**2**	216	7	0	225	**32**	4	37	0	**73**	
+45 mins.	8	103	1	0	112	**4**	1	1	0	6	1	203	**14**	0	218	7	**9**	**46**	0	62	
Total Volume	45	401	7	0	453	8	4	6	0	18	3	960	30	0	993	60	21	171	0	252	
% App. Total	9.9	88.5	1.5	0		44.4	22.2	33.3	0		0.3	96.7	3	0		23.8	8.3	67.9	0		
PHF	.750	.815	.875	.000	.833	.500	.500	.375	.000	.500	.375	.857	.536	.000	.865	.469	.583	.929	.000	.863	



L2 Data Collection

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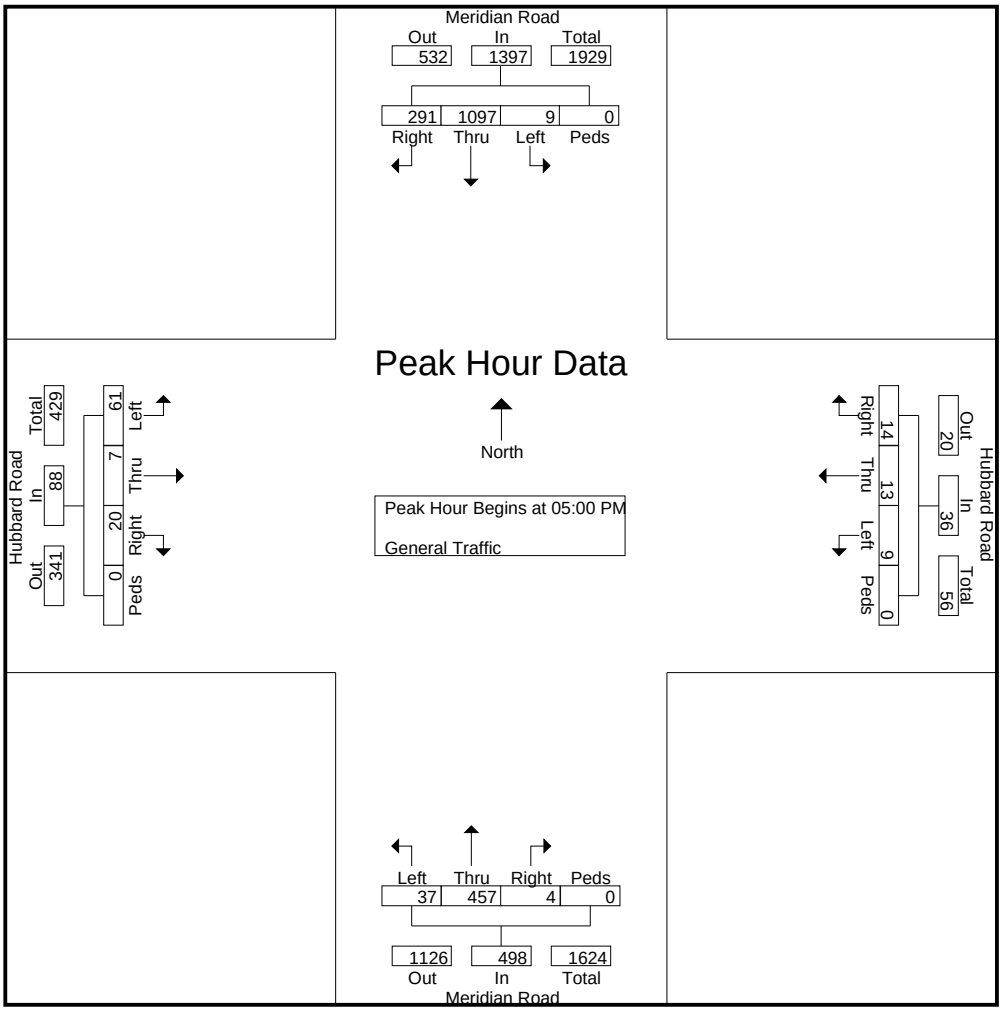
Idaho (208) 860-7554 Utah (801) 431-2993

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 5

	Meridian Road From North					Hubbard Road From East					Meridian Road From South					Hubbard Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. 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	61	254	2	0	317	**6**	1	3	0	10	1	**117**	8	0	126	6	2	**20**	0	**28**	481
05:15 PM	**81**	271	0	0	352	3	**5**	**4**	0	**12**	**2**	116	**12**	0	**130**	2	0	12	0	14	508
05:30 PM	72	**293**	**4**	0	**369**	1	3	0	0	4	1	111	8	0	120	**8**	2	15	0	25	**518**
05:45 PM	77	279	3	0	359	4	4	2	0	10	0	113	9	0	122	4	**3**	14	0	21	512
Total Volume	291	1097	9	0	1397	14	13	9	0	36	4	457	37	0	498	20	7	61	0	88	2019
% App. Total	20.8	78.5	0.6	0		38.9	36.1	25	0		0.8	91.8	7.4	0		22.7	8	69.3	0		
PHF	.898	.936	.563	.000	.946	.583	.650	.563	.000	.750	.500	.976	.771	.000	.958	.625	.583	.763	.000	.786	.974



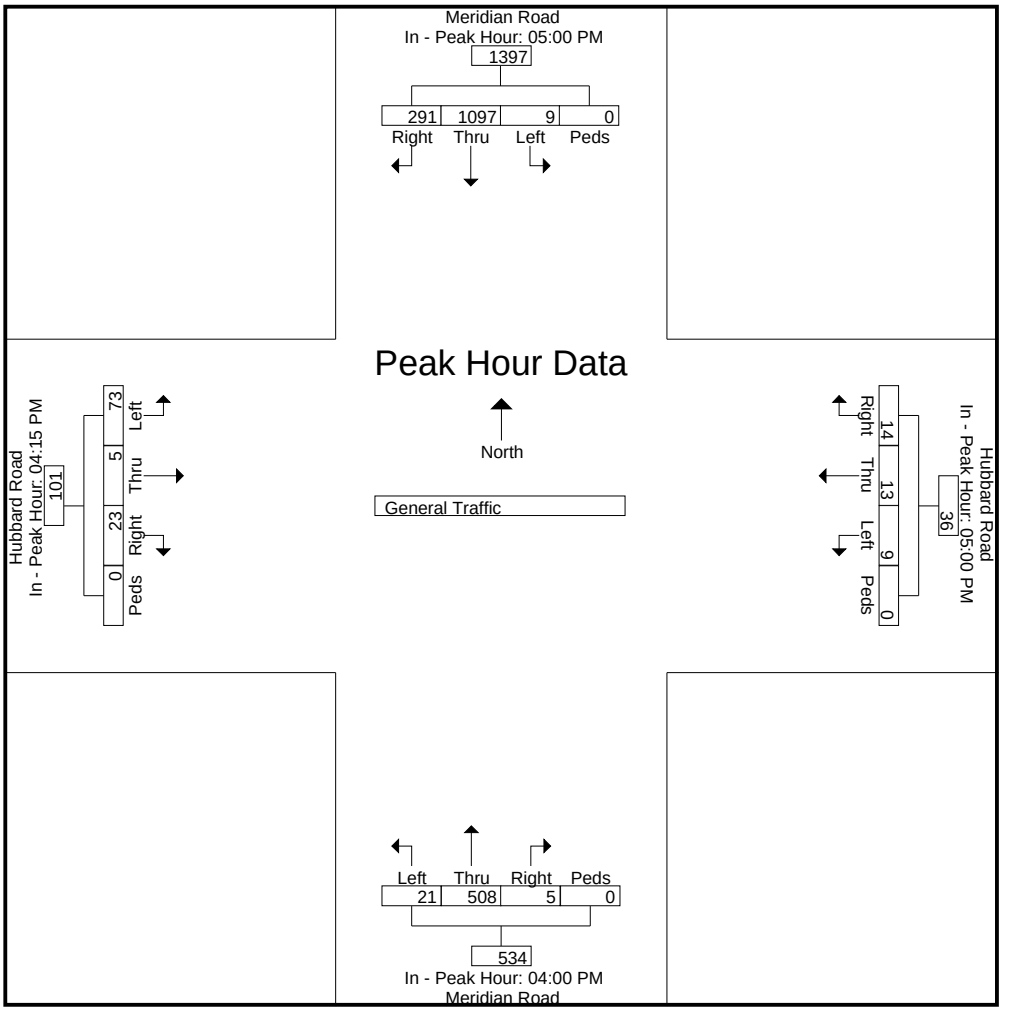
L2 Data Collection

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

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 6

	Meridian Road From North					Hubbard Road From East					Meridian Road From South					Hubbard Road From West					
Start Time	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Right**	**Thru**	**Left**	**Peds**	**App. Total**	**Int. 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					05:00 PM					04:00 PM					04:15 PM					
+0 mins.	61	254	2	0	317	**6**	1	3	0	10	1	128	**9**	0	138	5	1	**22**	0	**28**	
+15 mins.	**81**	271	0	0	352	3	**5**	**4**	0	**12**	1	120	1	0	122	3	1	15	0	19	
+30 mins.	72	**293**	**4**	0	**369**	1	3	0	0	4	1	**146**	7	0	**154**	**9**	1	16	0	26	
+45 mins.	77	279	3	0	359	4	4	2	0	10	**2**	114	4	0	120	6	**2**	20	0	28	
Total Volume	291	1097	9	0	1397	14	13	9	0	36	5	508	21	0	534	23	5	73	0	101	
% App. Total	20.8	78.5	0.6	0		38.9	36.1	25	0		0.9	95.1	3.9	0		22.8	5	72.3	0		
PHF	.898	.936	.563	.000	.946	.583	.650	.563	.000	.750	.625	.870	.583	.000	.867	.639	.625	.830	.000	.902	



L2 Data Collection

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

Study: THOM0136
Intersection: Meridian Rd / Deer Flat Rd
City, State: Kuna, Idaho
Control: Stop Sign

File Name : Meridian Rd & Hubbard Rd
Site Code :
Start Date : 1/23/2018
Page No : 7

Image 1

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Locust Grove Rd b Hubbard Rd & Deer Flat Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Locust Grove between Hubbard & Deer Flat
Kuna, Idaho

Start Time	23-Jan-18 Tue	SB	NB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		1	0							1
02:15		0	0							0
02:30		0	0							0
02:45		0	0							0
03:00		1	0							1
03:15		0	0							0
03:30		0	0							0
03:45		0	0							0
04:00		0	0							0
04:15		1	0							1
04:30		0	1							1
04:45		1	0							1
05:00		0	0							0
05:15		3	4							7
05:30		2	3							5
05:45		1	1							2
06:00		0	2							2
06:15		0	4							4
06:30		2	4							6
06:45		**3**	2							5
07:00		**5**	6							**11**
07:15		**2**	**4**							**6**
07:30		**6**	**10**							**16**
07:45		2	**5**							**7**
08:00		1	**8**							9
08:15		0	2							2
08:30		2	2							4
08:45		8	5							13
09:00		1	1							2
09:15		2	3							5
09:30		2	7							9
09:45		6	3							9
10:00		2	3							5
10:15		1	2							3
10:30		3	2							5
10:45		3	4							7
11:00		1	9							10
11:15		3	2							5
11:30		6	6							12
11:45		4	1							5
Total		75	106							181
Percent		41.4%	58.6%							
Peak	-	06:45	07:15	-	-	-	-	-	-	07:00
Vol.	-	16	27	-	-	-	-	-	-	40
P.H.F.		0.667	0.675							0.625

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Locust Grove Rd b Hubbard Rd & Deer Flat Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Locust Grove between Hubbard & Deer Flat
Kuna, Idaho

Start Time	23-Jan-18 Tue	SB	NB	Total
12:00 PM		6	2	8
12:15		4	8	12
12:30		5	2	7
12:45		6	2	8
01:00		3	0	3
01:15		4	5	9
01:30		4	4	8
01:45		2	0	2
02:00		5	2	7
02:15		6	2	8
02:30		6	4	10
02:45		10	4	14
03:00		2	4	6
03:15		3	3	6
03:30		11	**9**	20
03:45		11	**6**	17
04:00		9	**6**	15
04:15		10	**5**	15
04:30		9	1	10
04:45		**18**	4	**22**
05:00		**16**	2	**18**
05:15		**14**	6	**20**
05:30		**11**	4	**15**
05:45		9	2	11
06:00		12	3	15
06:15		5	2	7
06:30		6	2	8
06:45		3	2	5
07:00		8	2	10
07:15		4	1	5
07:30		1	2	3
07:45		3	2	5
08:00		2	3	5
08:15		1	2	3
08:30		2	1	3
08:45		2	0	2
09:00		2	3	5
09:15		1	3	4
09:30		2	1	3
09:45		0	0	0
10:00		1	0	1
10:15		1	0	1
10:30		0	1	1
10:45		0	0	0
11:00		1	0	1
11:15		0	0	0
11:30		0	0	0
11:45		0	0	0
Total		241	117	358
Percent		67.3%	32.7%	
Peak	-	16:45	15:30	16:45
Vol.	-	59	26	75
P.H.F.		0.819	0.722	0.852

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Locust Grove Rd b Hubbard Rd & Deer Flat Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Locust Grove between Hubbard & Deer Flat
Kuna, Idaho

Start Time	24-Jan-18 Wed	SB	NB	Total
12:00 AM		1	0	1
12:15		0	0	0
12:30		0	0	0
12:45		0	0	0
01:00		**1**	0	**1**
01:15		**0**	0	**0**
01:30		**0**	0	**0**
01:45		**1**	0	**1**
02:00		*	*	*
02:15		*	*	*
02:30		*	*	*
02:45		*	*	*
03:00		*	*	*
03:15		*	*	*
03:30		*	*	*
03:45		*	*	*
04:00		*	*	*
04:15		*	*	*
04:30		*	*	*
04:45		*	*	*
05:00		*	*	*
05:15		*	*	*
05:30		*	*	*
05:45		*	*	*
06:00		*	*	*
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		3	0	3
Percent		100.0%	0.0%	
Peak	-	01:00	-	01:00
Vol.	-	2	-	2
P.H.F.		0.500		0.500
Grand Total		319	223	542
Percent		58.9%	41.1%	

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Deer Flat Rd b Meridian Rd & Locust Grove Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Deer Flat between Meridian & Locust Grov
Kuna, Idaho

Start Time	23-Jan-18 Tue	WB	EB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		0	0							0
02:15		0	0							0
02:30		0	1							1
02:45		2	0							2
03:00		1	0							1
03:15		3	0							3
03:30		0	0							0
03:45		0	0							0
04:00		0	1							1
04:15		0	2							2
04:30		2	2							4
04:45		2	0							2
05:00		0	3							3
05:15		2	10							12
05:30		4	18							22
05:45		2	14							16
06:00		6	15							21
06:15		2	19							21
06:30		7	21							28
06:45		6	32							38
07:00		**20**	**34**							**54**
07:15		**24**	**40**							**64**
07:30		**27**	**32**							**59**
07:45		**17**	**34**							**51**
08:00		9	23							32
08:15		4	14							18
08:30		1	9							10
08:45		12	7							19
09:00		6	6							12
09:15		8	11							19
09:30		6	10							16
09:45		8	10							18
10:00		11	9							20
10:15		6	5							11
10:30		12	11							23
10:45		7	2							9
11:00		6	19							25
11:15		8	2							10
11:30		14	12							26
11:45		18	8							26
Total		263	436							699
Percent		37.6%	62.4%							
Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	88	140	-	-	-	-	-	-	228
P.H.F.		0.815	0.875							0.891

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Deer Flat Rd b Meridian Rd & Locust Grove Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Deer Flat between Meridian & Locust Grov
Kuna, Idaho

Start Time	23-Jan-18 Tue	WB	EB							Total
12:00 PM		6	10							16
12:15		10	15							25
12:30		6	11							17
12:45		10	8							18
01:00		4	5							9
01:15		16	10							26
01:30		10	8							18
01:45		11	8							19
02:00		12	11							23
02:15		14	4							18
02:30		15	13							28
02:45		9	**12**							21
03:00		14	**13**							27
03:15		12	**19**							31
03:30		16	**28**							44
03:45		15	12							27
04:00		30	8							38
04:15		34	5							39
04:30		35	7							42
04:45		**47**	10							**57**
05:00		**53**	12							**65**
05:15		**51**	16							**67**
05:30		**61**	17							**78**
05:45		39	13							52
06:00		24	12							36
06:15		20	4							24
06:30		12	6							18
06:45		20	5							25
07:00		11	4							15
07:15		3	7							10
07:30		6	3							9
07:45		5	5							10
08:00		1	6							7
08:15		2	4							6
08:30		5	3							8
08:45		5	5							10
09:00		3	14							17
09:15		3	8							11
09:30		3	4							7
09:45		1	2							3
10:00		2	5							7
10:15		1	0							1
10:30		1	6							7
10:45		2	0							2
11:00		1	0							1
11:15		0	1							1
11:30		0	2							2
11:45		2	1							3
Total		663	382							1045
Percent		63.4%	36.6%							
Peak	-	16:45	14:45	-	-	-	-	-	-	16:45
Vol.	-	212	72	-	-	-	-	-	-	267
P.H.F.		0.869	0.643							0.856

L2 Data Collection

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

Study: THOM0136
Type: Volume / Direction
Tech: Judd / Klaren
Count: Axle Hits / 2

Deer Flat Rd b Meridian Rd & Locust Grove Rd VOL
Date Start: 23-Jan-18
Date End: 24-Jan-18
Deer Flat between Meridian & Locust Grov
Kuna, Idaho

Start Time	24-Jan-18 Wed	WB	EB							Total
12:00 AM		1	0							1
12:15		0	0							0
12:30		0	0							0
12:45		0	0							0
01:00		**1**	**1**							**2**
01:15		**0**	**0**							**0**
01:30		**0**	**0**							**0**
01:45		**2**	**1**							**3**
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		*	*							*
05:45		*	*							*
06:00		*	*							*
06:15		*	*							*
06:30		*	*							*
06:45		*	*							*
07:00		*	*							*
07:15		*	*							*
07:30		*	*							*
07:45		*	*							*
08:00		*	*							*
08:15		*	*							*
08:30		*	*							*
08:45		*	*							*
09:00		*	*							*
09:15		*	*							*
09:30		*	*							*
09:45		*	*							*
10:00		*	*							*
10:15		*	*							*
10:30		*	*							*
10:45		*	*							*
11:00		*	*							*
11:15		*	*							*
11:30		*	*							*
11:45		*	*							*
Total		4	2							6
Percent		66.7%	33.3%							
Peak	-	01:00	01:00	-	-	-	-	-	-	01:00
Vol.	-	3	2	-	-	-	-	-	-	5
P.H.F.		0.375	0.500							0.417
Grand Total		930	820							1750
Percent		53.1%	46.9%							

ITD-2658 7-99

SAFETY EVALUATION

I. PROJECT DATA

	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY
EXIST. RDWY	3	SH 69	2150	3.12	3.12	SPOT	15.552	72

LOCATION	Deer Flat Rd and Meridian Rd Intersection	PROPOSED IMPROVEMENT			
		LIFE	COST (1000)		
			CONST	R/W	TOTAL
IMPROVEMENT					

II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2012	3	0	1	1	2						
12	2013	3	0	3	3	0						
12	2014	4	0	2	2	2						
12	2015	4	0	2	2	2						
12	2016	3	0	2	2	1						
TOTAL------		17	0	10	10	7	0	0	0	0	0	0

AVE. SEVERITY % FOR THIS ROAD TYPE--------	18.8	81.2
EXPECTED I+F AND PDO ACCIDENTS----------	3.2	13.8
DIFFERENCE (DEVIATION FROM EXPECTED)---	6.8	
STATISTICALLY SIGNIFICANT?----------	YES(+)	
CONFIDENCE LEVEL----------	95%	

- (●) SPOT INTERSECTION (INCLUDE X STREET)
- ( ) SPOT NON-INTERSECTION
- ( ) SEGMENT (ALL ACCIDENTS)

III. TRAFFIC DATA

1	2	3	4	5	6	7	8	9	10	11	12
AADT (1000)					TOTAL NO. OF			TOTAL TRAVEL			
			CROSS STREET	VCF (3÷1)			ACC/YR	MV/YR	MVM/YR	ACC/MV	ACC/MVM
PRES.	FUT.	AVE.			YEARS	ACC.	(7 ÷ 6)	.365(1+4)	(9 x MI.)	(8 ÷ 9)	(8 ÷ 10)
15.6			6.946	###	5	17	3.40	8.21	-	0.41	-

IV. REDUCTION FACTOR

1	2	3	4	5	6
		BASE RATE	EXPECTED	D.R.	CALC.
ACC/MVM	R.F.	ACC/MV(M)	ACC/MV(M)	MV(M)	R.F.
				1-(>3 OR 4)	(5 ÷ 1)
0.41	*	0.56	*	*	*

V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4								
	ACC.		BEFORE ACC. COST ($1000)									
	TYPE	NO.	COST	TOTAL	5	6	7	8	9	10	11	
	I+F											
	PDO				$/ACC.	ACC./YR	VCF	LIFE	1.00-CRF	$ BEFORE	$ AFTER	
YES(+)												
YES(-)												
NO												
SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST =								÷		=		
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) =								÷		=		

COMPUTED BY: Chhang Ream DATE: 03/01/18 PROJECT NO.: _____

CHECKED BY: _____ DATE: _____ KEY NUMBER: _____

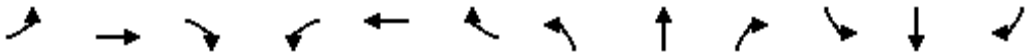
Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	14	3	0	1	2	0	18	4	0	15	1
Future Vol, veh/h	7	14	3	0	1	2	0	18	4	0	15	1
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	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	22	5	0	2	3	0	28	6	0	23	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	5	0	0	27	0	0	63	52	25	68	53	4
Stage 1	-	-	-	-	-	-	47	47	-	4	4	-
Stage 2	-	-	-	-	-	-	16	5	-	64	49	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1616	-	-	1587	-	-	932	839	1051	925	838	1080
Stage 1	-	-	-	-	-	-	967	856	-	1018	892	-
Stage 2	-	-	-	-	-	-	1004	892	-	947	854	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1616	-	-	1587	-	-	906	833	1051	892	832	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	906	833	-	892	832	-
Stage 1	-	-	-	-	-	-	960	850	-	1011	892	-
Stage 2	-	-	-	-	-	-	977	892	-	904	848	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	9.3	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	866	1616	-	-	1587	-	-	844
HCM Lane V/C Ratio	0.039	0.007	-	-	-	-	-	0.029
HCM Control Delay (s)	9.3	7.2	0	-	0	-	-	9.4
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	443	125	30	2	65	9	69	558	19	6	180	270
Future Volume (vph)	443	125	30	2	65	9	69	558	19	6	180	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.98		1.00	1.00		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1713		1676	1732		1676	3336		1676	3051	
Flt Permitted	0.47	1.00		0.65	1.00		0.36	1.00		0.37	1.00	
Satd. Flow (perm)	831	1713		1147	1732		627	3336		651	3051	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	487	137	33	2	71	10	76	613	21	7	198	297
RTOR Reduction (vph)	0	6	0	0	4	0	0	1	0	0	155	0
Lane Group Flow (vph)	487	164	0	2	77	0	76	633	0	7	340	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	49.8	42.8		13.1	12.1		55.2	48.5		44.6	43.2	
Effective Green, g (s)	49.8	42.8		13.1	12.1		55.2	48.5		44.6	43.2	
Actuated g/C Ratio	0.42	0.36		0.11	0.10		0.47	0.41		0.38	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	
Lane Grp Cap (vph)	579	622		132	178		353	1374		258	1119	
v/s Ratio Prot	c0.23	0.10		0.00	0.04		c0.01	c0.19		0.00	0.11	
v/s Ratio Perm	c0.13			0.00			0.09			0.01		
v/c Ratio	0.84	0.26		0.02	0.43		0.22	0.46		0.03	0.30	
Uniform Delay, d1	27.9	26.4		46.5	49.6		18.0	25.1		22.9	26.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.7	0.1		0.0	1.7		0.3	1.1		0.1	0.7	
Delay (s)	38.5	26.4		46.6	51.3		18.4	26.2		23.0	27.2	
Level of Service	D	C		D	D		B	C		C	C	
Approach Delay (s)		35.4			51.2			25.4			27.2	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	117.7	Sum of lost time (s)	24.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	443	125	30	2	65	9	69	558	19	6	180	270
Future Volume (veh/h)	443	125	30	2	65	9	69	558	19	6	180	270
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1800
Adj Flow Rate, veh/h	487	137	33	2	71	10	76	613	21	7	198	297
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	581	485	117	157	103	15	334	1333	46	296	618	553
Arrive On Green	0.29	0.35	0.35	0.00	0.07	0.07	0.04	0.40	0.40	0.01	0.37	0.37
Sat Flow, veh/h	1681	1375	331	1681	1514	213	1681	3308	113	1681	1676	1500
Grp Volume(v), veh/h	487	0	170	2	0	81	76	310	324	7	198	297
Grp Sat Flow(s),veh/h/ln	1681	0	1706	1681	0	1727	1681	1676	1745	1681	1676	1500
Q Serve(g_s), s	26.3	0.0	7.4	0.1	0.0	4.7	2.9	14.0	14.0	0.3	8.7	16.1
Cycle Q Clear(g_c), s	26.3	0.0	7.4	0.1	0.0	4.7	2.9	14.0	14.0	0.3	8.7	16.1
Prop In Lane	1.00		0.19	1.00		0.12	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	581	0	601	157	0	118	334	676	703	296	618	553
V/C Ratio(X)	0.84	0.00	0.28	0.01	0.00	0.69	0.23	0.46	0.46	0.02	0.32	0.54
Avail Cap(c_a), veh/h	768	0	961	397	0	536	506	676	703	526	618	553
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	28.7	0.0	24.0	44.5	0.0	46.9	20.0	22.5	22.5	20.6	23.3	25.6
Incr Delay (d2), s/veh	6.3	0.0	0.1	0.0	0.0	6.9	0.3	2.2	2.2	0.1	1.4	3.7
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(95%),veh/ln	19.0	0.0	6.3	0.1	0.0	4.5	2.4	11.2	11.6	0.2	7.6	11.6
LnGrp Delay(d),s/veh	35.0	0.0	24.1	44.5	0.0	53.8	20.4	24.8	24.7	20.6	24.6	29.3
LnGrp LOS	C		C	D		D	C	C	C	C	C	C
Approach Vol, veh/h		657			83			710			502	
Approach Delay, s/veh		32.1			53.6			24.3			27.3	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.6	13.0	10.4	44.0	6.3	42.3	6.9	47.5
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	41.0	32.0	15.0	38.0	15.0	58.0	15.0	38.0
Max Q Clear Time (g_c+I1), s	28.3	6.7	4.9	18.1	2.1	9.4	2.3	16.0
Green Ext Time (p_c), s	1.3	0.3	0.1	1.6	0.0	0.6	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	124	0	0	65	2	4	6	1	2	1	13
Future Vol, veh/h	15	124	0	0	65	2	4	6	1	2	1	13
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	143	0	0	75	2	5	7	1	2	1	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	143	0	0	261	254	143	257	253	76
Stage 1	-	-	-	-	-	-	177	177	-	76	76	-
Stage 2	-	-	-	-	-	-	84	77	-	181	177	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1522	-	-	1440	-	-	692	650	905	696	650	985
Stage 1	-	-	-	-	-	-	825	753	-	933	832	-
Stage 2	-	-	-	-	-	-	924	831	-	821	753	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1522	-	-	1440	-	-	674	642	905	683	642	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	674	642	-	683	642	-
Stage 1	-	-	-	-	-	-	815	744	-	922	832	-
Stage 2	-	-	-	-	-	-	909	831	-	803	744	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	10.5	9.1
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	671	1522	-	-	1440	-	-	905
HCM Lane V/C Ratio	0.019	0.011	-	-	-	-	-	0.02
HCM Control Delay (s)	10.5	7.4	0	-	0	-	-	9.1
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

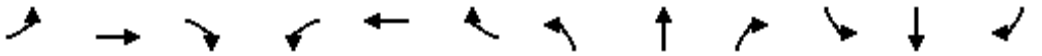
Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	6	1	9	12	0	5	16	2	1	47	3
Future Vol, veh/h	1	6	1	9	12	0	5	16	2	1	47	3
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	8	1	13	17	0	7	22	3	1	65	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	17	0	0	9	0	0	89	54	9	66	54	17
Stage 1	-	-	-	-	-	-	11	11	-	43	43	-
Stage 2	-	-	-	-	-	-	78	43	-	23	11	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1600	-	-	1611	-	-	896	837	1073	927	837	1062
Stage 1	-	-	-	-	-	-	1010	886	-	971	859	-
Stage 2	-	-	-	-	-	-	931	859	-	995	886	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1600	-	-	1611	-	-	833	829	1073	899	829	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	833	829	-	899	829	-
Stage 1	-	-	-	-	-	-	1009	885	-	970	852	-
Stage 2	-	-	-	-	-	-	849	852	-	967	885	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	3.1	9.4	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	847	1600	-	-	1611	-	-	841
HCM Lane V/C Ratio	0.038	0.001	-	-	0.008	-	-	0.084
HCM Control Delay (s)	9.4	7.3	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	46	33	39	159	4	62	328	4	3	573	464
Future Volume (vph)	224	46	33	39	159	4	62	328	4	3	573	464
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	1.00		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	1654		1676	1759		1676	3347		1676	3128	
Flt Permitted	0.32	1.00		0.70	1.00		0.14	1.00		0.54	1.00	
Satd. Flow (perm)	556	1654		1240	1759		251	3347		950	3128	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	241	49	35	42	171	4	67	353	4	3	616	499
RTOR Reduction (vph)	0	17	0	0	1	0	0	0	0	0	83	0
Lane Group Flow (vph)	241	67	0	42	174	0	67	357	0	3	1032	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	42.0	29.7		24.2	17.9		76.7	70.3		66.7	65.3	
Effective Green, g (s)	42.0	29.7		24.2	17.9		76.7	70.3		66.7	65.3	
Actuated g/C Ratio	0.32	0.23		0.18	0.14		0.58	0.53		0.51	0.50	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	
Lane Grp Cap (vph)	331	372		248	239		215	1786		488	1550	
v/s Ratio Prot	c0.10	0.04		0.01	0.10		c0.02	0.11		0.00	c0.33	
v/s Ratio Perm	c0.13			0.02			0.17			0.00		
v/c Ratio	0.73	0.18		0.17	0.73		0.31	0.20		0.01	0.67	
Uniform Delay, d1	36.4	41.2		45.0	54.6		16.3	16.0		16.1	25.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.8	0.1		0.3	10.6		0.8	0.3		0.0	2.3	
Delay (s)	44.2	41.3		45.3	65.1		17.1	16.3		16.1	27.3	
Level of Service	D	D		D	E		B	B		B	C	
Approach Delay (s)		43.4			61.3			16.4			27.2	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	131.7	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	46	33	39	159	4	62	328	4	3	573	464
Future Volume (veh/h)	224	46	33	39	159	4	62	328	4	3	573	464
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1800
Adj Flow Rate, veh/h	241	49	35	42	171	4	67	353	4	3	616	499
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	321	219	156	268	205	5	242	1827	21	561	891	720
Arrive On Green	0.14	0.23	0.23	0.03	0.12	0.12	0.04	0.54	0.54	0.00	0.51	0.51
Sat Flow, veh/h	1681	959	685	1681	1717	40	1681	3396	38	1681	1764	1425
Grp Volume(v), veh/h	241	0	84	42	0	175	67	174	183	3	585	530
Grp Sat Flow(s),veh/h/ln	1681	0	1644	1681	0	1758	1681	1676	1758	1681	1676	1513
Q Serve(g_s), s	14.6	0.0	5.0	2.6	0.0	11.8	2.3	6.5	6.5	0.1	32.1	32.2
Cycle Q Clear(g_c), s	14.6	0.0	5.0	2.6	0.0	11.8	2.3	6.5	6.5	0.1	32.1	32.2
Prop In Lane	1.00		0.42	1.00		0.02	1.00		0.02	1.00		0.94
Lane Grp Cap(c), veh/h	321	0	375	268	0	210	242	902	946	561	847	764
V/C Ratio(X)	0.75	0.00	0.22	0.16	0.00	0.83	0.28	0.19	0.19	0.01	0.69	0.69
Avail Cap(c_a), veh/h	378	0	476	424	0	422	388	902	946	763	847	764
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	37.9	0.0	37.9	44.7	0.0	52.0	18.1	14.4	14.4	14.6	22.7	22.8
Incr Delay (d2), s/veh	6.8	0.0	0.1	0.3	0.0	8.4	0.6	0.5	0.5	0.0	4.6	5.1
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(95%),veh/ln	11.8	0.0	4.1	2.2	0.0	10.3	2.0	5.6	5.9	0.1	22.4	20.7
LnGrp Delay(d),s/veh	44.8	0.0	38.0	45.0	0.0	60.4	18.8	14.9	14.8	14.6	27.3	27.9
LnGrp LOS	D		D	D		E	B	B	B	B	C	C
Approach Vol, veh/h		325			217			424			1118	
Approach Delay, s/veh		43.0			57.4			15.5			27.6	
Approach LOS		D			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	20.4	10.5	67.0	9.8	33.5	6.5	71.0
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	21.0	29.0	15.0	61.0	15.0	35.0	15.0	61.0
Max Q Clear Time (g_c+I1), s	16.6	13.8	4.3	34.2	4.6	7.0	2.1	8.5
Green Ext Time (p_c), s	0.3	0.6	0.1	4.3	0.0	0.2	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

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	6	43	2	0	174	3	0	7	1	3	17	38
Future Vol, veh/h	6	43	2	0	174	3	0	7	1	3	17	38
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	48	2	0	196	3	0	8	1	3	19	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	199	0	0	50	0	0	292	262	49	266	262	198
Stage 1	-	-	-	-	-	-	63	63	-	198	198	-
Stage 2	-	-	-	-	-	-	229	199	-	68	64	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1373	-	-	1557	-	-	660	643	1020	687	643	843
Stage 1	-	-	-	-	-	-	948	842	-	804	737	-
Stage 2	-	-	-	-	-	-	774	736	-	942	842	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1373	-	-	1557	-	-	610	640	1020	677	640	843
Mov Cap-2 Maneuver	-	-	-	-	-	-	610	640	-	677	640	-
Stage 1	-	-	-	-	-	-	943	838	-	800	737	-
Stage 2	-	-	-	-	-	-	716	736	-	927	838	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	10.4	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	671	1373	-	-	1557	-	-	762
HCM Lane V/C Ratio	0.013	0.005	-	-	-	-	-	0.086
HCM Control Delay (s)	10.4	7.6	0	-	0	-	-	10.2
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

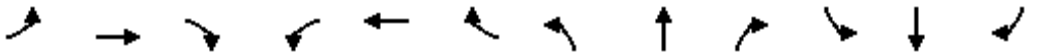
Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	13	16	3	0	1	2	0	35	4	0	27	6
Future Vol, veh/h	13	16	3	0	1	2	0	35	4	0	27	6
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	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	25	5	0	2	3	0	54	6	0	42	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	5	0	0	30	0	0	97	73	28	102	74	4
Stage 1	-	-	-	-	-	-	68	68	-	4	4	-
Stage 2	-	-	-	-	-	-	29	5	-	98	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1616	-	-	1583	-	-	885	817	1047	879	816	1080
Stage 1	-	-	-	-	-	-	942	838	-	1018	892	-
Stage 2	-	-	-	-	-	-	988	892	-	908	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1616	-	-	1583	-	-	835	806	1047	821	805	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	835	806	-	821	805	-
Stage 1	-	-	-	-	-	-	930	827	-	1005	892	-
Stage 2	-	-	-	-	-	-	934	892	-	833	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0	9.7	9.5
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	825	1616	-	-	1583	-	-	844
HCM Lane V/C Ratio	0.073	0.012	-	-	-	-	-	0.06
HCM Control Delay (s)	9.7	7.3	0	-	0	-	-	9.5
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	524	158	51	25	88	38	97	722	23	35	324	313
Future Volume (vph)	524	158	51	25	88	38	97	722	23	35	324	313
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.95		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1700		1676	1685		1676	3338		1676	3353	1500
Flt Permitted	0.40	1.00		0.62	1.00		0.45	1.00		0.19	1.00	1.00
Satd. Flow (perm)	701	1700		1086	1685		792	3338		338	3353	1500
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	576	174	56	27	97	42	107	793	25	38	356	344
RTOR Reduction (vph)	0	7	0	0	11	0	0	1	0	0	0	136
Lane Group Flow (vph)	576	223	0	27	128	0	107	817	0	38	356	208
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8		7	4	1
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	61.7	51.6		21.7	17.6		55.2	44.7		49.2	41.7	79.8
Effective Green, g (s)	61.7	51.6		21.7	17.6		55.2	44.7		49.2	41.7	79.8
Actuated g/C Ratio	0.47	0.39		0.16	0.13		0.42	0.34		0.37	0.32	0.61
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	3.0
Lane Grp Cap (vph)	609	665		197	224		401	1131		202	1060	975
v/s Ratio Prot	c0.27	0.13		0.00	0.08		c0.02	c0.24		0.01	0.11	0.06
v/s Ratio Perm	c0.17			0.02			0.09			0.06		0.08
v/c Ratio	0.95	0.33		0.14	0.57		0.27	0.72		0.19	0.34	0.21
Uniform Delay, d1	29.1	28.1		46.8	53.6		24.1	38.2		27.9	34.5	11.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.7	0.1		0.3	3.5		0.4	4.0		0.9	0.9	0.1
Delay (s)	52.8	28.2		47.1	57.1		24.4	42.2		28.8	35.4	11.9
Level of Service	D	C		D	E		C	D		C	D	B
Approach Delay (s)		45.8			55.5			40.1			24.1	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	131.9	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	524	158	51	25	88	38	97	722	23	35	324	313
Future Volume (veh/h)	524	158	51	25	88	38	97	722	23	35	324	313
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	576	174	56	27	97	42	107	793	25	38	356	344
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	504	162	217	119	52	340	1179	37	211	1098	966
Arrive On Green	0.32	0.39	0.39	0.02	0.10	0.10	0.06	0.36	0.36	0.03	0.33	0.33
Sat Flow, veh/h	1681	1280	412	1681	1169	506	1681	3318	105	1681	3353	1500
Grp Volume(v), veh/h	576	0	230	27	0	139	107	401	417	38	356	344
Grp Sat Flow(s),veh/h/ln	1681	0	1692	1681	0	1675	1681	1676	1746	1681	1676	1500
Q Serve(g_s), s	36.0	0.0	11.6	1.7	0.0	9.9	5.1	24.7	24.7	1.8	9.8	12.9
Cycle Q Clear(g_c), s	36.0	0.0	11.6	1.7	0.0	9.9	5.1	24.7	24.7	1.8	9.8	12.9
Prop In Lane	1.00		0.24	1.00		0.30	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	617	0	666	217	0	171	340	596	621	211	1098	966
V/C Ratio(X)	0.93	0.00	0.35	0.12	0.00	0.81	0.31	0.67	0.67	0.18	0.32	0.36
Avail Cap(c_a), veh/h	649	0	776	382	0	411	449	596	621	367	1098	966
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	30.5	0.0	26.0	47.3	0.0	53.7	25.1	33.3	33.3	27.8	30.9	10.1
Incr Delay (d2), s/veh	20.3	0.0	0.1	0.3	0.0	8.9	0.5	6.0	5.7	0.9	0.8	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(95%),veh/ln	27.5	0.0	9.3	1.5	0.0	8.7	4.3	18.2	18.8	1.6	8.1	9.5
LnGrp Delay(d),s/veh	50.7	0.0	26.1	47.6	0.0	62.6	25.6	39.3	39.1	28.7	31.7	11.1
LnGrp LOS	D		C	D		E	C	D	D	C	C	B
Approach Vol, veh/h		806			166			925			738	
Approach Delay, s/veh		43.7			60.2			37.6			21.9	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	44.6	18.5	13.0	46.0	9.0	54.1	9.6	49.4
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	41.0	30.0	15.0	40.0	15.0	56.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	38.0	11.9	7.1	14.9	3.7	13.6	3.8	26.7
Green Ext Time (p_c), s	0.6	0.5	0.1	1.8	0.0	0.8	0.1	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	160	0	0	83	2	4	7	1	2	1	24
Future Vol, veh/h	32	160	0	0	83	2	4	7	1	2	1	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	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	184	0	0	95	2	5	8	1	2	1	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	184	0	0	369	355	184	359	354	96
Stage 1	-	-	-	-	-	-	258	258	-	96	96	-
Stage 2	-	-	-	-	-	-	111	97	-	263	258	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1496	-	-	1391	-	-	588	571	858	596	571	960
Stage 1	-	-	-	-	-	-	747	694	-	911	815	-
Stage 2	-	-	-	-	-	-	894	815	-	742	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1496	-	-	1391	-	-	558	555	858	576	555	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	558	555	-	576	555	-
Stage 1	-	-	-	-	-	-	726	675	-	885	815	-
Stage 2	-	-	-	-	-	-	867	815	-	712	675	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0	11.4	9.2
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	573	1496	-	-	1391	-	-	892
HCM Lane V/C Ratio	0.024	0.025	-	-	-	-	-	0.035
HCM Control Delay (s)	11.4	7.5	0	-	0	-	-	9.2
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

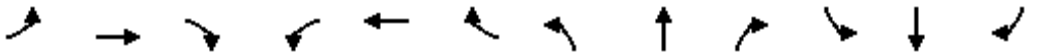
Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	7	1	10	13	0	6	37	2	1	73	18
Future Vol, veh/h	6	7	1	10	13	0	6	37	2	1	73	18
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	10	1	14	18	0	8	51	3	1	101	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	18	0	0	11	0	0	136	73	11	100	73	18
Stage 1	-	-	-	-	-	-	27	27	-	46	46	-
Stage 2	-	-	-	-	-	-	109	46	-	54	27	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1599	-	-	1608	-	-	835	817	1070	881	817	1061
Stage 1	-	-	-	-	-	-	990	873	-	968	857	-
Stage 2	-	-	-	-	-	-	896	857	-	958	873	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1599	-	-	1608	-	-	729	806	1070	827	806	1061
Mov Cap-2 Maneuver	-	-	-	-	-	-	729	806	-	827	806	-
Stage 1	-	-	-	-	-	-	985	869	-	963	849	-
Stage 2	-	-	-	-	-	-	763	849	-	895	869	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	3.2	9.9	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	803	1599	-	-	1608	-	-	846
HCM Lane V/C Ratio	0.078	0.005	-	-	0.009	-	-	0.151
HCM Control Delay (s)	9.9	7.3	0	-	7.3	0	-	10
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	281	78	85	69	197	34	141	635	13	86	823	540
Future Volume (vph)	281	78	85	69	197	34	141	635	13	86	823	540
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.92		1.00	0.98		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1627		1676	1725		1676	3343		1676	3353	1500
Flt Permitted	0.27	1.00		0.65	1.00		0.17	1.00		0.27	1.00	1.00
Satd. Flow (perm)	478	1627		1141	1725		296	3343		470	3353	1500
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	302	84	91	74	212	37	152	683	14	92	885	581
RTOR Reduction (vph)	0	26	0	0	4	0	0	1	0	0	0	151
Lane Group Flow (vph)	302	149	0	74	245	0	152	696	0	92	885	430
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8		7	4	1
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	53.9	40.3		32.8	25.2		60.7	49.0		60.3	48.8	71.5
Effective Green, g (s)	53.9	40.3		32.8	25.2		60.7	49.0		60.3	48.8	71.5
Actuated g/C Ratio	0.41	0.30		0.25	0.19		0.46	0.37		0.46	0.37	0.54
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	3.0
Lane Grp Cap (vph)	399	495		313	328		257	1237		318	1235	878
v/s Ratio Prot	c0.13	0.09		0.01	0.14		c0.05	0.21		0.03	c0.26	0.08
v/s Ratio Perm	c0.18			0.04			0.22			0.11		0.20
v/c Ratio	0.76	0.30		0.24	0.75		0.59	0.56		0.29	0.72	0.49
Uniform Delay, d1	29.9	35.3		39.2	50.6		24.2	33.2		21.8	35.9	19.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.0	0.1		0.4	8.9		3.6	1.9		1.1	3.6	0.4
Delay (s)	37.9	35.4		39.6	59.5		27.8	35.0		22.8	39.5	19.5
Level of Service	D	D		D	E		C	D		C	D	B
Approach Delay (s)		37.0			55.0			33.7			31.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	132.4	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	281	78	85	69	197	34	141	635	13	86	823	540
Future Volume (veh/h)	281	78	85	69	197	34	141	635	13	86	823	540
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	302	84	91	74	212	37	152	683	14	92	885	581
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	219	237	343	244	43	244	1415	29	345	1338	845
Arrive On Green	0.16	0.28	0.28	0.05	0.17	0.17	0.07	0.42	0.42	0.05	0.40	0.40
Sat Flow, veh/h	1681	776	841	1681	1464	256	1681	3360	69	1681	3353	1500
Grp Volume(v), veh/h	302	0	175	74	0	249	152	341	356	92	885	581
Grp Sat Flow(s),veh/h/ln	1681	0	1616	1681	0	1720	1681	1676	1753	1681	1676	1500
Q Serve(g_s), s	17.2	0.0	10.5	4.3	0.0	17.0	6.3	17.8	17.8	3.8	25.9	33.2
Cycle Q Clear(g_c), s	17.2	0.0	10.5	4.3	0.0	17.0	6.3	17.8	17.8	3.8	25.9	33.2
Prop In Lane	1.00		0.52	1.00		0.15	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	365	0	456	343	0	286	244	706	738	345	1338	845
V/C Ratio(X)	0.83	0.00	0.38	0.22	0.00	0.87	0.62	0.48	0.48	0.27	0.66	0.69
Avail Cap(c_a), veh/h	480	0	645	470	0	500	336	706	738	473	1338	845
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	33.1	0.0	34.8	38.7	0.0	48.8	23.4	25.3	25.3	20.5	29.5	18.7
Incr Delay (d2), s/veh	8.9	0.0	0.2	0.3	0.0	8.0	2.6	2.4	2.3	0.9	2.6	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(95%),veh/ln	13.7	0.0	8.2	3.6	0.0	13.6	5.6	13.5	14.0	3.3	18.2	21.0
LnGrp Delay(d),s/veh	42.0	0.0	35.0	39.0	0.0	56.8	26.0	27.6	27.5	21.4	32.1	23.2
LnGrp LOS	D		C	D		E	C	C	C	C	C	C
Approach Vol, veh/h		477			323			849			1558	
Approach Delay, s/veh		39.4			52.7			27.3			28.2	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	26.0	14.5	54.0	11.9	39.9	11.8	56.6
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	28.0	35.0	15.0	48.0	15.0	48.0	15.0	48.0
Max Q Clear Time (g_c+I1), s	19.2	19.0	8.3	35.2	6.3	12.5	5.8	19.8
Green Ext Time (p_c), s	0.6	1.1	0.2	3.9	0.1	0.6	0.3	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	26	67	2	0	222	3	0	8	1	3	19	63
Future Vol, veh/h	26	67	2	0	222	3	0	8	1	3	19	63
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	75	2	0	249	3	0	9	1	3	21	71

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	77	0	0	431	386	76	390	386	251
Stage 1	-	-	-	-	-	-	134	134	-	251	251	-
Stage 2	-	-	-	-	-	-	297	252	-	139	135	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1313	-	-	1522	-	-	535	548	985	569	548	788
Stage 1	-	-	-	-	-	-	869	785	-	753	699	-
Stage 2	-	-	-	-	-	-	712	698	-	864	785	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1313	-	-	1522	-	-	464	535	985	551	535	788
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	535	-	551	535	-
Stage 1	-	-	-	-	-	-	849	767	-	736	699	-
Stage 2	-	-	-	-	-	-	628	698	-	833	767	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	11.5	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	564	1313	-	-	1522	-	-	703
HCM Lane V/C Ratio	0.018	0.022	-	-	-	-	-	0.136
HCM Control Delay (s)	11.5	7.8	0	-	0	-	-	10.9
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

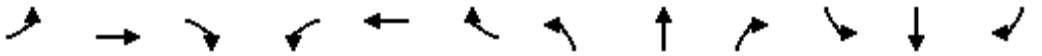
Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	13	16	3	1	1	2	0	42	7	0	29	6
Future Vol, veh/h	13	16	3	1	1	2	0	42	7	0	29	6
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	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	25	5	2	2	3	0	65	11	0	45	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	5	0	0	30	0	0	103	77	28	114	78	4
Stage 1	-	-	-	-	-	-	68	68	-	8	8	-
Stage 2	-	-	-	-	-	-	35	9	-	106	70	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1616	-	-	1583	-	-	877	813	1047	863	812	1080
Stage 1	-	-	-	-	-	-	942	838	-	1013	889	-
Stage 2	-	-	-	-	-	-	981	888	-	900	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1616	-	-	1583	-	-	824	802	1047	793	801	1080
Mov Cap-2 Maneuver	-	-	-	-	-	-	824	802	-	793	801	-
Stage 1	-	-	-	-	-	-	930	827	-	1000	888	-
Stage 2	-	-	-	-	-	-	923	887	-	810	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	1.8	9.8	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	830	1616	-	-	1583	-	-	838
HCM Lane V/C Ratio	0.091	0.012	-	-	0.001	-	-	0.064
HCM Control Delay (s)	9.8	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	524	160	51	39	95	68	97	722	28	46	324	313
Future Volume (vph)	524	160	51	39	95	68	97	722	28	46	324	313
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1701		1676	1654		1676	3334		1676	3353	1500
Flt Permitted	0.32	1.00		0.61	1.00		0.45	1.00		0.17	1.00	1.00
Satd. Flow (perm)	568	1701		1084	1654		790	3334		303	3353	1500
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	576	176	56	43	104	75	107	793	31	51	356	344
RTOR Reduction (vph)	0	7	0	0	19	0	0	1	0	0	0	139
Lane Group Flow (vph)	576	225	0	43	160	0	107	823	0	51	356	205
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8		7	4	1
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	64.4	52.5		25.2	19.3		54.0	43.3		49.0	40.8	79.9
Effective Green, g (s)	64.4	52.5		25.2	19.3		54.0	43.3		49.0	40.8	79.9
Actuated g/C Ratio	0.48	0.39		0.19	0.14		0.40	0.32		0.37	0.30	0.60
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	3.0
Lane Grp Cap (vph)	596	666		230	238		389	1078		194	1021	962
v/s Ratio Prot	c0.28	0.13		0.01	0.10		c0.02	c0.25		0.02	0.11	0.06
v/s Ratio Perm	c0.18			0.03			0.09			0.08		0.07
v/c Ratio	0.97	0.34		0.19	0.67		0.28	0.76		0.26	0.35	0.21
Uniform Delay, d1	29.0	28.5		45.3	54.3		25.7	40.7		29.4	36.2	12.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	28.3	0.1		0.4	7.3		0.4	5.1		1.5	0.9	0.1
Delay (s)	57.3	28.6		45.7	61.6		26.1	45.8		30.9	37.2	12.6
Level of Service	E	C		D	E		C	D		C	D	B
Approach Delay (s)		49.0			58.5			43.6			25.5	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	133.9	Sum of lost time (s)	24.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	524	160	51	39	95	68	97	722	28	46	324	313
Future Volume (veh/h)	524	160	51	39	95	68	97	722	28	46	324	313
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	576	176	56	43	104	75	107	793	31	51	356	344
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	602	521	166	257	122	88	327	1111	43	198	1048	932
Arrive On Green	0.31	0.41	0.41	0.03	0.13	0.13	0.06	0.34	0.34	0.03	0.31	0.31
Sat Flow, veh/h	1681	1284	409	1681	955	688	1681	3290	129	1681	3353	1500
Grp Volume(v), veh/h	576	0	232	43	0	179	107	404	420	51	356	344
Grp Sat Flow(s),veh/h/ln	1681	0	1693	1681	0	1643	1681	1676	1742	1681	1676	1500
Q Serve(g_s), s	35.6	0.0	11.8	2.8	0.0	13.3	5.3	26.2	26.2	2.6	10.2	14.1
Cycle Q Clear(g_c), s	35.6	0.0	11.8	2.8	0.0	13.3	5.3	26.2	26.2	2.6	10.2	14.1
Prop In Lane	1.00		0.24	1.00		0.42	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	602	0	686	257	0	211	327	566	588	198	1048	932
V/C Ratio(X)	0.96	0.00	0.34	0.17	0.00	0.85	0.33	0.71	0.71	0.26	0.34	0.37
Avail Cap(c_a), veh/h	650	0	774	406	0	395	432	566	588	344	1048	932
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	29.7	0.0	25.5	45.2	0.0	53.2	26.8	36.0	36.0	29.8	33.0	11.6
Incr Delay (d2), s/veh	24.2	0.0	0.1	0.3	0.0	9.2	0.6	7.5	7.2	1.5	0.9	1.1
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(95%),veh/ln	27.8	0.0	9.3	2.3	0.0	10.8	4.5	19.3	19.9	2.3	8.4	10.1
LnGrp Delay(d),s/veh	53.9	0.0	25.6	45.5	0.0	62.4	27.4	43.5	43.3	31.3	33.8	12.7
LnGrp LOS	D		C	D		E	C	D	D	C	C	B
Approach Vol, veh/h		808			222			931			751	
Approach Delay, s/veh		45.8			59.1			41.6			24.0	
Approach LOS		D			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	44.5	22.0	13.3	45.0	9.9	56.6	10.1	48.1
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	42.0	30.0	15.0	39.0	15.0	57.0	15.0	39.0
Max Q Clear Time (g_c+I1), s	37.6	15.3	7.3	16.1	4.8	13.8	4.6	28.2
Green Ext Time (p_c), s	0.9	0.7	0.1	1.7	0.0	0.8	0.1	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	39.4
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	167	0	0	85	2	4	7	1	2	1	27
Future Vol, veh/h	42	167	0	0	85	2	4	7	1	2	1	27
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	192	0	0	98	2	5	8	1	2	1	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	192	0	0	403	388	192	392	387	99
Stage 1	-	-	-	-	-	-	288	288	-	99	99	-
Stage 2	-	-	-	-	-	-	115	100	-	293	288	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1381	-	-	558	547	850	567	547	957
Stage 1	-	-	-	-	-	-	720	674	-	907	813	-
Stage 2	-	-	-	-	-	-	890	812	-	715	674	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1493	-	-	1381	-	-	524	527	850	544	527	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	524	527	-	544	527	-
Stage 1	-	-	-	-	-	-	694	650	-	874	813	-
Stage 2	-	-	-	-	-	-	860	812	-	680	650	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	11.8	9.2
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	543	1493	-	-	1381	-	-	888
HCM Lane V/C Ratio	0.025	0.032	-	-	-	-	-	0.039
HCM Control Delay (s)	11.8	7.5	0	-	0	-	-	9.2
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	220	1	0	159	4	0
Future Vol, veh/h	220	1	0	159	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	244	1	0	177	4	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	245	0	422	245
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	177	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1321	-	588	794
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	854	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1321	-	588	794
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	588	-	-	1321	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	11.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	203	112	5	17	47
Future Vol, veh/h	17	203	112	5	17	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	226	124	6	19	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	130	0	-	0	391	127
Stage 1	-	-	-	-	127	-
Stage 2	-	-	-	-	264	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1455	-	-	-	613	923
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1455	-	-	-	604	923
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1455	-	-	-	809
HCM Lane V/C Ratio	0.013	-	-	-	0.088
HCM Control Delay (s)	7.5	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

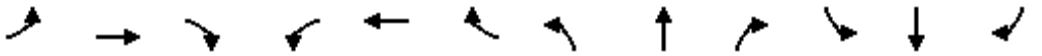
Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	7	1	14	13	0	6	41	4	1	81	18
Future Vol, veh/h	6	7	1	14	13	0	6	41	4	1	81	18
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	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	10	1	19	18	0	8	57	6	1	113	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	18	0	0	11	0	0	152	83	11	114	83	18
Stage 1	-	-	-	-	-	-	27	27	-	56	56	-
Stage 2	-	-	-	-	-	-	125	56	-	58	27	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1599	-	-	1608	-	-	815	807	1070	863	807	1061
Stage 1	-	-	-	-	-	-	990	873	-	956	848	-
Stage 2	-	-	-	-	-	-	879	848	-	954	873	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1599	-	-	1608	-	-	700	793	1070	801	793	1061
Mov Cap-2 Maneuver	-	-	-	-	-	-	700	793	-	801	793	-
Stage 1	-	-	-	-	-	-	985	869	-	951	838	-
Stage 2	-	-	-	-	-	-	734	838	-	882	869	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	3.8	10	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	797	1599	-	-	1608	-	-	831
HCM Lane V/C Ratio	0.089	0.005	-	-	0.012	-	-	0.167
HCM Control Delay (s)	10	7.3	0	-	7.3	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	281	86	85	78	201	56	141	635	28	119	823	540
Future Volume (vph)	281	86	85	78	201	56	141	635	28	119	823	540
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.93		1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1633		1676	1707		1676	3332		1676	3353	1500
Flt Permitted	0.23	1.00		0.64	1.00		0.17	1.00		0.24	1.00	1.00
Satd. Flow (perm)	406	1633		1133	1707		299	3332		432	3353	1500
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	302	92	91	84	216	60	152	683	30	128	885	581
RTOR Reduction (vph)	0	25	0	0	7	0	0	2	0	0	0	153
Lane Group Flow (vph)	302	158	0	84	269	0	152	711	0	128	885	428
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	6		5	2		3	8		7	4	1
Permitted Phases	6			2			8			4		4
Actuated Green, G (s)	54.3	38.7		35.3	25.7		59.3	47.5		61.1	48.4	71.0
Effective Green, g (s)	54.3	38.7		35.3	25.7		59.3	47.5		61.1	48.4	71.0
Actuated g/C Ratio	0.41	0.29		0.27	0.19		0.45	0.36		0.46	0.37	0.54
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	2.0		3.0	3.0		3.0	2.0		5.0	2.0	3.0
Lane Grp Cap (vph)	383	476		341	331		256	1194		318	1224	871
v/s Ratio Prot	c0.13	0.10		0.02	0.16		c0.05	0.21		0.04	c0.26	0.08
v/s Ratio Perm	c0.19			0.05			0.21			0.15		0.20
v/c Ratio	0.79	0.33		0.25	0.81		0.59	0.60		0.40	0.72	0.49
Uniform Delay, d1	30.1	36.8		37.5	51.1		24.8	34.7		22.2	36.3	19.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.3	0.2		0.4	14.0		3.7	2.2		1.7	3.7	0.4
Delay (s)	40.4	36.9		37.9	65.1		28.5	36.9		24.0	40.0	19.8
Level of Service	D	D		D	E		C	D		C	D	B
Approach Delay (s)		39.1			58.8			35.4			31.4	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	24.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	281	86	85	78	201	56	141	635	28	119	823	540
Future Volume (veh/h)	281	86	85	78	201	56	141	635	28	119	823	540
Number	1	6	16	5	2	12	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1765	1765	1800	1765	1765	1800	1765	1765	1800	1765	1765	1765
Adj Flow Rate, veh/h	302	92	91	84	216	60	152	683	30	128	885	581
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	238	235	370	245	68	239	1288	57	338	1295	821
Arrive On Green	0.16	0.29	0.29	0.05	0.18	0.18	0.07	0.39	0.39	0.06	0.39	0.39
Sat Flow, veh/h	1681	816	807	1681	1330	369	1681	3272	144	1681	3353	1500
Grp Volume(v), veh/h	302	0	183	84	0	276	152	350	363	128	885	581
Grp Sat Flow(s),veh/h/ln	1681	0	1622	1681	0	1700	1681	1676	1739	1681	1676	1500
Q Serve(g_s), s	17.0	0.0	11.0	4.9	0.0	19.3	6.6	19.5	19.5	5.5	26.8	34.8
Cycle Q Clear(g_c), s	17.0	0.0	11.0	4.9	0.0	19.3	6.6	19.5	19.5	5.5	26.8	34.8
Prop In Lane	1.00		0.50	1.00		0.22	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	358	0	473	370	0	313	239	660	685	338	1295	821
V/C Ratio(X)	0.84	0.00	0.39	0.23	0.00	0.88	0.64	0.53	0.53	0.38	0.68	0.71
Avail Cap(c_a), veh/h	474	0	653	487	0	503	326	660	685	438	1295	821
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	32.5	0.0	34.4	37.2	0.0	48.4	24.8	28.3	28.3	21.6	31.2	20.4
Incr Delay (d2), s/veh	10.1	0.0	0.2	0.3	0.0	10.5	2.8	3.0	2.9	1.5	2.9	5.1
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(95%),veh/ln	13.7	0.0	8.6	4.1	0.0	15.1	5.7	14.5	15.1	4.8	18.8	22.0
LnGrp Delay(d),s/veh	42.6	0.0	34.6	37.5	0.0	58.8	27.6	31.3	31.2	23.1	34.1	25.5
LnGrp LOS	D		C	D		E	C	C	C	C	C	C
Approach Vol, veh/h		485			360			865			1594	
Approach Delay, s/veh		39.6			53.9			30.6			30.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.6	28.4	14.7	53.0	12.6	41.5	13.8	53.9
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	28.0	36.0	15.0	47.0	15.0	49.0	15.0	47.0
Max Q Clear Time (g_c+I1), s	19.0	21.3	8.6	36.8	6.9	13.0	7.5	21.5
Green Ext Time (p_c), s	0.6	1.2	0.2	3.6	0.1	0.6	0.4	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	71	2	0	230	3	0	8	1	3	19	75
Future Vol, veh/h	32	71	2	0	230	3	0	8	1	3	19	75
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	80	2	0	258	3	0	9	1	3	21	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	82	0	0	465	414	81	418	414	260
Stage 1	-	-	-	-	-	-	153	153	-	260	260	-
Stage 2	-	-	-	-	-	-	312	261	-	158	154	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1303	-	-	1515	-	-	508	529	979	545	529	779
Stage 1	-	-	-	-	-	-	849	771	-	745	693	-
Stage 2	-	-	-	-	-	-	699	692	-	844	770	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1303	-	-	1515	-	-	429	514	979	525	514	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	514	-	525	514	-
Stage 1	-	-	-	-	-	-	824	749	-	723	693	-
Stage 2	-	-	-	-	-	-	604	692	-	809	748	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.4	0	11.8	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	543	1303	-	-	1515	-	-	698
HCM Lane V/C Ratio	0.019	0.028	-	-	-	-	-	0.156
HCM Control Delay (s)	11.8	7.8	0	-	0	-	-	11.1
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	149	4	1	317	3	0
Future Vol, veh/h	149	4	1	317	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	166	4	1	352	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	170	0	522	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1407	-	515	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1407	-	514	876
Mov Cap-2 Maneuver	-	-	-	-	514	-
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	710	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	514	-	-	1407	-
HCM Lane V/C Ratio	0.006	-	-	0.001	-
HCM Control Delay (s)	12.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	97	286	19	10	32
Future Vol, veh/h	52	97	286	19	10	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	58	108	318	21	11	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	339	0	-	0	553	329
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	224	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1220	-	-	-	494	712
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	469	712
Mov Cap-2 Maneuver	-	-	-	-	469	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	11.1
HCM LOS			B

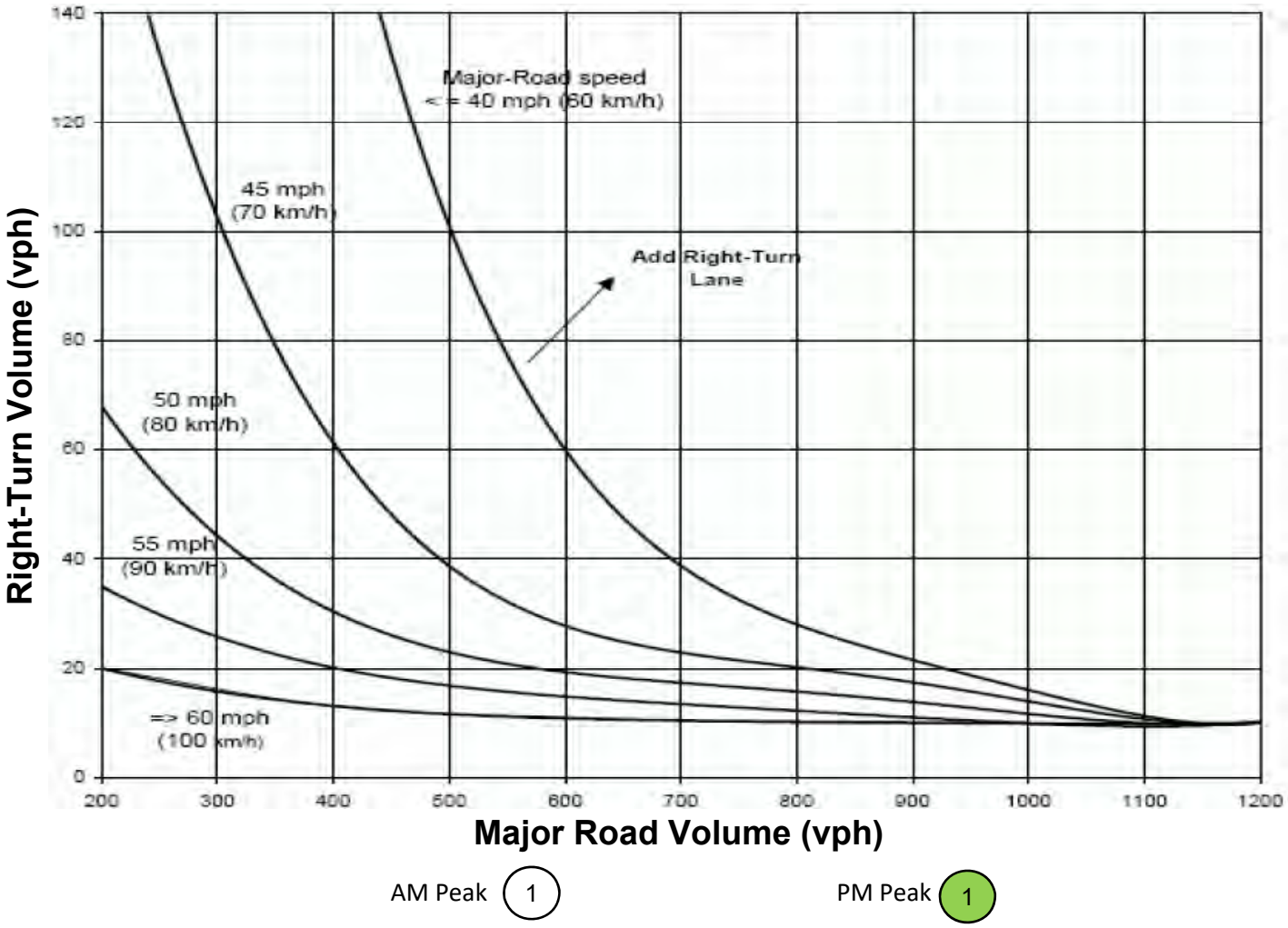
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	634
HCM Lane V/C Ratio	0.047	-	-	-	0.074
HCM Control Delay (s)	8.1	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Deer Flat Subdivision
ACHD Right-Turn Lane Analysis - Two-Lane Road

2018 Existing Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Right-Turn Volume (vph)	Major Road Volume (vph)	Meet Warrant?
1 Hubbard Road and Locust Grove Road	EB	50	AM	3	24	No[1]
			PM	1	8	No[1]
2 Hubbard Road and Locust Grove Road	WB	50	AM	2	3	No[1]
			PM	0	21	No[1]
3 Deer Flat Road and Locust Grove Road	EB	50	AM	0	139	No[1]
			PM	2	51	No[1]
4 Deer Flat Road and Locust Grove Road	WB	50	AM	2	67	No[1]
			PM	3	177	No[1]

[1] Right-turn volume less than 10 vph and/or major road volume less than 200 vph - not warranted.



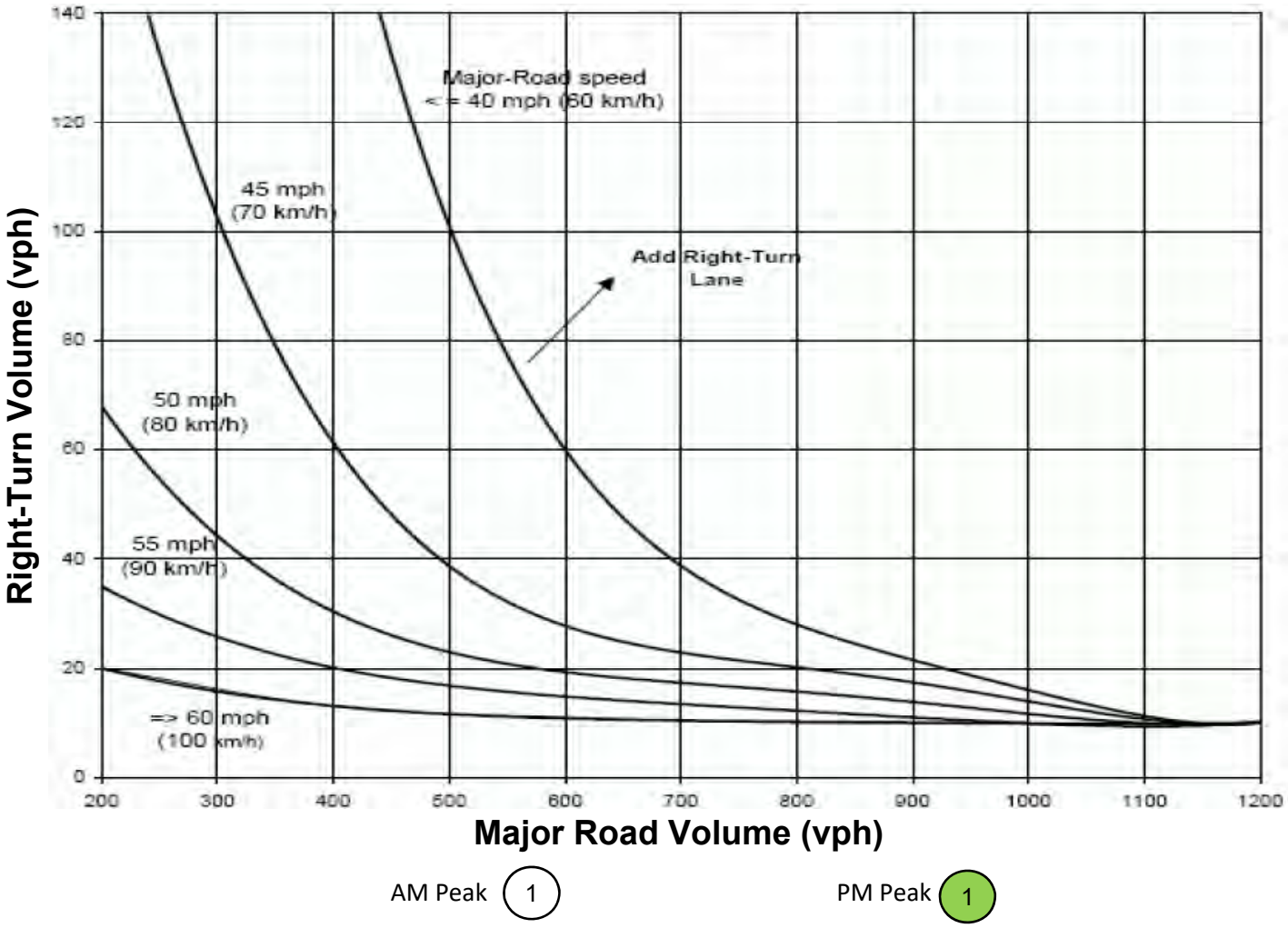
AM Peak (1) PM Peak (1)

Deer Flat Subdivision
ACHD Right-Turn Lane Analysis - Two-Lane Road

2025 Background Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Right-Turn Volume (vph)	Major Road Volume (vph)	Meet Warrant?
1 Hubbard Road and Locust Grove Road	EB	50	AM	3	32	No[1]
			PM	1	14	No[1]
2 Hubbard Road and Locust Grove Road	WB	50	AM	2	3	No[1]
			PM	0	23	No[1]
3 Deer Flat Road and Locust Grove Road	EB	50	AM	0	191	No[1]
			PM	2	95	No[1]
4 Deer Flat Road and Locust Grove Road	WB	50	AM	2	85	No[1]
			PM	3	225	No[1]

[1] Right-turn volume less than 10 vph and/or major road volume less than 200 vph - not warranted.



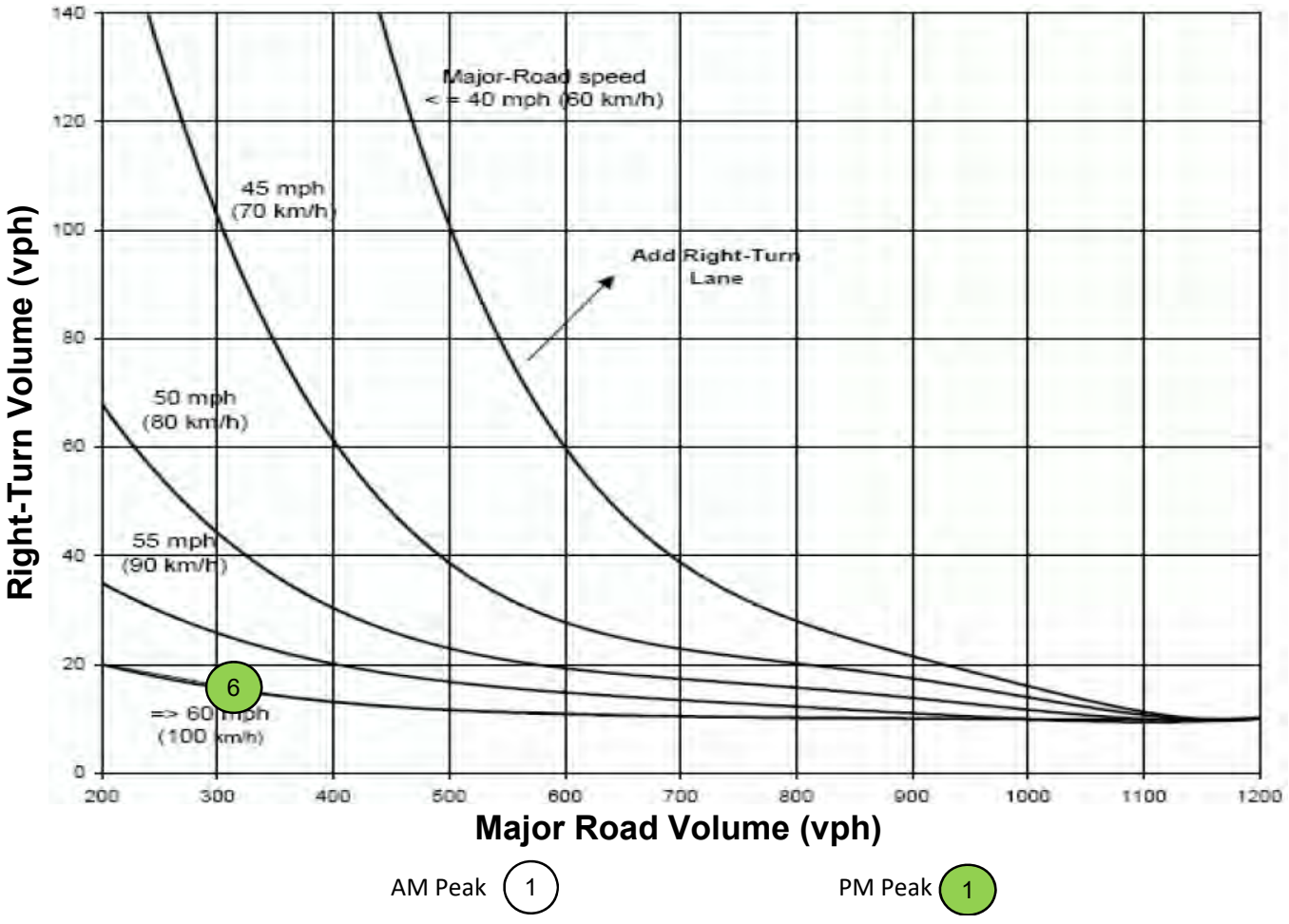
AM Peak (1) PM Peak (1)

Deer Flat Subdivision
ACHD Right-Turn Lane Analysis - Two-Lane Road

2025 Total Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Right-Turn Volume (vph)	Major Road Volume (vph)	Meet Warrant?
(1) Hubbard Road and Locust Grove Road	EB	50	AM	3	32	No[1]
			PM	1	14	No[1]
(2) Hubbard Road and Locust Grove Road	WB	50	AM	2	4	No[1]
			PM	0	27	No[1]
(3) Deer Flat Road and Locust Grove Road	EB	50	AM	0	208	No[1]
			PM	2	105	No[1]
(4) Deer Flat Road and Locust Grove Road	WB	50	AM	2	87	No[1]
			PM	3	233	No[1]
(5) West Access and Deer Flat Road	EB	50	AM	1	221	No[1]
			PM	4	153	No[1]
(6) East Access and Deer Flat Road	WB	50	AM	5	117	No[1]
			PM	19	305	No

[1] Right-turn volume less than 10 vph and/or major road volume less than 200 vph - not warranted.

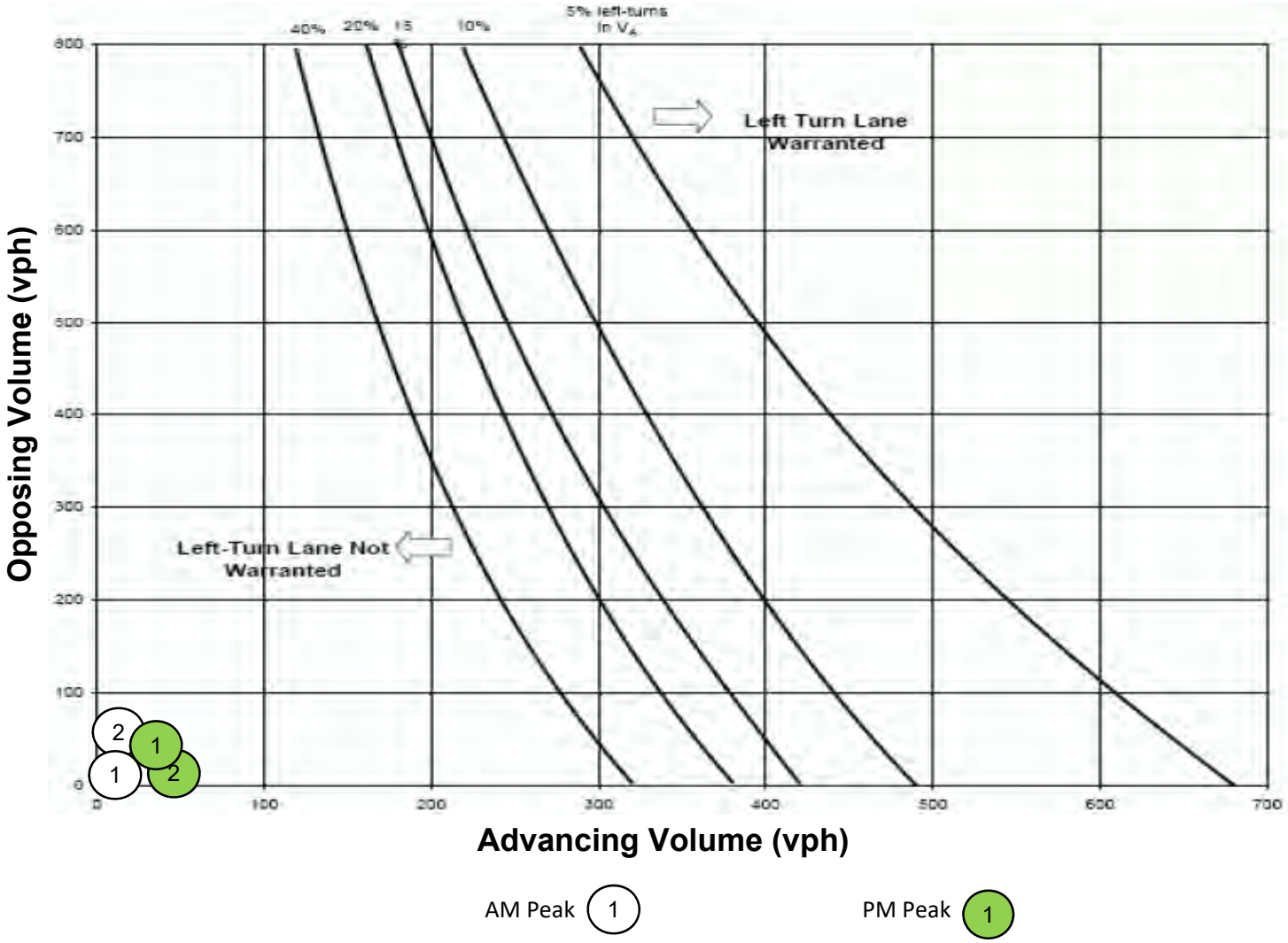


AM Peak (1) PM Peak (1)

Deer Flat Subdivision
ACHD Left-Turn Lane Analysis - 50 mph Two-Lane Road

2018 Existing Traffic

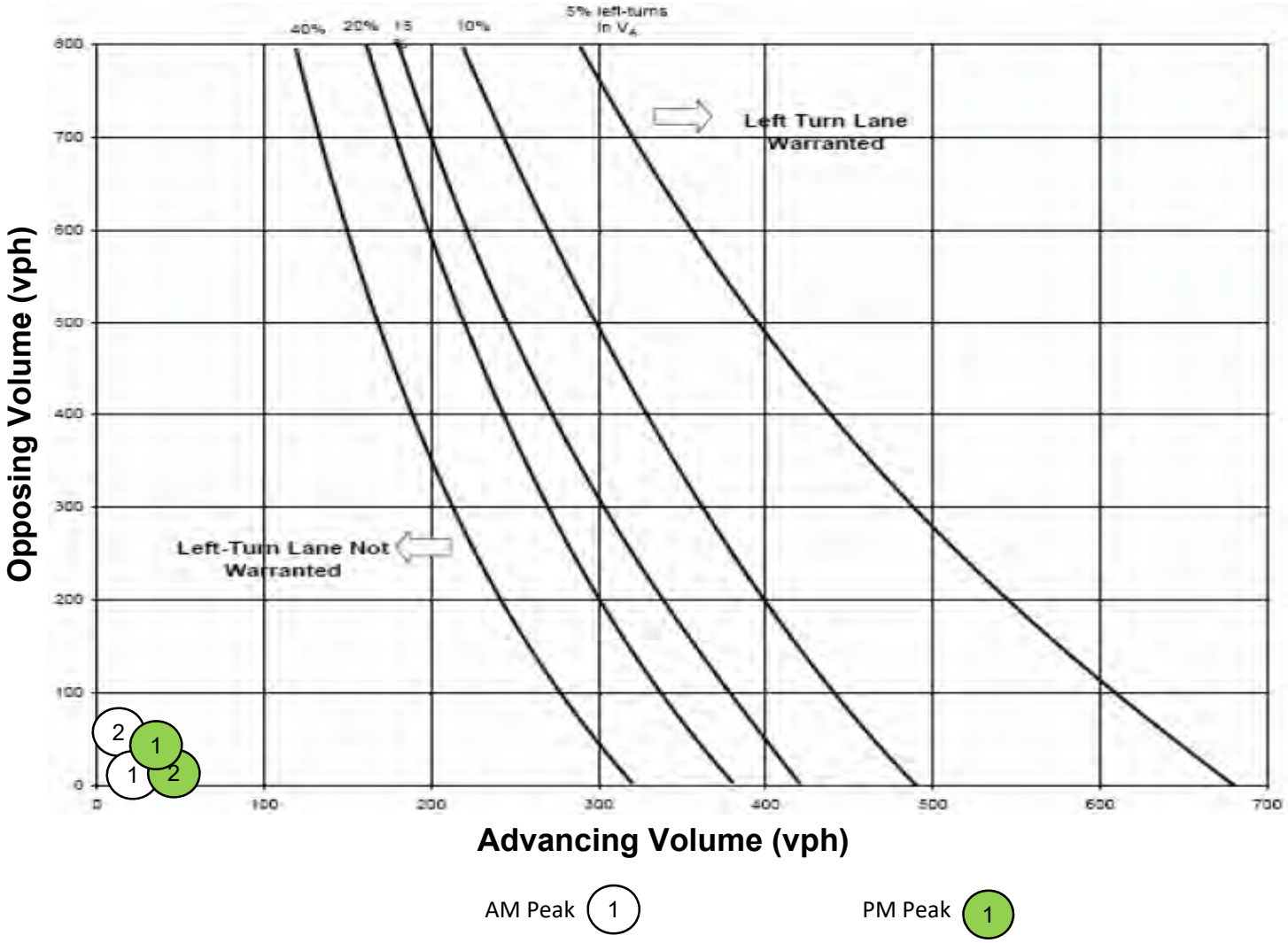
Intersection	Approach	Speed Limit (mph)	Peak Hour	Advancing Volume (vph)	Opposing Volume (vph)	Left-Turn Volume (%)	Meet Warrant?
(1) Hubbard Road and Locust Grove Road	EB	50	AM	24	3	29%	No
			PM	8	12	13%	No
(2) Hubbard Road and Locust Grove Road	WB	50	AM	3	17	0%	No
			PM	21	7	43%	No



Deer Flat Subdivision
ACHD Left-Turn Lane Analysis - 50 mph Two-Lane Road

2025 Background Traffic

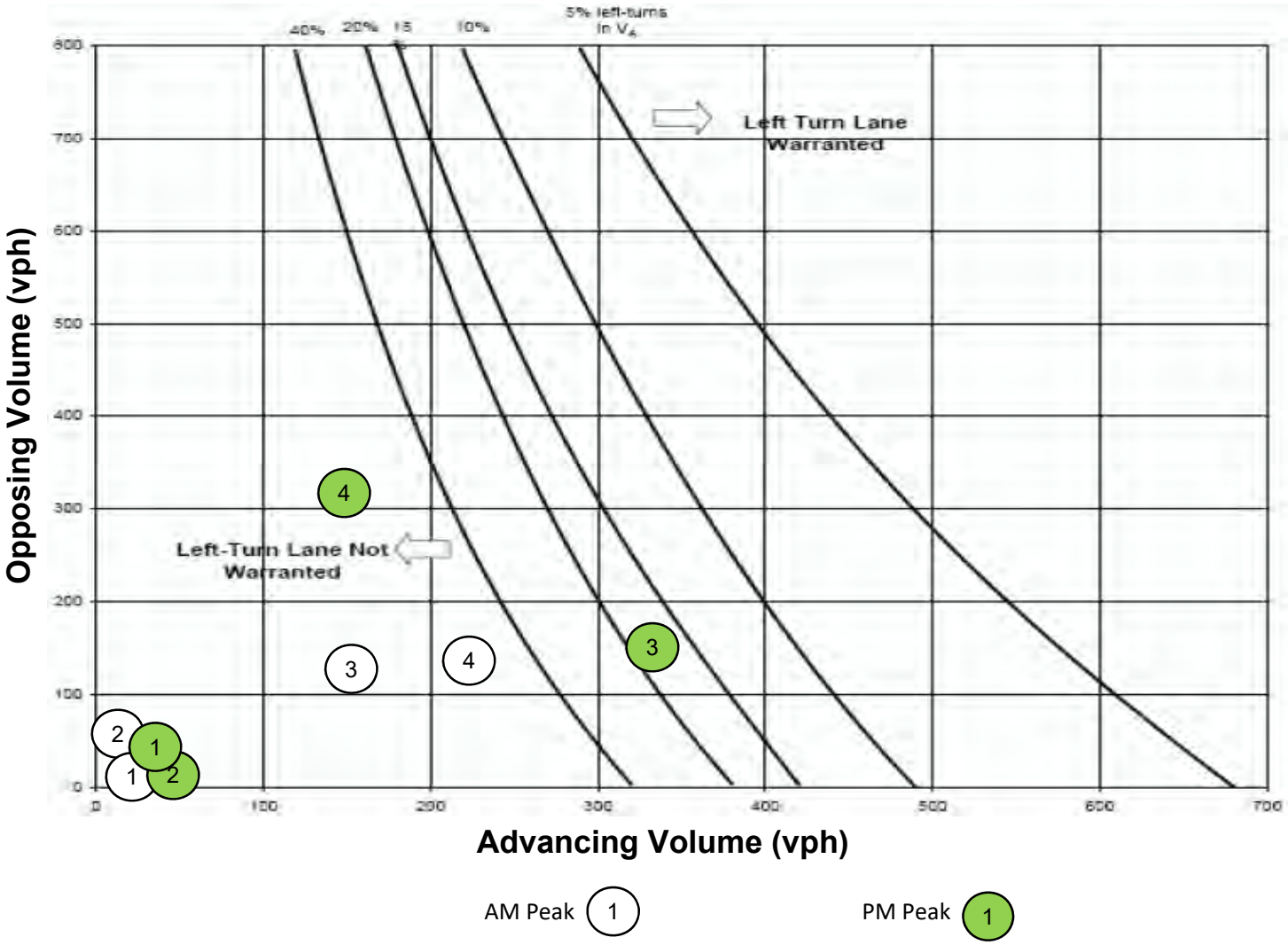
Intersection	Approach	Speed Limit (mph)	Peak Hour	Advancing Volume (vph)	Opposing Volume (vph)	Left-Turn Volume (%)	Meet Warrant?
(1) Hubbard Road and Locust Grove Road	EB	50	AM	32	3	40%	No
			PM	14	13	44%	No
(2) Hubbard Road and Locust Grove Road	WB	50	AM	3	19	0%	No
			PM	23	8	43%	No



Deer Flat Subdivision
ACHD Left-Turn Lane Analysis - 50 mph Two-Lane Road

2025 Total Traffic

Intersection	Approach	Speed Limit (mph)	Peak Hour	Advancing Volume (vph)	Opposing Volume (vph)	Left-Turn Volume (%)	Meet Warrant?
1 Hubbard Road and Locust Grove Road	EB	50	AM	32	3	40%	No
			PM	14	13	44%	No
2 Hubbard Road and Locust Grove Road	WB	50	AM	4	19	23%	No
			PM	27	8	51%	No
3 West Access and Deer Flat Road	WB	50	AM	159	221	0%	No
			PM	318	153	0%	No
4 East Access and Deer Flat Road	EB	50	AM	220	117	8%	No
			PM	149	305	35%	No



LANDSCAPE NOTES:

1. REGULATIONS & STANDARDS
   - 1.1. All contractor work shall be conducted in accordance with ISPWC (Idaho Standard Public Works Construction), 2015, and Kuna, ID codes, standards and state and local regulations.
2. EXISTING CONDITIONS
   - 2.1. All utilities shall be located prior to construction and protected. Any damage to structures, utilities or concrete will be replaced at contractor's expense.
   - 2.2. The site has many existing improvements such as underground utilities, curb and gutter, light poles and sidewalks.
   - 2.3. See Engineer's plans for information about existing features, all drainage pipes and locations. Protect and retain drainage at all times.
3. GRADING & SITE PREPARATION
   - 3.1. Prepare finish grades for planting by grubbing and removing weeds. If necessary apply Round-Up (or equivalent herbicide), using a certified applicator. Remove rocks and other materials over 2".
   - 3.2. All gravel overprep to be removed and disposed of off site.
   - 3.3. Finish grade to be smooth transition to allow for entire site to be a natural flowing space.
   - 3.4. Refer to Engineer's plans for grading information & for all drainage pipes and locations. Protect and retain drainage at all times.
   - 3.5. No pooling or standing water will be accepted per industry standards.
4. SOILS
   - 4.1. All planter beds to receive a minimum of 18" depth of screened topsoil. Spread, compact, and fine grade to smooth and uniform grade 2.5" below adjacent surfaces.
   - 4.2. All lawn areas to receive a minimum of 12" depth of screened topsoil. Spread, compact, and fine grade topsoil to a smooth uniform grade 1" below adjacent surfaces.
   - 4.3. Reuse of existing topsoil that has been stockpiled on site is permitted if:
     - 4.3.1. Topsoil is tested and analyzed to ensure a proper growing medium. Provide additional amendments as determined by soil tests. And
     - 4.3.2. Topsoil is to be loose, friable sandy loam that is clean and free of toxic materials, noxious weeds, weed seeds, rocks, grass or other foreign materials.
     - 4.3.3. Topsoil should have a pH of 6.5 to 8.
     - 4.3.4. If on site topsoil does not meet these minimum standards contractor is responsible for providing approved imported topsoil or improving onsite topsoil per the approval of the project manager.
   - 4.4. If imported topsoil is used it must be from a local source and be screened free of any debris or foreign matter. Topsoil must not contain rocks, sticks, lumps, or toxic matter.
   - 4.5. Smooth, compact, and fine grade topsoil in lawn areas to smooth and uniform grade .5" below adjacent surfaces.
   - 4.6. Prepare finish grade of topsoil to elevations set by Engineer's plans with positive drainage away from structures. Refer to Civil Engineer's plans for grading information.
   - 4.7. Amend all new plantings with 2 parts topsoil and 1 part compost.
5. PLANTER BED MULCH
   - 5.1. All planter beds to receive 3" depth of black and tan mini rock mulch, or approved other. Install over commercial grade weed barrier fabric per manufacturer recommendations.
6. LAWN AREAS
   - 6.1. Sod, to be tall turf-type fescue or approved equal per approved by Owner.
   - 6.2. All lawn areas to have cut edge.
7. PLANTS
   - 7.1. All plant material shall be installed per industry standards.
   - 7.2. All plant material shall meet or exceed the minimum federal standards as regulated by ANSI Z60.1, American Standard for Nursery Stock. Plants not meeting these standards for quality, or plants determined to be unhealthy by Owner's representative, will be rejected.
   - 7.3. All trees and shrubs to be installed per details.
   - 7.4. Fertilize all trees and shrubs with 'Agriform' planting tablets or approved equal. Apply per manufacturers recommendations.
   - 7.5. All plants shall adhere to plant schedule, species & sizes. Any necessary substitutions due to availability or alternatives shall be coordinated to the landscape architect via submittal.
8. IRRIGATION
   - 8.1. Irrigation system shall be built to the following specifications:
     - 8.1.1. Adhere to city codes when connecting to city water.
     - 8.1.2. All irrigation material to be new with manufacturers' warranty fully intact.
   - 8.2. All remote control valves (including master control valve) to have flow control device.
   - 8.3. Install indoor rated controller. Coordinate with general contractor on exact location.
   - 8.4. Controller to include On/Off rain switch or other rain shut off device that does not alter program.
   - 8.5. Irrigation system piping to be minimum class 200 PVC or approved equal, sleeves to be double the size of pipes located within, all wires to be contained in separate sleeves 1-1/2" dia min.
   - 8.6. Use common trenching where possible.
   - 8.7. All PVC located under hardscapes to be schedule 40 PVC with same req's as above.
   - 8.8. All mainline pipe and wires to be buried a minimum of 18" and all lateral piping to be buried a minimum of 12" below grade.
   - 8.9. All wires to be 14 gauge direct bury wire at a minimum. Size wire for correct voltage loss.
   - 8.10. Supply a minimum of (2) spare wires to furthest valves from controller in all directions.
   - 8.11. Sprinkler heads shall have a matched precipitation within each control circuit. Velocities shall not exceed 5 feet per second.
   - 8.12. Contractor is responsible complying with all codes and paying all permits necessary.
   - 8.13. Sprinkler heads shall have matched precipitation within each control circuit. Velocities shall not exceed 5 feet per second.
9. CONTRACTOR RESPONSIBILITIES
   - 9.1. Contractor is responsible for 1 year of maintenance starting at the final date of acceptance by owner.
   - 9.2. Estimated quantities are shown for general reference only. Contractor shall be responsible for all quantity estimates.
   - 9.3. All plant material and workmanship shall be guaranteed for a period of one year beginning at the date of Acceptance by Owner. Replace all dead or unhealthy plant material immediately with same type and size at no cost to Owner.
   - 9.4. Landscape contractor to turn in as built drawings at the end of project. Substantial completion will not be granted until 2 copies @ 1"=30' scale are turned in and approved by owner's representative.
10. In the event of a discrepancy, notify the General Contractor.

LANDSCAPE REQUIREMENTS:

(PER KUNA MUNICIPAL CODE)

SCREENING & BUFFERING:
STREET LANDSCAPE BUFFER:
* (2) 2"-CAL TREE PER 100 LF
* (3) 6'-7' MIN HEIGHT EVERGREEN TREES PER 100 LF
* (12) 2 GALLON POT MINIMUM SHRUBS PER 100 LF

STREET	LENGTH (MINUS CURB CUTS)	DECID TREES REQ./PROVIDED	EVGRN TREES REQ./PROVIDED	SHRUBS REQ./PROVIDED
• DEER FLAT RD	1,145'	23/23	33/33	137/142
• S STROEBEL RD	1,160'	24/24	36/36	139/141
• N LUGARNO AVE (WEST)	115'	2/2	3/3	14/15
• N LUGARNO AVE (EAST)	115'	2/2	3/3	14/15
• E RYDE ST	410'	8/8	12/12	49/75
• E MANLY ST (NORTH)	105'	2/2	3/3	12/12
• E MANLY ST (SOUTH)	105'	2/2	3/3	12/12
• E CONCORD ST (NORTH)	105'	2/2	3/3	12/13
• E CONCORD ST (SOUTH)	105'	2/2	3/3	12/13
• N HORTDALE AVE (WEST)	105'	2/2	3/3	12/13
• N HORTDALE AVE (EAST)	105'	2/2	3/3	12/13
• E SYLVANIA ST	410'	8/8	12/12	49/75
• E BEXLEY ST (NORTH)	105'	2/2	3/3	12/15
• E BEXLEY ST (SOUTH)	105'	2/2	3/3	12/13

COMMON LOT LANDSCAPING:
*1 TREE PER 1,000 SF

COMMON LOT	AREA (SF)	TREES REQUIRED	TREES PROVIDED
• BLOCK 2/L-15	4,042	4	4
• BLOCK 3/L-9	4,400	4	4
• BLOCK 4/L-1	29,425	29	30
• BLOCK 4/L-4	45,033	45	45
• BLOCK 5/L-5	10,000	10	10
• BLOCK 8/L-5	10,000	10	10
• BLOCK 10/L-9	4,800	5	5

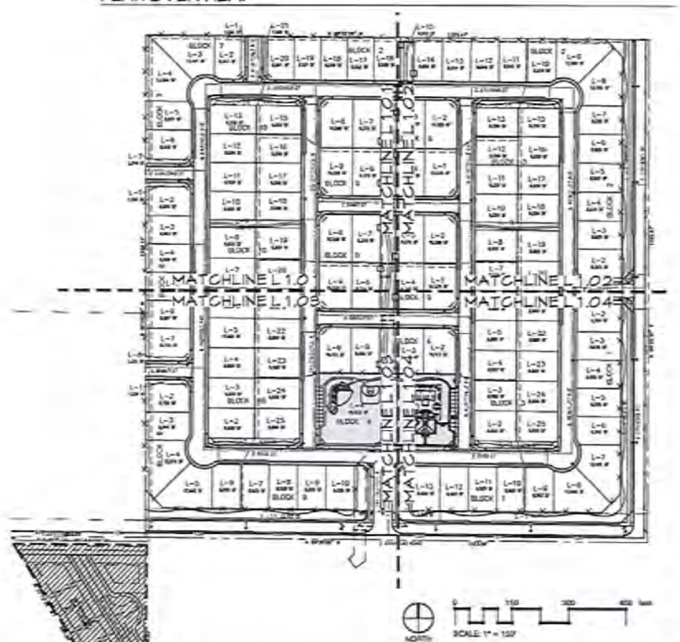
GENERAL REQUIREMENTS:
TREE SIZING:
- SHADE TREES: MIN 2" CAL, B&B
- ORNAMENTAL TREES: MIN 2" CAL, B&B
- CONIFER TREES: MIN 6' H, B&B

SHRUB SIZING:
- WOODY SHRUBS: 2 GAL

PLANT SCHEDULE

TREES	BOTANICAL NAME / COMMON NAME	CONT	CAL	SIZE	QTY	REMARKS
	Acer x freemanii 'Jeffersred' / Autumn Blaze Maple	B&B	2"		28	50'h x 40'w
	Fraxinus pennsylvanica 'Patmore' / 'Patmore' Green Ash	B & B	2"		20	40'h x 20'w
	Gleditsia triacanthos inermis 'Shademaster' TM / Shademaster Locust	B & B	2"		14	50'h x 30'w
	Liquidambar styraciflua 'Worplesdon' / Worplesdon Sweet Gum	B & B	2"		21	40'h x 25'w
	Picea omorika 'Bruns' / Bruns Spruce	B&B		6'-7' H	79	30'h x 10'w
	Pinus flexilis 'Vanderwolf's Pyramid' / Vanderwolf's Pyramid Pine	B & B		6'-7' H	44	25'h x 12'w
	Prunus virginiana 'Canada Red' / Canada Red Cherry	B & B	2"		50	25'h x 20'w
	Quercus robur x alba 'Crimson Spire' / Crimson Spire Oak	B & B	2"		43	40'h x 20'w
	Tilia americana 'Redmond' / Redmond American Linden	B & B	2"		19	50'h x 30'w
SHRUBS	BOTANICAL NAME / COMMON NAME	CONT			QTY	REMARKS
	Euonymus fortunei 'Emerald 'n Gold' TM / Wintercreeper	2 gal			137	2'h x 5'w
	Perovskia atriplicifolia 'Blue Spires' / Russian Sage	2 gal			261	4'h x 4'w
	Prunus laurocerasus 'Otto Luyken' / Otto Luykens English Laurel	3 gal			44	3'h x 6'w
	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	5 gal			114	2'h x 6'w

PLAN OVERVIEW:



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PRELIMINARY

STATE OF IDAHO — MILLET G HOWARD — LA-18733 — LICENSED LANDSCAPE ARCHITECT

NOT FOR CONSTRUCTION

LUGARNO TERRA SUBDIVISION

KUNA, ID

REVISIONS:

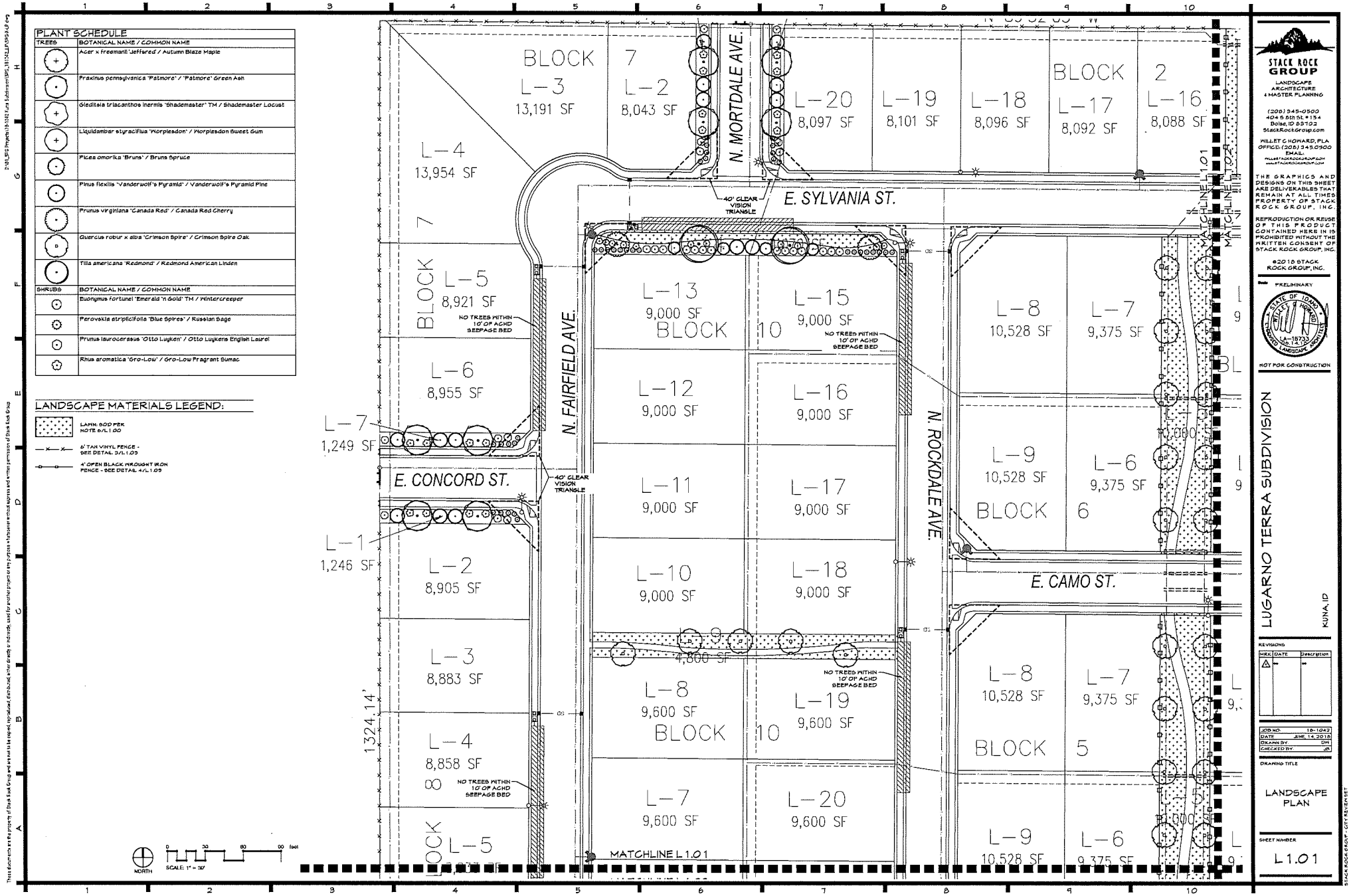
REV	DATE	Description
△	–	–

JOB NO:	18-1042
DATE:	JUNE 14, 2018
DRAWN BY:	DH
CHECKED BY:	JH

DRAWING TITLE
LANDSCAPE OVERVIEW

SHEET NUMBER
L1.00

Exhibit B7


PLANT SCHEDULE
TREES
BOTANICAL NAME / COMMON NAME
Acer x freemanii 'Jeffered' / Autumn Blaze Maple
Fraxinus pennsylvanica 'Patmore' / 'Patmore' Green Ash
Gleditsia triacanthos inermis 'Shademaster' TM / Shademaster Locust
Liquidambar styraciflua 'Worplesdon' / Worplesdon Sweet Gum
Picea omorika 'Bruns' / Bruns Spruce
Pinus flexilis 'Vanderwolf's Pyramid' / Vanderwolf's Pyramid Pine
Prunus virginiana 'Canada Red' / Canada Red Cherry
Quercus robur x alba 'Crimson Spire' / Crimson Spire Oak
Tilia americana 'Redmond' / Redmond American Linden
SHRUBS
BOTANICAL NAME / COMMON NAME
Euonymus fortunei 'Emerald 'n Gold' TM / Wintercreeper
Perovskia atriplicifolia 'Blue Spires' / Russian Sage
Prunus laurocerasus 'Otto Luyken' / Otto Luykens English Laurel
Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac
LANDSCAPE MATERIALS LEGEND:
LAWN: SOD PER NOTE 6/L1.00
6' TAN VINYL FENCE - SEE DETAIL 3/L1.09
4' OPEN BLACK WROUGHT IRON FENCE - SEE DETAIL 4/L1.09
BLOCK 7
L-3 13,191 SF
L-2 8,043 SF
L-20 8,097 SF
L-19 8,101 SF
L-18 8,096 SF
BLOCK 2
L-17 8,092 SF
L-16 8,088 SF
L-4 13,954 SF
N. MORTDALE AVE.
40' CLEAR VISION TRIANGLE
E. SYLVANIA ST.
MATCHLINE L1.01
BLOCK 7
L-5 8,921 SF
L-6 8,955 SF
L-7 1,249 SF
N. FAIRFIELD AVE.
NO TREES WITHIN 10' OF ACHD SEEPAGE BED
L-13 9,000 SF
L-15 9,000 SF
BLOCK 10
L-12 9,000 SF
L-16 9,000 SF
L-11 9,000 SF
L-17 9,000 SF
L-10 9,000 SF
L-18 9,000 SF
L-8 10,528 SF
L-7 9,375 SF
L-9 10,528 SF
L-6 9,375 SF
BLOCK 6
E. CONCORD ST.
40' CLEAR VISION TRIANGLE
N. ROCKDALE AVE.
E. CAMO ST.
L-1 1,246 SF
L-2 8,905 SF
L-3 8,883 SF
1324.14'
L-4 8,858 SF
L-8 9,600 SF
L-19 9,600 SF
BLOCK 10
L-7 9,600 SF
L-20 9,600 SF
L-8 10,528 SF
L-7 9,375 SF
BLOCK 5
L-9 10,528 SF
L-6 9,375 SF
MATCHLINE L1.01
NORTH
SCALE: 1" = 30'
0 30 60 90 feet
STACK ROCK GROUP
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STATE OF IDAHO MILLETT HOWARD LA-18733 No 14.19 LICENSED LANDSCAPE ARCHITECT
NOT FOR CONSTRUCTION
LUGARNO TERRA SUBDIVISION
KUNA, ID
REVISIONS
MRK DATE Description
JOB NO: 18-1042
DATE: JUNE, 14, 2018
DRAWN BY: DM
CHECKED BY: JH
DRAWING TITLE
LANDSCAPE PLAN
SHEET NUMBER
L1.01

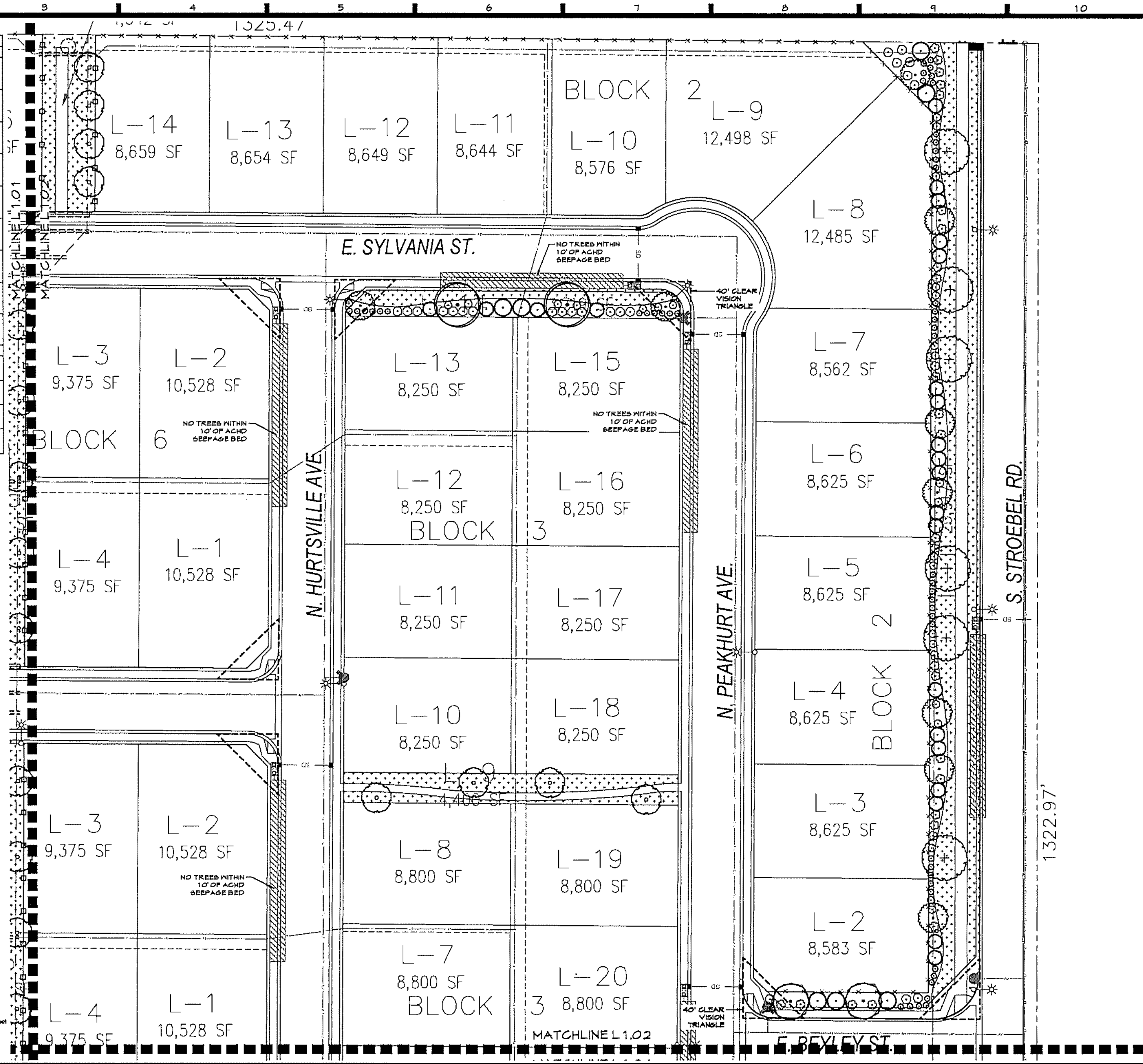
PLANT SCHEDULE

TREES	BOTANICAL NAME / COMMON NAME
	Acer x freemanii 'Jeffersred' / Autumn Blaze Maple
	Fraxinus pennsylvanica 'Patmore' / 'Patmore' Green Ash
	Gleditsia triacanthos inermis 'Shademaster' TM / Shademaster Locust
	Liquidambar styraciflua 'Worplesdon' / Worplesdon Sweet Gum
	Picea omorika 'Bruns' / Bruns Spruce
	Pinus flexilis 'Vanderwolf's Pyramid' / Vanderwolf's Pyramid Pine
	Prunus virginiana 'Canada Red' / Canada Red Cherry
	Quercus robur x alba 'Crimson Spire' / Crimson Spire Oak
	Tilia americana 'Redmond' / Redmond American Linden
SHRUBS	**BOTANICAL NAME / COMMON NAME**
	Euonymus fortunei 'Emerald 'n Gold' TM / Wintercreeper
	Perovskia atriplicifolia 'Blue Spires' / Russian Sage
	Prunus laurocerasus 'Otto Luyken' / Otto Luykens English Laurel
	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac

LANDSCAPE MATERIALS LEGEND:

- LAWN: SOD PER NOTE 6/L1.00
- 6' TAN VINYL FENCE - SEE DETAIL 3/L1.05
- 4' OPEN BLACK WROUGHT IRON FENCE - SEE DETAIL 4/L1.05

NORTH SCALE: 1" = 30' (0, 30, 60, 90 feet)



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PRELIMINARY

STATE OF IDAHO · WILLET C HOWARD · LA-18733 · LICENSED LANDSCAPE ARCHITECT

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LUGARNO TERRA SUBDIVISION

KUNA, ID

REVISIONS

MRK	DATE	Description
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JOB NO.	18-1042
DATE	JUNE, 14, 2018
DRAWN BY	DW
CHECKED BY	JB

DRAWING TITLE

LANDSCAPE PLAN

SHEET NUMBER

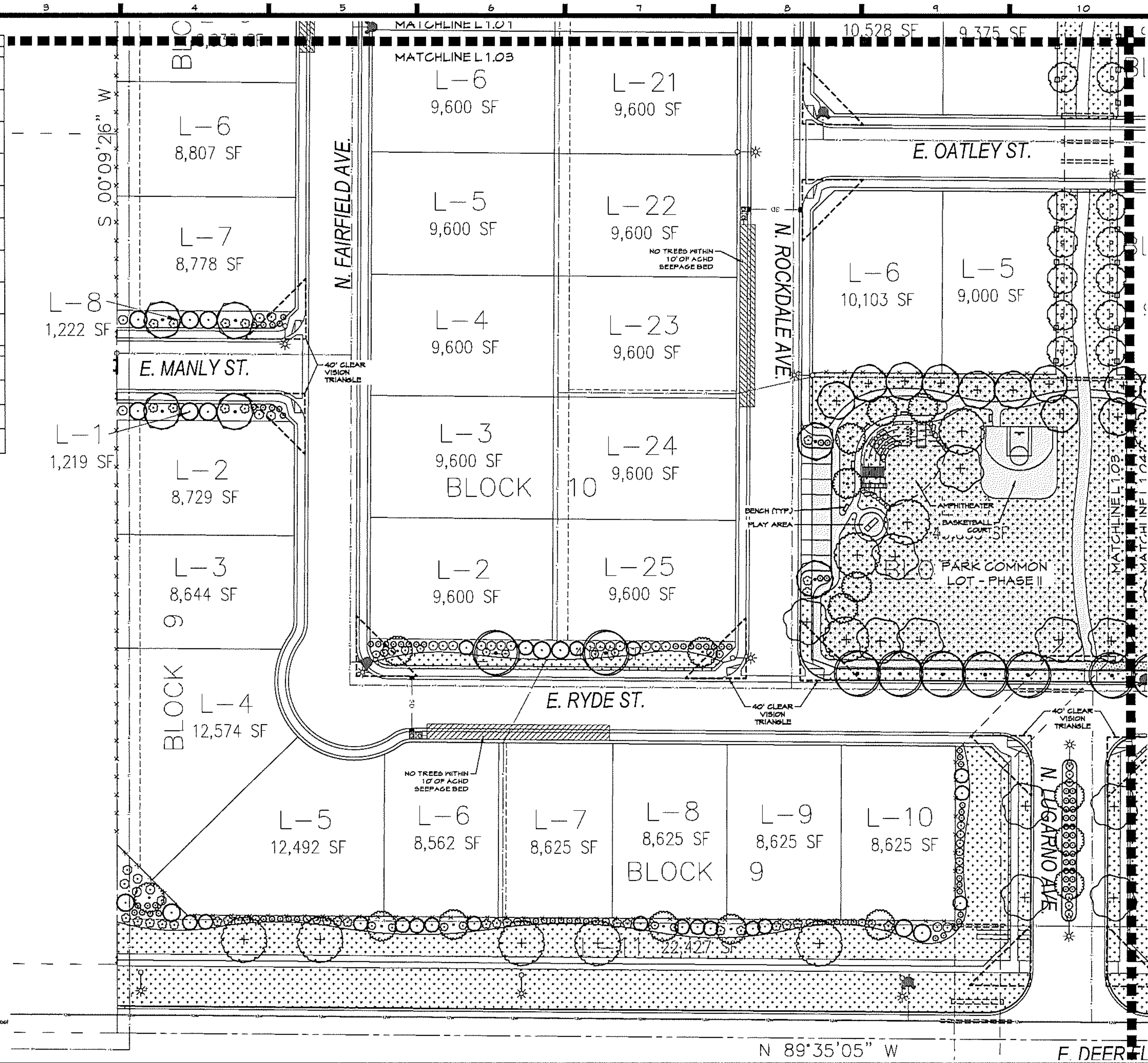
L1.02

PLANT SCHEDULE

TREES	BOTANICAL NAME / COMMON NAME
	Acer x freemanii 'Jeffersred' / Autumn Blaze Maple
	Fraxinus pennsylvanica 'Patmore' / 'Patmore' Green Ash
	Gleditsia triacanthos inermis 'Shademaster' TM / Shademaster Locust
	Liquidambar styraciflua 'Worplesdon' / Worplesdon Sweet Gum
	Picea omorika 'Bruns' / Bruns Spruce
	Pinus flexilis 'Vanderwolf's Pyramid' / Vanderwolf's Pyramid Pine
	Prunus virginiana 'Canada Red' / Canada Red Cherry
	Quercus robur x alba 'Crimson Spire' / Crimson Spire Oak
	Tilia americana 'Redmond' / Redmond American Linden
SHRUBS	**BOTANICAL NAME / COMMON NAME**
	Euonymus fortunei 'Emerald 'n Gold' TM / Wintercreeper
	Perovskia atriplicifolia 'Blue Spires' / Russian Sage
	Prunus laurocerasus 'Otto Luyken' / Otto Luykens English Laurel
	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac

LANDSCAPE MATERIALS LEGEND:

- LAWN: SOD PER NOTE 6/L1.00
- 6' TAN VINYL FENCE - SEE DETAIL 3/L1.05
- 4' OPEN BLACK WROUGHT IRON FENCE - SEE DETAIL 4/L1.05



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REVISIONS

MRK	DATE	Description
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JOB NO.	16-1042
DATE	JUNE 14, 2016
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CHECKED BY	JH

DRAWING TITLE

LANDSCAPE PLAN

SHEET NUMBER

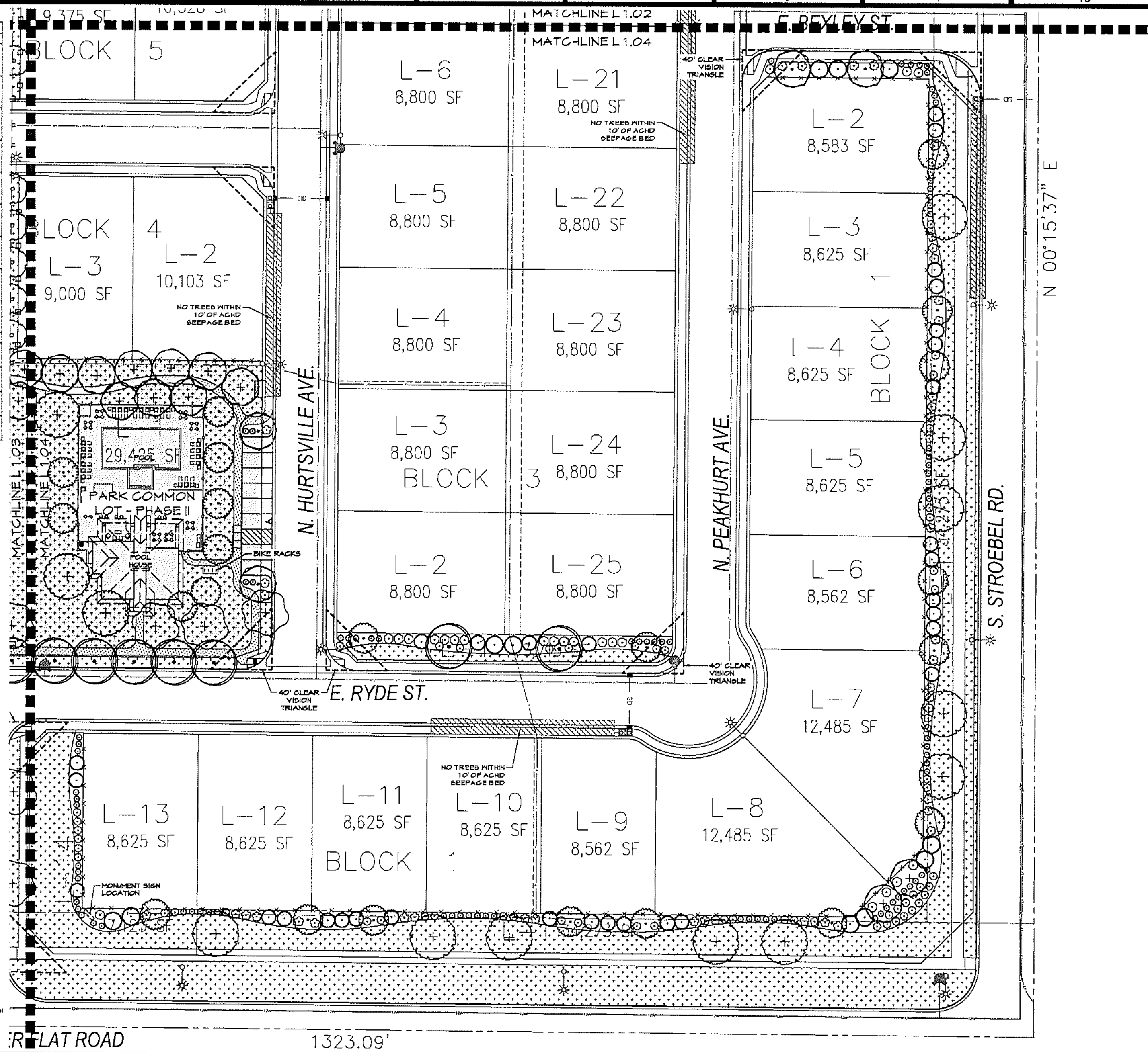
L1.03

PLANT SCHEDULE

	BOTANICAL NAME / COMMON NAME
TREES	
	Acer x freemanii 'Jeffersred' / Autumn Blaze Maple
	Fraxinus pennsylvanica 'Patmore' / 'Patmore' Green Ash
	Gleditsia triacanthos inermis 'Shademaster' TM / Shademaster Locust
	Liquidambar styraciflua 'Worplesdon' / Worplesdon Sweet Gum
	Picea omorika 'Bruns' / Bruns Spruce
	Pinus flexilis 'Vanderwolf's Pyramid' / Vanderwolf's Pyramid Pine
	Prunus virginiana 'Canada Red' / Canada Red Cherry
	Quercus robur x alba 'Crimson Spire' / Crimson Spire Oak
	Tilia americana 'Redmond' / Redmond American Linden
SHRUBS	BOTANICAL NAME / COMMON NAME
	Euonymus fortunei 'Emerald 'n Gold' TM / Wintercreeper
	Perovskia atriplicifolia 'Blue Spires' / Russian Sage
	Prunus laurocerasus 'Otto Luyken' / Otto Luykens English Laurel
	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac

LANDSCAPE MATERIALS LEGEND:

- LAWN: SOD PER NOTE 6/L1.00
- 6' TAN VINYL FENCE - SEE DETAIL 3/L1.05
- 4' OPEN BLACK WROUGHT IRON FENCE - SEE DETAIL 4/L1.05



NORTH

SCALE: 1" = 30'

0 30 60 90 feet

STACK ROCK GROUP

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LUGARNO TERRA SUBDIVISION

KUNA, ID

REVISIONS

MRK	DATE	DESCRIPTION
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JOB NO	18-1042
DATE	JUNE 14, 2018
DRAWN BY	DH
CHECKED BY	JR

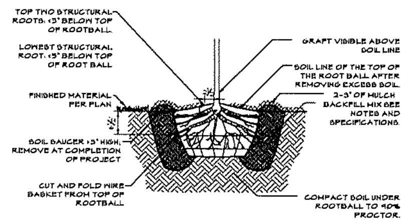
DRAWING TITLE

LANDSCAPE PLAN

SHEET NUMBER

L1.04

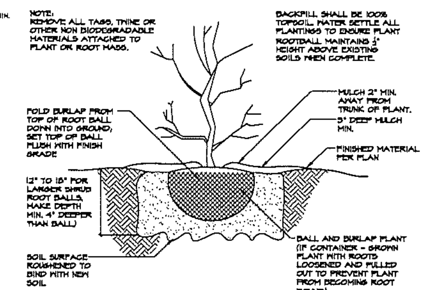
NOTES:
1. DO NOT DAMAGE OR CUT LEADER.
2. DO NOT DISTURB ROOT OR DAMAGE ROOT BALL WHEN INSTALLING TREE OR TREE STAKES.
3. TREE STAKING SHALL BE AT THE DISCRETION OF CONTRACTOR. HOWEVER ANY TREES DISTURBED FROM PLUMB DURING THE PLANT WARRANTEE PERIOD WILL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
4. WATER PLANTS THOROUGHLY IMMEDIATELY AFTER INSTALLATION.
5. REMOVE ALL BURLAP, TWINE, ROPE, OR MATERIAL FROM THE TOP ⅓ OF THE ROOTBALL.
6. 4' DIAMETER PLANTER BED/MULCH RING AROUND THE TRUNK OF THE TREE. 3" OF MULCH MIN. DO NOT PLACE MULCH WITHIN 3" OF TRUNK OF TREE.



(1) BALL AND BURLAP TREE PLANTING
3/4" = 1'-0" 329343.33-04

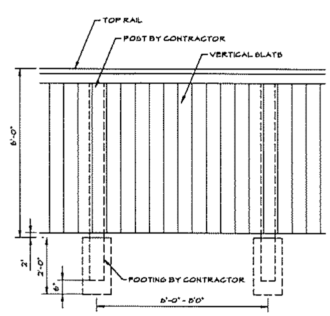
NOTE:
REMOVE ALL TAGS, TWINE OR OTHER NON BIODEGRADABLE MATERIALS ATTACHED TO PLANT OR ROOT MASS.

BACKFILL SHALL BE 100% TOPSOIL. WATER SETTLE ALL PLANTINGS TO ENSURE PLANT ROOTBALL MAINTAINS ½" HEIGHT ABOVE EXISTING SOILS WHEN COMPLETE.



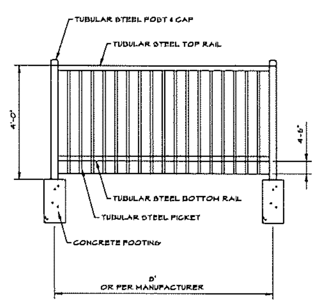
(2) SHRUB PLANTING
1" = 1'-0" 329333.16-01

NOTE:
*FENCE TO BE TAN VINYL, OR OTHER TO BE APPROVED BY OWNER
*POSTS, CONNECTIONS, SLATS & FOOTINGS BY CONTRACTOR



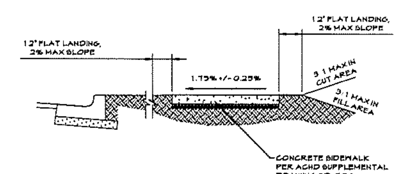
(3) 6' CLOSED VISION FENCE
1/2" = 1'-0" 323129.23-04

NOTE:
*ALL COMPONENTS TO BE BLACK
*INSTALL PER MANUFACTURER RECOMMENDATIONS
*DIMENSIONS TO MATCH EXISTING FENCE ON SITE



(4) TUBULAR STEEL FENCE
1/2" = 1'-0" 323119-04

NOTE:
REFERENCE ACHD SUPPLEMENTAL DRAWING SD-704 & CIVIL DRAWINGS



(5) CONCRETE SIDEWALKS ADJ LANDING- 12"
3/8" = 1'-0" 033361-01

STACK ROCK GROUP
LANDSCAPE ARCHITECTURE & MASTER PLANNING

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PRELIMINARY

STATE OF IDAHO — WILLET C HOWARD — LA-18733 — LICENSED LANDSCAPE ARCHITECT

NOT FOR CONSTRUCTION

LUGARNO TERRA SUBDIVISION

KUNA, ID

REVISIONS

MRK	DATE	Description
△	–	–

JOB NO.	18-1042
DATE	JUNE 14, 2018
DRAWN BY	DW
CHECKED BY	JR

DRAWING TITLE

LANDSCAPE DETAILS

SHEET NUMBER

L1.05