CITY OF KIRKLAND
123 FIFTH AVENUE
KIRKLAND, WA 98033-6189
425.587.3225

Mitigated Determination of Nonsignificance

CASE #: SEP12-00567

DATE ISSUED: May 6, 2013

DESCRIPTION OF PROPOSAL: Proposal to subdivide one parcel of 6.38 acres into 35 lots and a planned unit development in a RSX 7.2 zone. Access to the property will be from an extension of 128th Ave NE from NE 75th ST to NE 80th ST.

APPLICANT: Mike Smith

PROJECT LOCATION: 7707 128TH AVE NE

LEAD AGENCY IS THE CITY OF KIRKLAND

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21.030 (2) (c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request.

This determination is issued under 197-11-340 (2); the lead agency will not act on this proposal for 14 days from the date above. Comments must be submitted by 5:00 p.m. on May 20, 2013

Responsible Official: _____ 5-6-2013

Eric Shields, Director
Department of Planning and Community Development
425-587-3225

Date

Address: City of Kirkland
123 Fifth Avenue
Kirkland, WA 98033-6189

You may appeal this determination to the Planning Department at Kirkland City Hall, 123 Fifth Avenue, Kirkland, WA 98033 no later than 5:00 p.m., May 20, 2013 by WRITTEN NOTICE OF APPEAL.

You should be prepared to make specific factual objections. Contact the Planning Department at 425-587-3225 to read or ask about the procedures for SEPA appeals.

Please reference case # SEP12-00567

Publish in the Seattle Times (date): May 7, 2013

Owner: Toll Bros, Inc

MITIGATING MEASURES INCORPORATED INTO THE PROPOSAL:

1. Install a sidewalk on the east side of the 128th Avenue NE rather than the west side between NE 80th Street and NE 75th Street.
2. Installation of the RRFB at the intersection of NE 80th Street /128th Avenue NE.
3. Install a STOP sign on 128th Avenue NE at NE 75th Street.
4. Install a STOP sign on the south leg of the existing intersection of NE 75th Street/128th Avenue NE.
5. Complete the two small missing sections of sidewalks at the intersection of NE 80th Street/128th Avenue NE with the installation of the RRFB at the NE 80th ST crosswalk.

cc: Case # SUB12-00560

Distributed By: _____ 5/6/13

Date:

Distribute this form with a copy of the checklist to the following:

Attn: Environmental Reviewer
Muckleshoot Indian Tribe Fisheries Division
39015 172nd Avenue SE
Auburn, WA 98092

Director of Support Services Center
Lake Washington School District No. 414
PO Box 97039
Redmond, WA 98073-9739

David B. Johnson and Lillian Cruz
Livengood, Fitzgerald and Alskog PLLC
PO Box 908
Kirkland WA 98083-0908

Owner: Toll Bros, Inc

CITY OF KIRKLAND
Planning and Community Development Department
123 Fifth Avenue, Kirkland, WA 98033
425.587.3225 - www.kirklandwa.gov

MEMORANDUM

To: Eric R. Shields, AICP, SEPA Responsible Official
From: Janice Coogan, Project Planner
Date: May 1, 2013
File: SEP12-00567, SUB12-00560
Subject: ENVIRONMENTAL DETERMINATION FOR PROPOSED C&G PRELIMINARY SUBDIVISION AND PLANNED UNIT DEVELOPMENT at 7707 128th Ave NE

PROPOSAL

Toll Bros LLC proposes a 35 lot preliminary subdivision and planned unit development (PUD) at the above property (see Attachment 1, Plans). The site currently contains one building housing a radio station and related transmission antennas. Access to the lots will be from a dedicated street connection of 128th Avenue NE from NE 75th ST to NE 80th ST and three side vehicular access easements.

The PUD request includes a 10% density bonus of three additional lots and to modify the following Zoning Code regulations:

- Provide smaller lot sizes than the minimum lot size (7,200 sq. ft.) required in the RSX 7.2 zone. Lots range from 4,678-7,863 sq. ft.
- Calculate lot coverage at 50% on a project wide basis rather than per lot
- Calculate floor area ratio on a project wide basis rather than per lot and at a reduced rate of 55%

Pursuant to PUD KZC Chapter 125 requirements and approval criteria, in exchange for the modification requests, the applicant proposes the following benefits that would not be required for a typical subdivision under city codes and regulations:

- Underground storm water vault (could install a drainage pond) with a large grass open space above and recreation amenities (sports court, play equipment, picnic bench) for residents
- Wide landscape buffers at north and south entrances (incorporates some existing trees) and a 6' high wood fence along east and west property lines
- Superior architectural design of homes within the development
- Upgrading the existing crosswalk at the corner of NE 80th ST and 128th Avenue NE to Rose Hill Elementary School by adding a flashing RRFB crosswalk (in response to public comments concerning pedestrian safety along NE 80th ST).

In addition, the applicant requests a modification to the right of way standards of Zoning Code Chapter 110 to reduce the new street pavement width, provide a sidewalk on one side rather than both sides. Street trees would be planted on both sides of the street. To offset this modified street standard and to improve sidewalk connections to the elementary school, the applicant has agreed to extend a sidewalk with landscape strip and street trees from the north property line to NE 80th ST on one side of the street (off site sidewalks are not typically required if a development does not front along adjoining right of way).

ENVIRONMENTAL ISSUES

I have had an opportunity to visit the site, review the environmental checklist (Attachment 4) and supplemental reports. One of the key environmental issues is the potential traffic impacts of the development. Staff has received many public comments related to the potential traffic impacts of the development, whether or not the street should be a through connection or cul de sac, existing traffic speed and pedestrian safety along NE 80th ST and surrounding streets. A traffic impact analysis (TIA) of the development was submitted by the applicant's traffic consultants, Transpo in April 2013 (Attachment 3) and evaluated by the City's traffic engineer (see Attachment 2).

RECOMMENDATION

As a result of the City's evaluation of the TIA, the Public Works Department staff recommends the following improvements be incorporated into the proposal (see Attachment 2). Based on my review of all available information and adopted policies of the City, I agree with Public Works staff that the proposal be revised or clarified to include the following mitigating measures so that a Mitigated Determination of Non-significance (MDNS) can be issued:

1. Install a sidewalk on the east side of the 128th Avenue NE rather than the west side between NE 80th Street and NE 75th Street.
2. Installation of the RRFB at the intersection of NE 80th Street /128th Avenue NE.
3. Install a STOP sign on 128th Avenue NE at NE 75th Street.
4. Install a STOP sign on the south leg of the existing intersection of NE 75th Street/128th Avenue NE.
5. Complete the two small missing sections of sidewalks at the intersection of NE 80th Street/128th Avenue NE with the installation of the RRFB at the NE 80th ST crosswalk.

In addition to the mitigation measures above, the applicant has agreed to connect 128th Avenue NE from the north property line of the development to NE 80th ST and install sidewalks with street trees along one side of the street. The applicant is aware that road and park impact fees are required with each building permit.

It will be necessary to further analyze certain aspects of the proposal to determine if the project complies with all the applicable City codes and policies. That analysis is will be addressed within the staff advisory report, which will be presented at the public hearing. State law specifies that this environmental review under the State Environmental Policy Act (SEPA) is to focus only on potential significant impacts to the environment that could not be adequately mitigated through the Kirkland regulations and Comprehensive Plan.[1]

This recommendation is based on adopted policies of the City as found in the City's Comprehensive Plan. Specifically the following elements of the 2004 Comprehensive Plan contain the following policies:

Transportation

Policy T-1.4: Ensure that there is sufficient right-of-way.

Policy T-2.1: Promote pedestrian and bicycle networks that safely access commercial areas, schools, transit routes, parks, and other destinations within Kirkland and connect to adjacent communities, regional destinations and routes.

[1]ESHB 1724, adopted April 23, 1995

Policy T-2.2: Promote a comprehensive and interconnected network of pedestrian and bike routes within neighborhoods.

Policy T-4.1: Promote efficient use of existing right-of-ways through measures such as:

- Intersection improvements;
- Time-of-day parking restrictions along congested arterials;
- Signal timing optimization;
- Added center left-turn lanes; and
- Limiting left turns along congested arterials.

Policy T-4.3: Maintain a system of arterials, collectors, and local access streets that form an inter-connected network for vehicular circulation.

Policy T-5: Maintain and improve convenient access for emergency vehicles.

Policy T-5.4: Require new development to mitigate site specific transportation impacts.

Policy LU-3.6: Encourage vehicular and nonmotorized connections between adjacent properties.

PS-1.3: Provide a system of streets that facilitates improved emergency response times.

SEPA ENCLOSURES

1. Plans received 4/26/2013
2. Traffic Impact Analysis memo from Thang Nguyen 4/30/2013
3. Transpo Traffic Report April 2013
4. Environmental Checklist

_____

Review by Responsible Official:

_____ I concur _____ I do not concur

Comments:_____

_____

_____

_____

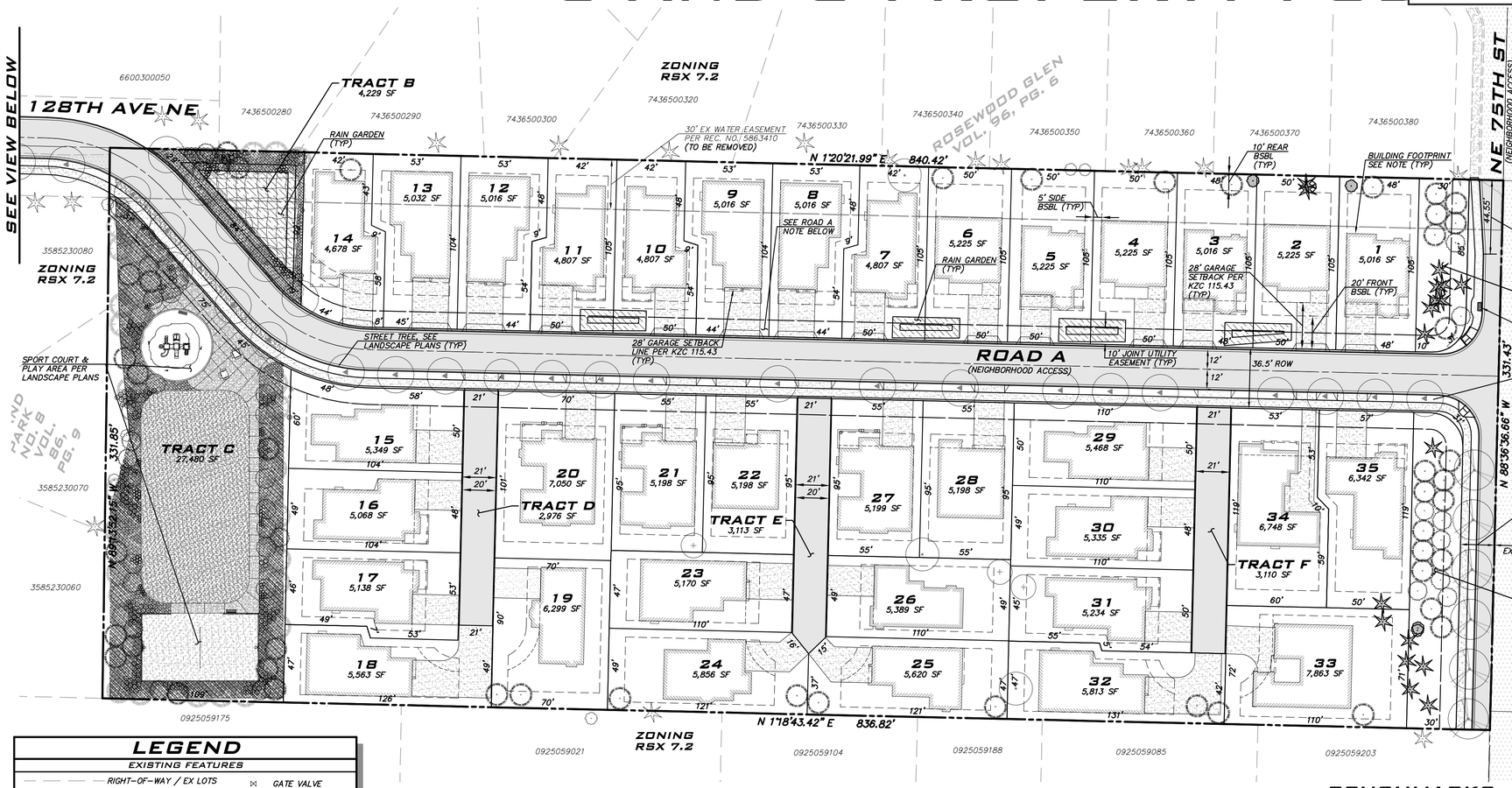
Eric R. Shields, Planning Director ..... Date

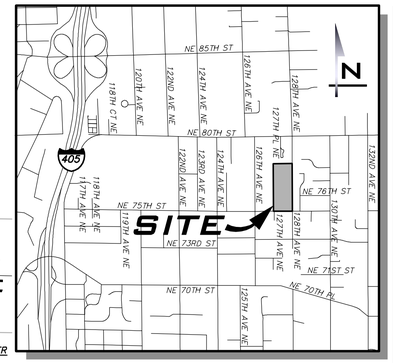
cc: applicant

NE SEC 9, TWP 25N, RGE 5E, W.M.

C AND G PROPERTY PUD

Attachment 1





VICINITY MAP

SCALE: 1"=1,500'

PROJECT TEAM

OWNER
CAMWEST – A TOLL BROTHERS COMPANY
9720 NE 120TH PL, SUITE 100
KIRKLAND, WA 98034
(425) 828–1955
CONTACT: MIKE SMITH

SURVEYOR
MEAD GILMAN & ASSOCIATES
PROFESSIONAL LAND SURVEYORS
P.O. BOX 289
WOODINVILLE, WA 98072
(425) 486–1252
CONTACT: SHANE BARNES, PLS

CIVIL ENGINEER
THE BLUELINE GROUP
25 CENTRAL WAY, SUITE 400
KIRKLAND, WA 98033
(425) 216–4051 x224
CONTACT: TODD OBERG, PE

ARBORIST
WASHINGTON FORESTRY CONSULTANTS, INC
1919 YELM HWY SE
OLYMPIA, WA 98501
(360) 943–1723
CONTACT: GALEN WRIGHT

LANDSCAPE ARCHITECT
THOMAS RENGSTORF ASSOCIATES
911 WESTERN AVE, SUITE 202
SEATTLE, WA 98104
(206) 682–7562
CONTACT: THOMAS RENGSTORF

SITE DATA

PROJECT DESCRIPTION:	35 LOT PUD
ZONING:	RSX 7.2 (LOW DENSITY RESIDENTIAL)
TAX PARCEL NUMBER:	0925059010
SITE ADDRESS:	7707 128TH AVE NE
ADJACENT DEVELOPMENT:	SINGLE FAMILY AND CHURCH PROPERTY
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL
DENSITY:	5.49 DU/AC
GROSS SITE AREA:	278,113 SF (6.38 AC)
PROPOSED ROW AREA (INCLUDES ROW AREA FOR ROAD A, 11,534 SF & ROW DEDICATION AREA FOR NE 74TH ST, 6,794 SF):	38,328 SF (0.88 AC)
NET SITE AREA (GROSS SITE AREA LESS PROPOSED ROW AREA):	239,785 SF (5.50 AC)
ACCESS / UTILITY TRACTS	
TRACT D:	2,976 SF
TRACT E:	3,113 SF
TRACT F:	3,110 SF
TOTAL LOT AREA:	189,822 SF
TOTAL LOTS:	35
SMALLEST LOT SIZE:	4,678 SF (LOT 14)
AVERAGE LOT SIZE:	5,435 SF
SETBACKS:	20' FRONT, 10' REAR, 5' SIDE
SCHOOL DISTRICT:	LAKE WASHINGTON #414
WATER DISTRICT:	CITY OF KIRKLAND
SEWER DISTRICT:	CITY OF KIRKLAND
FIRE:	CITY OF KIRKLAND
TELEPHONE SERVICE PROVIDER:	FRONTIER
ELECTRICAL POWER PROVIDER:	PUGET SOUND ENERGY
CABLE TV PROVIDER:	COMCAST

LEGAL DESCRIPTION

THE EAST HALF OF THE EAST HALF OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 25 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON;

EXCEPT THAT PORTION SOLD TO CORLEY MORTGAGE COMPANY, INC., A WASHINGTON CORPORATION, BY STATUTORY WARRANTY DEED DATED APRIL 1968, DESCRIBED AS THE NORTH 476.28 FEET OF THE EAST HALF OF THE EAST HALF OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 9, TOWNSHIP 25 NORTH, RANGE 5 EAST, W.M., IN KING COUNTY, WASHINGTON;

ALSO EXCEPT THE NORTH 30 FEET FOR ROAD PURPOSES.

SITUATE IN THE CITY OF KIRKLAND, COUNTY OF KING, STATE OF WASHINGTON.

BENCHMARKS

- **ORIGINAL:** CITY OF KIRKLAND CONTROL POINT DESIGNATION 20: FOUND CONC MON WITH 3" BRASS DISC & PUNCH DOWN 1.2' IN A CASE AT INTX. OF 132ND AND 80TH STAMPED WITH SECTIONS "3 4 9 10". ELEV. = 437.17
- **TBM – A:** ROADSIDE CAP BOLT OF FIRE HYDRANT IN SOUTHEAST QUADRANT OF INTX. OF 127TH AVE NE & NE 75TH ST. ELEV. = 450.10
- **TBM – B:** FOUND RAILROAD SPIKE IN SOUTH FACE OF POWER POLE IN NORTHWEST QUADRANT OF INTX. OF 128TH AVE NE AND NE 80TH ST. ELEV. = 430.13

BASIS OF BEARING

BASIS OF BEARINGS IS THE INTERSECTION MONUMENT LOCATED AT NE 75TH STREET AND 129TH AVENUE NORTHEAST AS SHOWN ON THE PLAT OF FIR GLEN ADDITION NO. 2 AS RECORDED IN VOLUME 78 OF PLATS, AT PAGE 20, AND THE CUL–DE–SAC MONUMENT LOCATED AT THE SOUTH END OF 127TH PLACE NORTHEAST AS SHOWN ON THE PLAT OF INLAND PARK NO. 8 AS RECORDED IN VOLUME 86 OF PLATS, AT PAGE 9. A BEARING OF NORTH 18°04'03" WEST WAS HELD BETWEEN THESE MONUMENTS AND A DISTANCE OF 1023.07' WAS MEASURED COMPARED TO THE CALCULATED DISTANCE OF 1022.92'.

DATUM

NAVD 88

SHEET INDEX

TRACT TABLE

TRACT	DESIGNATION	AREA
A	OPEN SPACE	3,054 SF
B	OPEN SPACE	4,229 SF
C	DETENTION / OPEN SPACE	27,480 SF
D	ACCESS / UTILITY	2,976 SF
E	ACCESS / UTILITY	3,113 SF
F	ACCESS / UTILITY	3,110 SF
G	OPEN SPACE	5,613 SF

U. S. POSTAL SERVICE

APPROVED FOR MAILBOX LOCATION(S)

BY: _____
US POSTAL SERVICE

DATE: _____

BUILDING FOOTPRINT NOTE

THE HOMES BUILT ON LOTS WITHIN THE PUD MAY VARY FROM THE FOOTPRINT SHOWN ON THE DRAWINGS FOR A SPECIFIC LOT, DEPENDING ON BUYER PREFERENCES. THERE WILL BE A HOME DESIGN INCLUDED IN THE PRELIMINARY DESIGN PACKAGE INCLUDED WITH THE PUD SUBMITTAL.

UNDERGROUND UTILITY NOTE

UNDERGROUND UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITY LINES ARE SHOWN, OR THAT THE LOCATION, SIZE AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL UNCOVER ALL INDICATED PIPING WHERE CROSSING, INTERFERENCES, OR CONNECTIONS OCCUR PRIOR TO TRENCHING OR EXCAVATION FOR ANY PIPE OR STRUCTURES, TO DETERMINE ACTUAL LOCATIONS, SIZE AND MATERIAL. THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROVISION FOR PROTECTION OF SAID FACILITIES. THE CONTRACTOR SHALL NOTIFY ONE CALL AT 1–800–424–5555 AND ARRANGE FOR FIELD LOCATION OF EXISTING FACILITIES BEFORE CONSTRUCTION.

ROAD A NOTE

MINIMUM 4.5' WIDE PLANTER STRIP ON EAST SIDE OF ROAD WILL BE PROVIDED. STREET TREES AT 30' O.C. WILL BE PROVIDED TO THE MAXIMUM EXTENT FEASIBLE.

NOTE

ALL EXISTING STRUCTURES LOCATED ONSITE ARE TO BE REMOVED UNLESS OTHERWISE NOTED.

LEGEND

EXISTING FEATURES

- RIGHT–OF–WAY / EX LOTS
- CENTERLINE
- EASEMENT
- SURFACE FEATURES
- BUILDING FOOTPRINT
- EDGE OF WETLAND
- 420 10' CONTOURS
- 422 2' CONTOURS
- SD STORM DRAIN PIPE
- SS SEWER MAIN
- W WATER MAIN
- OHP AERIAL POWER LINE
- P BURIED POWER LINE
- G GAS MAIN
- T BURIED TELEPHONE LINE
- X WIRE FENCE
- O CHAINLINK FENCE
- BOARD FENCE
- CATCH BASIN, TYPE I
- CATCH BASIN, TYPE II
- SD PIPE FLOW
- SEWER MANHOLE
- SS PIPE FLOW
- SEWER STUB
- FIRE HYDRANT
- WATER METER
- GATE VALVE
- BLOW OFF
- POWER POLE
- GUY ANCHOR
- P POWER VAULT
- TELEPHONE RISER
- SIGN
- SOIL LOG TEST PIT
- CONIFEROUS TREE
- DECIDUOUS TREE
- CONIFEROUS TREE TO BE SAVED
- DECIDUOUS TREE TO BE SAVED
- ASPHALT
- CONCRETE
- GRAVEL
- WETLAND

PROPOSED FEATURES

- BOUNDARY
- RIGHT–OF–WAY
- LOT LINE
- FLOW & CURB
- CENTER LINE
- SAWCUT
- EASEMENT
- 420 10' PROPOSED CONTOURS
- 422 2' PROPOSED CONTOURS
- STORM DRAIN PIPE
- ROOF & FOOTING DRAIN
- SEWER MAIN
- SEWER SERVICE
- WATER MAIN
- ROCKERY
- CATCH BASIN, TYPE I
- CATCH BASIN, TYPE II
- PIPE FLOW
- STORM CLEANOUT
- YARD DRAIN
- SEWER MANHOLE
- PIPE FLOW
- SEWER CLEANOUT
- WATER METER
- FIRE HYDRANT
- GATE VALVE
- TEE W/ CONC BLOCKING
- COUPLING
- ASPHALT PAVEMENT
- SIDEWALK/DRIVEWAY
- RAIN GARDEN

22x34
April 10, 2013 – 10:33am – User: akay
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CHRISTOPHER SHANE BARNES STATE OF WASHINGTON 35145 REGISTERED PROFESSIONAL LAND SURVEYOR 4/10/13

BLUELINE
25 CENTRAL WAY, SUITE 400, KIRKLAND, WA 98033
P: 425.216.4051, F: 425.216.4052
WWW.THEBLUELINEGROUP.COM

NO	DATE	BY	REVISIONS
1	2/26/13	ADK	REVISE SITE PLAN; UPDATE SITE DATA & PROVIDE LOT DIMS
2	4/10/13	ADK	REVISED PER 2/21/13 CITY OF KIRKLAND COMMENTS; REVISED HYDRANT LOCATIONS

PRELIMINARY SITE PLAN

C AND G PROPERTY PUD

CAMWEST - A TOLL BROTHERS COMPANY

PARCEL NO. 0925059010

CITY OF KIRKLAND WASHINGTON

LLOYD A. OBERG STATE OF WASHINGTON 37408 REGISTERED PROFESSIONAL ENGINEER

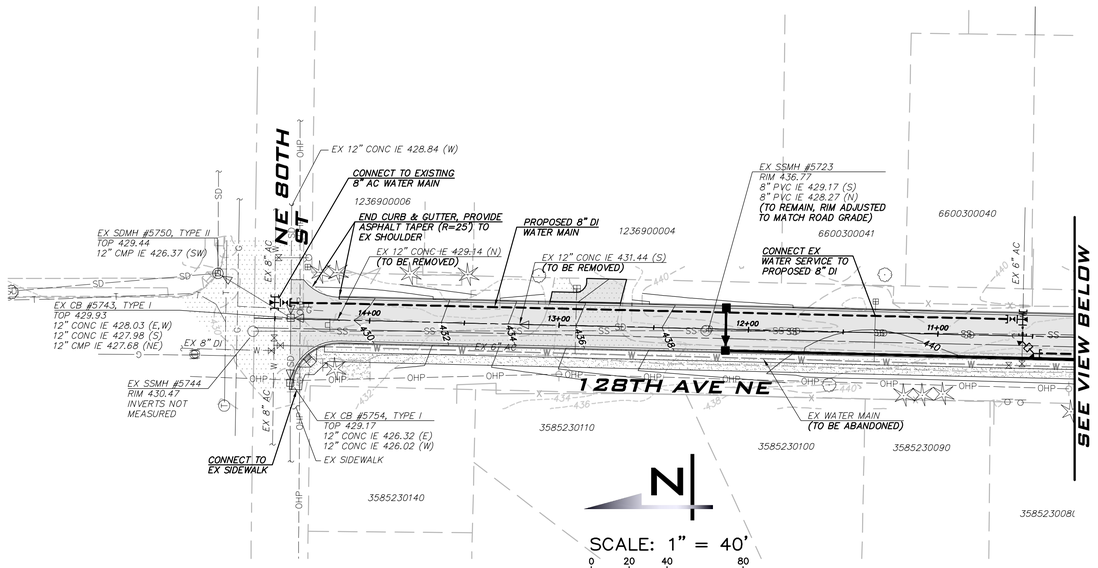
4/10/13

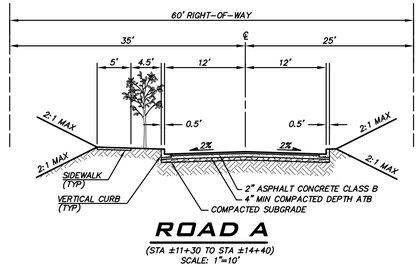
JOB NUMBER: 11-070

SHEET NAME: SP-01

SHT 1 OF 5

NE SEC 9, TWP 25N, RGE 5E, W.M.





ROAD A
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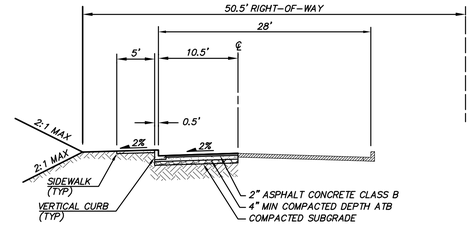
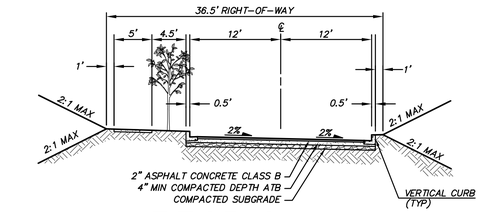


NE 75TH ST
(EAST OF ROAD A)
SCALE: 1"=10'



ROAD A
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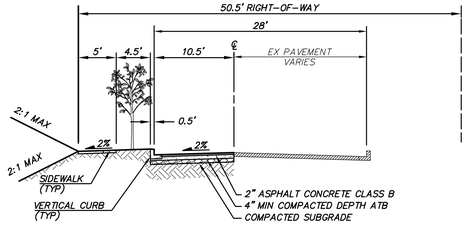

NE 75TH ST
(WEST OF ROAD A)
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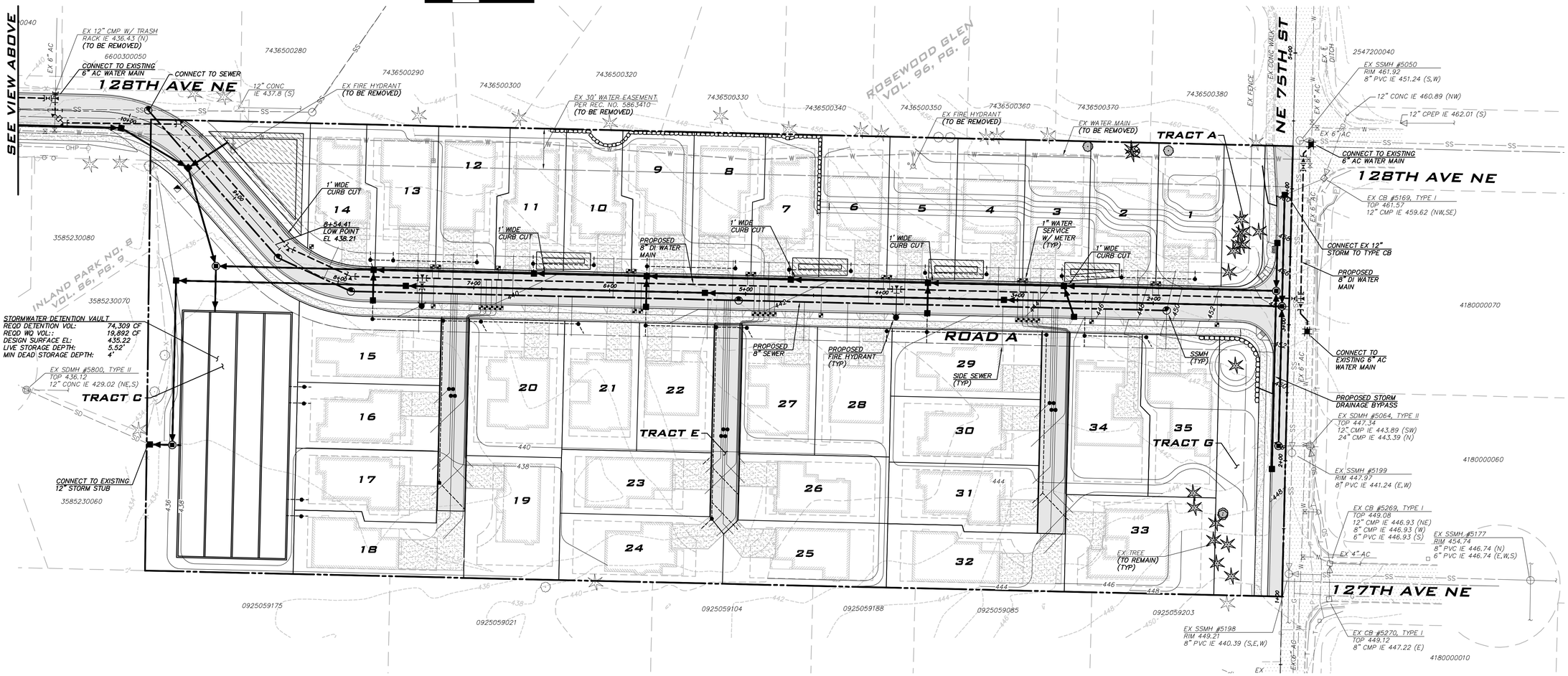

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BLUELINE
25 CENTRAL WAY, SUITE 400, KIRKLAND, WA 98033
P: 425.216.4051 F: 425.216.4052
WWW.BLUELINEGROUP.COM

SCALE: AS NOTED
PROJECT MANAGER: TODD A. OBERG, PE
PROJECT ENGINEER: TODD A. OBERG, PE
DESIGNER: ADAM KAY
ISSUE DATE: 4/10/2013

NO	DATE	BY	REVISIONS
1	2/26/13	ADK	REVISE SITE PLAN; UPDATE SITE DATA & PROVIDE LOT DIMS
2	4/10/13	ADK	REVISED PER 2/21/13 CITY OF KIRKLAND COMMENTS; REVISED HYDRANT LOCATIONS

PRELIMINARY UTILITY PLAN

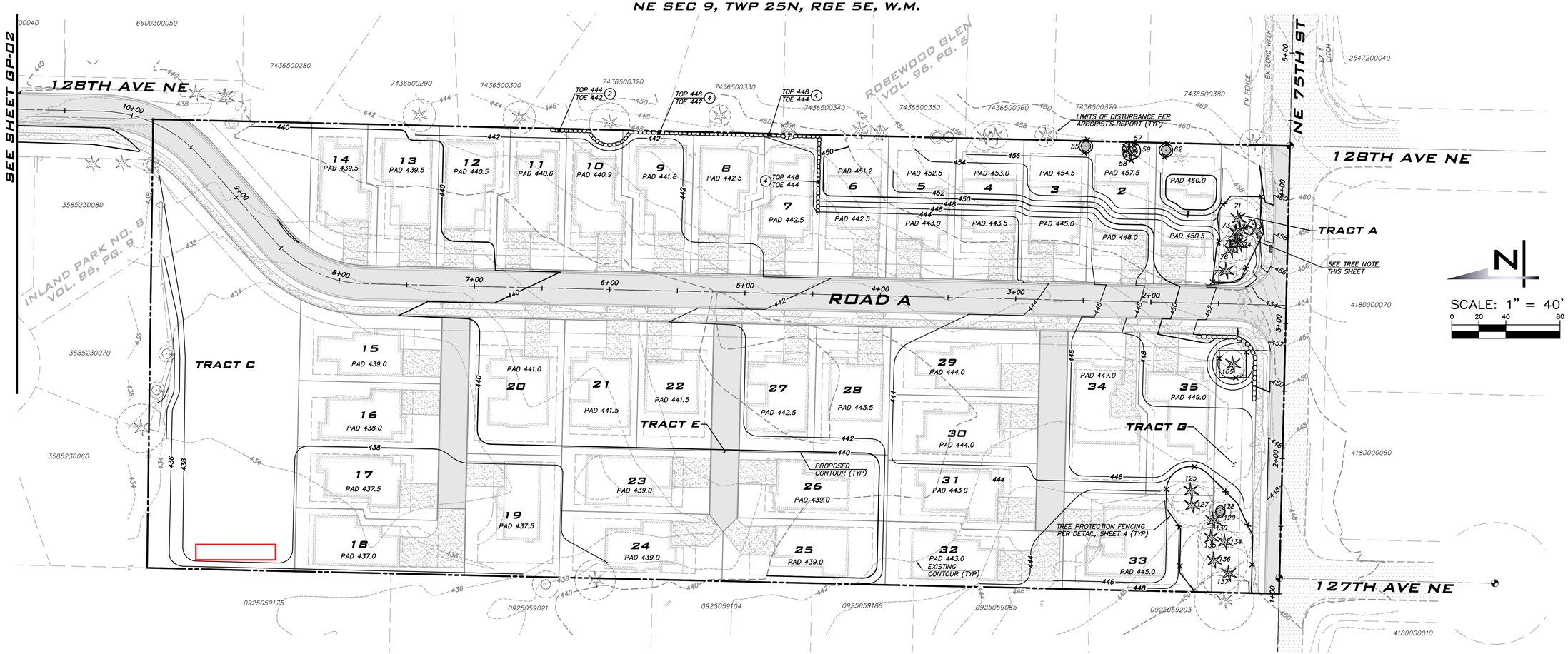
C AND G PROPERTY PUD

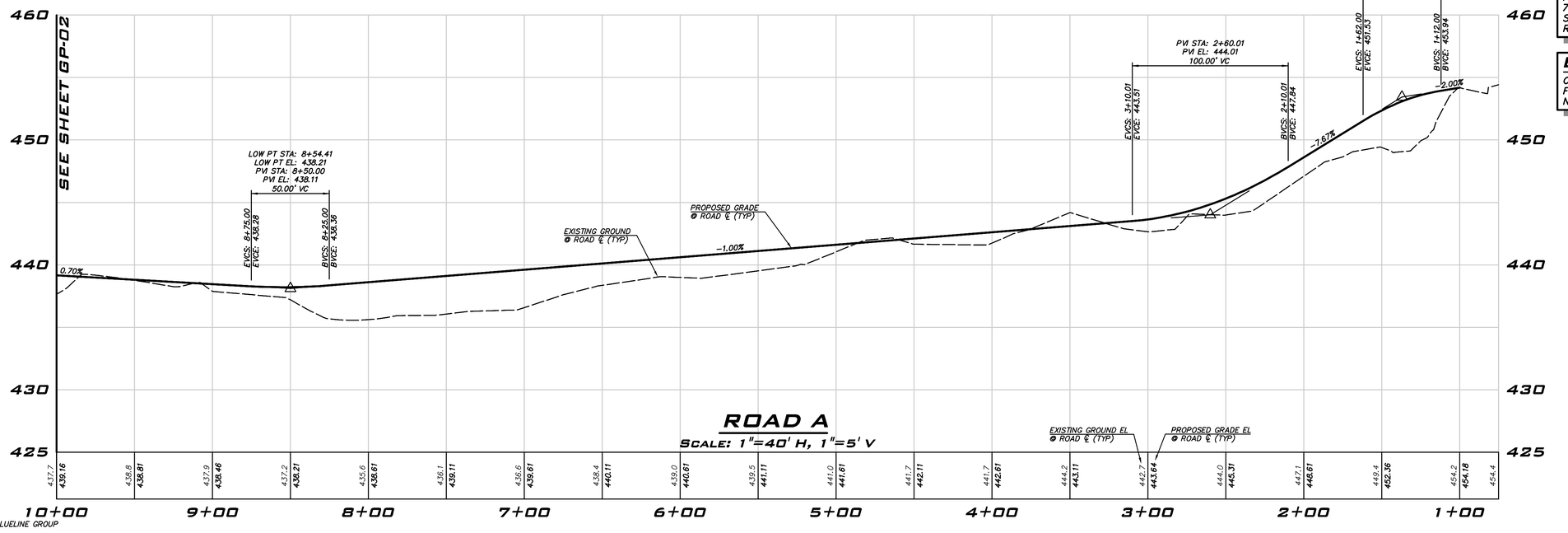
CAMWEST - A TOLL BROTHERS COMPANY
PARCEL NO. 0925059010
CITY OF KIRKLAND WASHINGTON

TODD A. OBERG
STATE OF WASHINGTON
37408
REGISTERED PROFESSIONAL ENGINEER
4/10/13

JOB NUMBER: 11-070
SHEET NAME: UP-01
SHT 2 OF 5

NE SEC 9, TWP 25N, RGE 5E, W.M.





TREE NOTE

FOR GRADING IN THE VICINITY OF TREES 70 THRU 77, ARBORIST SHALL BE ON SITE TO PROVIDE INSTRUCTIONS FOR ROOT PRUNING OF TREES.

EARTHWORK CALCS

CUT: 10,500 CY
FILL: 16,100 CY
NET: 5,600 CY (FILL)

BLUELINE
25 CENTRAL WAY, SUITE 400, KIRKLAND, WA 98033
P: 425.216.8051 F: 425.216.8056
WWW.BLUELINECORP.COM

SCALE: AS NOTED
PROJECT MANAGER: TODD A. OBERG, PE
PROJECT ENGINEER: TODD A. OBERG, PE
DESIGNER: ADAM KAY
ISSUE DATE: 4/10/2013

REVISIONS

NO	DATE	BY	
1	2/26/13	ADK	REVISE SITE PLAN; UPDATE SITE DATA & PROVIDE LOT DIMS
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PRELIMINARY GRADING PLAN

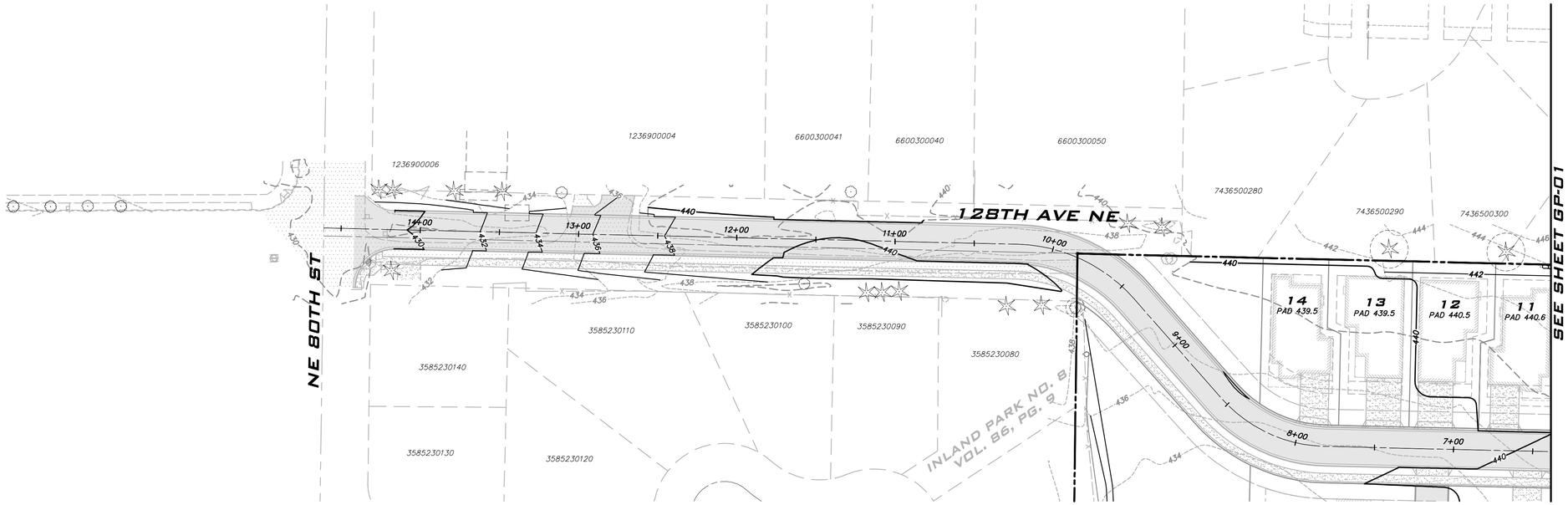
C AND G PROPERTY PUD

CAMWEST - A TOLL BROTHERS COMPANY
PARCEL NO. 0925059010
CITY OF KIRKLAND WASHINGTON

TODD A. OBERG, STATE OF WASHINGTON, 37409, REGISTERED PROFESSIONAL ENGINEER
4/10/13

JOB NUMBER: 11-070
SHEET NAME: GP-01
SHT 3 OF 5

NE SEC 9, TWP 25N, RGE 5E, W.M.



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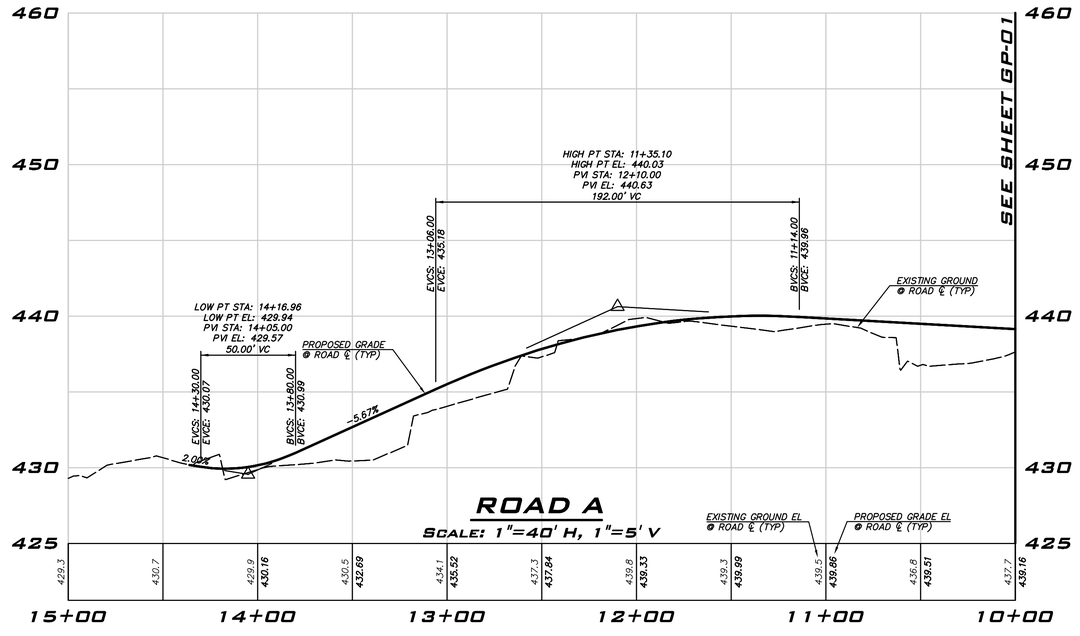

BLUELINE
25 CENTRAL WAY, SUITE 400, KIRKLAND, WA 98033
P: 425.216.4031 F: 425.216.4034
WWW.BLUELINEGROUP.COM

SCALE: AS NOTED
PROJECT MANAGER: TODD A. OBERG, PE
PROJECT ENGINEER: TODD A. OBERG, PE
DESIGNER: ADAM KAY
ISSUE DATE: 4/10/2013

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2	4/10/13	ADK	REVISED PER 2/21/13 CITY OF KIRKLAND COMMENTS; REVISED HYDRANT LOCATIONS

PRELIMINARY GRADING PLAN

C AND G PROPERTY PUD

CAMWEST - A TOLL BROTHERS COMPANY
PARCEL NO. 0925059010
CITY OF KIRKLAND WASHINGTON

TODD A. OBERG STATE OF WASHINGTON 37408 REGISTERED PROFESSIONAL ENGINEER

4/10/13

JOB NUMBER: 11-070
SHEET NAME: GP-02
SHT 4 OF 5

22x34
Apr 10, 2013 – 10:33pm – User: akay
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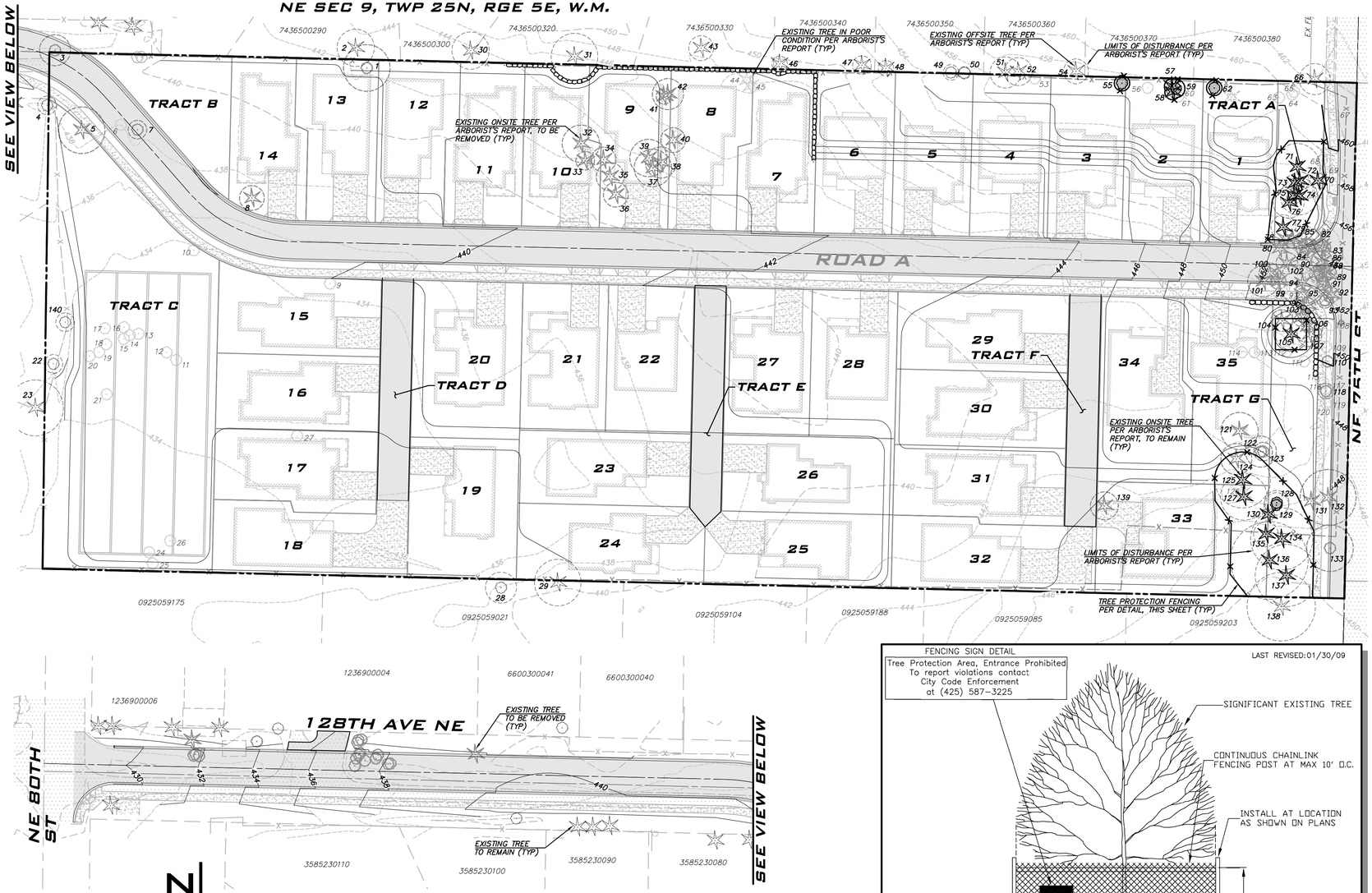
Tree #	Species	DBH (in.)	Condition	Tree Potential to Save*	Project Plan to Save/Remove	Tree Units for Save Trees	Minimum Root Protection Zone if Saved (ft.)	Notes
1	Cottonwood	20	Fair	No	Remove (H)**		15	some root damage from mowing - poor species
2	Western Red Cedar	24	Fair	--	Save	--	12	off site, no tag
3	Cottonwood	18	Fair	--	Save	--	10	off site, no tag
4	Japanese Maple	10	Fair	--	Save	--	6	off site, no tag
5	Douglas-fir	24	Good	Yes	Remove		15	
6	Cherry	8	Very Poor	No	Remove (H)			
7	Cherry	6-8	Fair	Yes	Remove (F)		6	5 stems
8	Western Hemlock	14	Fair	Yes	Remove (F)		8	multi-top
9	Apple	6	Very Poor	No	Remove (H)			
10	Apple	6-7	Poor	No	Remove (H)			3 stems
11	Apple	4-6	Poor	No	Remove (H)			5 stems
12	Apple	3-5	Poor	No	Remove (H)			5 stems
13	Apple	6	Poor	No	Remove (H)			
14	Apple	6	Poor	No	Remove (H)			
15	Apple	6	Poor	No	Remove (H)			
16	Apple	6,7	Poor	No	Remove (H)			
17	Apple	3-5	Poor	No	Remove (H)			
18	Apple	8	Poor	No	Remove (H)			
19	Apple	6	Poor	No	Remove (H)			
20	Apple	3-6	Poor	No	Remove (H)			
21	Apple	5,7	Poor	No	Remove (H)			
22	Flowering Plum	5-7	Fair	Yes	Remove (F)		6	behind fence, no tag
23	Grand Fir	26	Fair	Yes	Save		18	off site, no tag
24	Apple	4-5	Poor	No	Remove (H)			5 stems
25	Apple	4-6	Poor	No	Remove (H)			
26	Apple	6	Poor	No	Remove (H)			
27	Apple	2-6	Poor	No	Remove (H)			
28	Cherry	12,14	Fair	--	Save	--	10	off site, no tag
29	Western Red Cedar	28	Fair	--	Save	--	15	off site, no tag
30	Western Red Cedar	20,22	Fair	--	Save	--	12	off site, no tag
31	Douglas-fir	24	Good	--	Save	--	15	off site, no tag
32	Western Red Cedar	21	Good	Yes	Remove (F)		12	
33	Western Red Cedar	9,10	Fair	Yes	Remove (F)		6	
34	Western Red Cedar	6,14	Fair	Yes	Remove (F)		8	
35	Western Red Cedar	15	Good	Yes	Remove (F)		9	
36	Western Red Cedar	14	Fair	Yes	Remove (F)		8	
37	Western Red Cedar	20	Good	Yes	Remove (F)		12	
38	Western Red Cedar	18	Good	Yes	Remove (F)		10	
39	Western Red Cedar	20	Good	Yes	Remove (F)		12	
40	Western Red Cedar	13	Fair	Yes	Remove (F)		8	
41	Western Red Cedar	6	Fair	Yes	Remove (F)		5	
42	Douglas-fir	18	Good	Yes	Remove (F)		10	
43	Western Hemlock	16	Fair	--	Save	--	8	off site, no tag
44	Western Hemlock	32	Very Poor	No	Remove (H)			hollow at base
45	Western Red Cedar	35	Poor	No	Remove (H)			decay in base
46	Western Red Cedar	6	Fair	--	Save	--	5	off site, no tag
47	Western Hemlock	11	Poor	--	Save	--	6	off site, no tag
48	Western Red Cedar	8	Fair	--	Save	--	5	off site, no tag
49	Cherry	4,6	Fair	--	Save	--	5	off site, no tag
50	Cherry	8	Fair	--	Save	--	4	off site, no tag
51	Western Red Cedar	18	Poor	--	Save	--	10	off site, no tag, multi-top
52	Western Hemlock	16	Poor	--	Save	--	9	off site, no tag, multi-top
53	Bigleaf Maple	7	Poor	No	Remove (H)			offsite, growing into fence
54	Scotch Pine	12	Fair	--	Save	--	8	off site, no tag
55	Pacific Dogwood	6	Fair	Yes	Save	1	5	
56	Cherry	4,6	Poor	No	Remove (H)			
57	Western Red Cedar	8	Fair	Yes	Save	1	5	
58	Western Red Cedar	7	Fair	Yes	Save	1	5	
59	Cherry	9	Fair	Yes	Save	1	6	
60	Madrone	16	Poor	No	Remove (H)			in decline
61	Cherry	8	Poor	No	Remove (H)			
62	Red Alder	7	Fair	Yes	Save	1	5	
63	Red Alder	8	Very Poor	No	Remove (H)			dead top
64	Red Alder	6	Very Poor	No	Remove (H)			dead top
65	Red Alder	6	Very Poor	No	Remove (H)			dead top
66	Douglas-fir	18	Good	--	Save	--	10	off site, no tag
67	Red Alder	9	Poor	No	Remove (H)			in decline, broken top
68	Red Alder	9	Poor	No	Remove (H)			in decline
69	Western Hemlock	6	Poor	No	Remove (H)			
70	Western Red Cedar	9	Good	Yes	Save	1	5	
71	Western Red Cedar	24	Good	Yes	Save	8	15	
72	Western Red Cedar	10	Good	Yes	Save	1	6	
73	Western Red Cedar	10	Good	Yes	Save	1	6	
74	Western Red Cedar	19	Good	Yes	Save	5	12	
75	Western Red Cedar	8	Fair	Yes	Save	1	5	
76	Western Red Cedar	18	Fair	Yes	Save	5	10	
77	Western Red Cedar	12	Fair	Yes	Save	2	8	
78	Cottonwood	27	Fair	Yes	Remove (F)			
79	Western Red Cedar	9	Fair	Yes	Remove (F)		6	
80	Western Red Cedar	6	Fair	Yes	Remove (F)			
81	Cottonwood	6	Very Poor	No	Remove (H)			
82	Western Red Cedar	6	Fair	Yes	Remove (F)		4	
83	Western Red Cedar	8	Fair	Yes	Remove (F)		5	
84	Western Red Cedar	10	Fair	Yes	Remove (F)		6	
85	Western Red Cedar	7	Fair	Yes	Remove (F)		5	
86	Western Red Cedar	10	Good	Yes	Remove (F)		7	
87	Scouler's Willow	6	Very Poor	No	Remove (H)			
88	Western Red Cedar	10	Fair	Yes	Remove (F)		7	
89	Western Red Cedar	10	Fair	Yes	Remove (F)		7	
90	Western Red Cedar	7	Fair	Yes	Remove (F)		5	
91	Western Red Cedar	6	Fair	Yes	Remove (F)		4	
92	Western Red Cedar	8	Fair	Yes	Remove (F)		5	
93	Red Alder	7	Fair	Yes	Remove (F)		5	
94	Douglas-fir	24	Good	Yes	Remove (F)		15	
95	Western Red Cedar	6	Fair	Yes	Remove (F)		4	
96	Western Red Cedar	7	Fair	Yes	Remove (F)		5	
97	Cherry	7	Very Poor	No	Remove (H)			
98	Scouler's Willow	6	Poor	No	Remove (H)			
99	Western Red Cedar	8	Good	Yes	Remove (F)		5	
100	Western Red Cedar	10	Good	Yes	Remove (F)		7	
101	Western Red Cedar	14	Good	Yes	Remove (F)		10	
102	Western Red Cedar	10	Good	Yes	Remove (F)		7	
103	Western Red Cedar	9	Good	Yes	Remove (F)		6	
104	Western Red Cedar	10	Good	Yes	Remove (F)		7	
105	Western Red Cedar	13	Good	Yes	Save		10	
106	Western Red Cedar	18	Good	Yes	Remove (F)		10	
107	Western Red Cedar	12	Fair	Yes	Remove (F)		8	
108	Scouler's Willow	18	Very Poor	No	Remove (H)			severe decay in stem
109	Cherry	14	Very Poor	No	Remove (H)			decay in base
110	Red Alder	11	Fair	Yes	Remove (F)			
111	Cherry	6	Poor	No	Remove (H)			deformed stem
112	Scouler's Willow	6	Poor	No	Remove (H)			
113	Scouler's Willow	9	Poor	No	Remove (H)			decay
114	Scouler's Willow	16	Very Poor	No	Remove (H)			severe decay
115	Red Alder	9	Poor	No	Remove (H)			dead top
116	Red Alder	6	Poor	No	Remove (H)			poor form
117	Red Alder	7	Dead	No	Remove (H)			dead
118	Red Alder	6	Fair	Yes	Remove (F)		5	
119	Red Alder	8	Poor	No	Remove (H)			poor form
120	Red Alder	12	Very Poor	No	Remove (H)			dead top

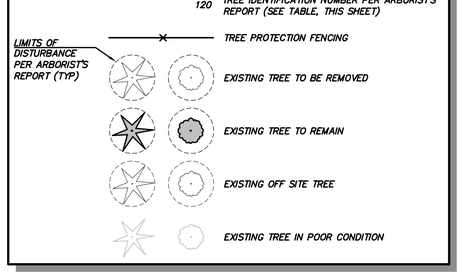


TREE NOTE

FOR GRADING IN THE VICINITY OF TREES 70 THRU 77, ARBORIST SHALL BE ON SITE TO PROVIDE INSTRUCTIONS FOR ROOT PRUNING OF TREES.

TREE DENSITY CALCULATIONS:

VIABLE SIGNIFICANT TREES ONSITE: 122
SURVEYED TREES OFFSITE: 18
NON-VIABLE TREES: 47
TREES TO BE SAVED: 23
VIABLE TREES TO BE REMOVED: 99
NET SITE AREA: 278,113 SF (6.38 ACRES)
REQUIRED MINIMUM TREE DENSITY: 120 TREE CREDITS (4.00 x 30 = 120)
PROVIDED TREE DENSITY: TREE CREDITS (SEE TREE DENSITY CALCULATIONS PROVIDED UNDER SEPERATE COVER.)



Tree #	Species	DBH (in.)	Condition	Tree Potential to Save*	Project Plan to Save/Remove	Tree Units for Save Trees	Minimum Root Protection Zone if Saved (ft.)	Notes
121	Western Red Cedar	18	Good	Yes	Remove (F)		12	
122	Red Alder	16	Fair	Yes	Remove (F)		10	
123	Cherry	9	Fair	Yes	Remove (F)		6	
124	Western Red Cedar	18	Fair	Yes	Remove (F)		10	
125	Western Red Cedar	32	Good	Yes	Save	12	18	
126	Western Hemlock	30	Poor	No	Remove (H)			hollow at base
127	Western Red Cedar	28	Fair	Yes	Save	10	15	
128	Cherry	14	Fair	Yes	Save	3	8	
129	Cherry	11,13	Fair	Yes	Save	3	8	
130	Western Red Cedar	6	Good	Yes	Save	1	4	
131	Douglas-fir	22	Good	Yes	Remove (F)	7	12	
132	Douglas-fir	34	Good	Yes	Remove (F)		18	
133	Bigleaf Maple	26	Fair	--	Remove (F)		15	
134	Western Red Cedar	36	Good	--	Save	14	20	
135	Western Hemlock	13	Fair	--	Save	2	8	
136	Western Red Cedar	42	Good	--	Save	17	25	
137	Western Red Cedar	34	Good	--	Save	13	20	
138	Western Red Cedar	40	Good	--	Save	--	22	Off-site, no tag
139	Western Red Cedar	13	Good	Yes	Remove (F)		9	
140	Flowering Plum	8,9	Fair	--	Remove (F)		6	
	Sum					**111**		

*Based only on physical condition
**Remove (H) = Remove tree for health issues;
***Remove (F) = Remove tree for grading/footprint issues;

NOTES

1. MINIMUM SIX (6) FOOT HIGH TEMPORARY CHAINLINK FENCE SHALL BE PLACED AT THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTURBANCE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE TREE(S). INSTALL FENCE POSTS USING PIER BLOCK ONLY. AVOID POST OR STAKES INTO MAJOR ROOTS. MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.
2. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION: FOR ROOTS OVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING, AND COVERED WITH SOIL AS SOON AS POSSIBLE.
3. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING. FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON-SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.
4. FENCING SIGNAGE AS DETAILED ABOVE MUST BE POSTED EVERY FIFTEEN (15) FEET ALONG THE FENCE. SIGN TO BE MINIMUM 11"X17", AND MADE OF WEATHERPROOF MATERIAL.

CITY OF KIRKLAND
PLAN NO. CK-R.49
TREE PROTECTION

BLUELINE
25 CENTRAL WAY, SUITE 400, KIRKLAND, WA 98033
P: 425.216.4051 F: 425.216.4056
WWW.BLUELINEGROUP.COM

SCALE: AS NOTED
PROJECT MANAGER: TODD A. OBERG, PE
PROJECT ENGINEER: TODD A. OBERG, PE
DESIGNER: ADAM KAY
ISSUE DATE: 4/10/2013

NO	DATE	BY	REVISIONS
1	2/26/13	ADK	REVISE SITE PLAN; UPDATE SITE DATA & PROVIDE LOT DIMS
2	4/10/13	ADK	REVISED PER 2/21/13 CITY OF KIRKLAND COMMENTS; REVISED HYDRANT LOCATIONS

TREE RETENTION PLAN
C AND G PROPERTY PUD
CAMWEST - A TOLL BROTHERS COMPANY
PARCEL NO. 0925059010
CITY OF KIRKLAND WASHINGTON

TODD A. OBERG, STATE OF WASHINGTON, 37408, REGISTERED PROFESSIONAL ENGINEER
4/10/13

JOB NUMBER: 11-070
SHEET NAME: TR-01
SHT 5 OF 5

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Attachment 2

CITY OF KIRKLAND
Department of Public Works
123 Fifth Avenue, Kirkland, WA 98033 425.587.3800
www.kirklandwa.gov

Memorandum

To: Janice Coogan, Senior Planner

From: Thang Nguyen, Transportation Engineer

Date: April 30, 2013

Subject: C & G Subdivision Development, Tran12-00528

This memo summarizes Public Works' review of the proposed C&G Subdivision development traffic impact analysis report dated January 2013 prepared by the Transpo Group. Public Works' recommendations and approval are outlined at the end of this memo.

Project Description

The applicant is proposing to construct a subdivision development with 36 single family units on a vacant lot. The proposed project is calculated to generate 400 daily, 34 AM peak hour and 41 PM peak net new vehicle trips. Access to the development site will be from NE 80th Street and NE 75th Street via a new connector road; 128th Avenue NE. The development is forecasted to be completed by the end of 2014.

The proposed project was tested for traffic concurrency with a road connection to NE 80th Street and passed traffic concurrency. Per *Section 25.10.020 Procedures* of the KMC, this Concurrency Test Notice will expire in one year (May 11, 2013) unless a development permit and certificate of concurrency are issued or an extension is granted.

Traffic Impacts

The traffic report was completed as outlined by Public Works and followed the City of Kirkland TIA guidelines. Project traffic distribution and assignment was estimated using the City's BKR Traffic Model.

The City 's Traffic Impact Analysis Guidelines (TIAG) requires a Level of Service (LOS) Analysis using the Highway Capacity Manual Operational Method for intersections that have proportionate share greater than 1%. Six intersections were analyzed for level of service. They include:

- 128th Avenue NE/NE 75th Street
- 126th Avenue NE /NE 73rd Street
- 126th Avenue NE/NE 80th Street

- 128th Avenue NE/NE 80th Street
- 130th Avenue NE/NE 80th Street and
- 130th Avenue NE/NE 75th Street

In particular, the intersection of 128th Avenue NE/NE 80th Street was analyzed for the AM, Mid-day school peak and PM peak hours.

Future 2014 traffic conditions with the proposed development also included project traffic from other pipeline developments that are forecasted to be built by 2014.

The City requires developers to mitigate traffic impacts when one or both of the following two conditions are met:

1. An intersection level of service is at E and the project traffic is more than 15% of the intersection traffic volumes.
2. An intersection level of service is at F and the project traffic is more than 5% of the intersection traffic volumes.

All the analyzed intersections are forecasted at an acceptable level of service C or better. Thus, based on the mitigation standards, off-site traffic mitigation based on the intersection level of service is not warranted.

Traffic Volumes and Patterns

Traffic on NE 80th Street- NE 80th Street carries approximately 4,700 vehicles daily east of 124th Avenue NE and approximately 500 vehicles during the AM and PM peak hours. These volumes are typical for a local street. Historical counts, indicate that the traffic volumes on NE 80th Street have been decreasing by approximately 6% per year since 2007.

The BKR traffic model was used to estimate the distribution of project traffic. Approximately 55% (220 daily, 19 AM peak and 23 PM peak hour trips) of the project traffic would use NE 70th Street and 45% would use NE 80th Street (180 daily, 15 AM peak and 18 PM peak hour trips). Existing traffic confirms the validity of the traffic model trip distribution.

Existing PM traffic counts show that traffic volume is very low on NE 75th Street (less than 30 PM peak hour trips). If there is any traffic diversion due to the new 128th Avenue NE connection, it is anticipated to be low. Even if all existing traffic from NE 75th Street diverged to use the new 128th Avenue NE connection to access NE 80th Street, its impact to the intersection of NE 80th Street and 128th Avenue NE would not be significant enough to require SEPA mitigation.

During the morning school peak, it is anticipated that there will be 15 additional project trip added to NE 80th Street as a result of the project. During the school afternoon peak, there would be less than five project trips impacting NE 80th Street. The amount of AM and PM peak hours project traffic added to the surrounding streets is found to have negligible traffic impact.

Driveway Operation

The intersection of 128th Avenue NE/NE 80th Street is forecasted to operate at an acceptable level of service and safely. To the north, 128th Avenue NE will be controlled with a STOP sign as it intersects with NE 80th Street. Based on the forecasted traffic volumes, the intersection does not meet warrants for a traffic signal. There are no roadway conditions or recurring accident pattern that would make the intersection unsafe. The intersection meets the City's safe sight distance requirements. Based on the operation and safety analysis and the City's standards for mitigation, no traffic mitigation is warranted.

In response to concerns on project traffic impact to pedestrians using the crosswalk at NE 80th Street/128th Avenue NE, the developer has agreed with the City to install a Rectangular Rapid Flashing Beacon- RRFB (flashing crosswalk light) system to make the intersection safer for pedestrians.

A stop sign will control the new 128th Avenue NE road connection to NE 75th Street and the new intersection is calculated to operate at level of service LOS-A. The new 128th Avenue NE connection to NE 75th Street will be off-set from the existing 128th Avenue NE from the south. Thus, a Stop sign will also need to be installed on the south leg of the existing NE 75th Street/128th Avenue NE intersection. Based on the sight distance analysis, the intersection will meet the City's safe sight distance standards. Thus, no other traffic mitigation is warranted.

Sidewalks

Complete sidewalks are only on the east side of 128th Avenue NE from NE 80th Street to NE 85th Street, most of the west side of the street does not have sidewalk. Complete sidewalks are only on the north side of NE 80th Street between 120th Avenue NE and 132nd Avenue NE. Most of the south side of the street has curb, gutter and sidewalks but there are sections that only have narrow sidewalks and no curb and gutter. Both sides of the street have bike lanes. The traffic study report inaccurately stated that there are sidewalks on both sides of 128th Avenue NE and NE 80th Street.

Per the City frontage improvement guideline, the developer is not required to construct curbs, gutters and sidewalks outside of the project property to NE 80th Street. However, the developer has agreed to construct curbs and gutters on both side of the new 128th Avenue NE within the project property and sidewalk on one side within the project property that would extend to NE 80th Street making a complete sidewalk connection from NE 75th Street to NE 80th Street.

There are two small sections of missing sidewalks on the south side of the intersection of NE 80th Street and 128th Avenue NE. Those two small missing sections of sidewalks should be constructed with the installation of the RRFB at the intersection to provide safe refuge and crossing for pedestrians. Furthermore since the RRFB and crosswalk is on the east side on 128th Avenue NE, the future sidewalk within the development extending to NE 80th Street should also be located to the east side of the street to provide continuity and minimize pedestrian crossing.

Parking
Parking will be provided on-site to meet the City's parking code requirements.

Public Comments
Staff has received comments and concerns from the public regarding existing traffic and the development traffic impacts on NE 80th Street and on the new 128th Avenue NE connection that will be constructed with the proposed project. Public concerns include: speeding, high traffic volumes, pedestrian and bicyclist safety, traffic accidents, need for better sidewalks, accessibility, project traffic forecast and traffic diversion due to the new 128th Avenue NE connection to NE 80th Street.

Roadway Connectivity
Some public comments suggest that the 128th Avenue NE connection is contrary to the City Comprehensive Plan and creates unnecessary traffic impacts.

The City of Kirkland comprehensive Plan Policy T-4.3 states: Maintain a system of arterials, collectors, and local access streets that forms an inter-connected network for vehicular circulation. Policy T-4.5 states : Maintain and improve convenient access for emergency vehicles. These two policies encourage a "grid" system road network to minimize cul-de-sacs, uneven trip distribution through the road network and to minimize impacts onto close-by neighborhood streets and to maintain and provide direct access for emergency vehicles.

The City of Kirkland has an adopted street functional classification system. The purpose of this system is to ensure that a system of roadways and streets provides a balanced relationship between mobility and land access. Mobility is the ability to efficiently travel along the roadway system, while land access is the ease of being able to connect to a particular development or parcel of land.

These classifications signify differing levels of accommodation for mobility and land access. The classification is hierarchical by the amount of travel mobility provided. Principal arterials primarily provide mobility, while local streets focus on providing land access. Table 1 summarizes the street functional classification system.

Table1. Functional classification

Functional	**Mobility**	**Access to**	**Traffic**	**Speed**

Classification		**Property**	**Volumes**	
Highways(Freeway)	Highest	No Direct Access	Highest	40+ mph
Principal Arterials	High	Minimum	High	30 to 40 mph
Minor Arterials	Moderate	Moderate	Moderate	30 to 35 mph
Collectors	Low	Higher	Moderate to Low	25 to 30 mph
Local Streets	Very Low	Highest	Low	25 mph

The project site fronts a local street to the south (NE 75th Street) and has a connection to a dead-end street to the north (128th Avenue NE) which connects to NE 80th Street, a collector. The development will construct and extend 128th Avenue NE to the south through the development to connect NE 80th Street with NE 75th Street. This will provide shorter and more convenient access to the collector streets and minimize unnecessary traffic impact to local streets to the south and to the east of the project site.

Existing Speed
Residents are concerned about excessive speed on NE 80th Street. The City has plans to narrow the travel lanes to ten feet in width using restriping to slow down traffic. As a result, the bike lanes will be widened and or buffered to improve bicycle safety. The restriping is scheduled to be done during the summer of this year.

Some public comments suggest installing speed humps on NE 80th Street to deter pass-through traffic from NE 85th Street and other routes. The City is working to improve the traffic flow on NE 85th Street through signal timing, access management and Intelligent Transportation System (ITS) to minimize drivers from using collector and local streets as diversionary pass-through routes.

Pedestrian safety
There is also concern that there will be significant traffic diverted to use the new connection at NE 80th Street and pedestrian safety will be significantly impacted there.

As discussed in the **Traffic Volumes and Patterns** section of this memo, the traffic diversion due to the new 128th Avenue connection is forecast to be small. The intersection of NE 80th Street and 128th Avenue NE (controlled by stop signs on 128th Avenue NE) will operate at a good level of service based on the City's level of service standard. The traffic volume with the proposed project does not meet warrants for installing a traffic signal. Furthermore, the applicant is proposing to install an RRFB flashing crosswalk light system at the intersection to improve pedestrian crossing. This location is staffed by adult crossing guards during school arrival and dismissal times.

Some comments from the public suggested that traffic/pedestrian accidents along NE 80th Street were the result of poor roadway design or excessive speeding. Staff has

reviewed the police reports on the accidents that occurred along NE 80th Street and did not find any pattern to suggest roadway design or speeding as contributing factors.

The accidents are isolated incidents that have no relation to the proposed development. There is not a pattern that would suggests the increase traffic from the proposed development would contribute to more traffic accidents.

Nevertheless, the City is always concerned about traffic accidents and school zone safety is a City priority. The City will continue to work with the SRHNA to find solutions to improve NE 80th Street and minimize traffic accidents.

Under SEPA, the City cannot require a developer to mitigate impacts that do not have a specific nexus with the project. Staff has met with the South Rose Hill Neighborhood Association (SRHNA) in the past about traffic on NE 80th Street concerning similar issues to those that are being raised relative to the proposed project. The City will continue work with the SRHNA to find improvements for NE 80th Street outside of this development process.

Road Impact Fees

Per City's Ordinance 3685, Road Impact Fees per the Impact Fee Schedule in effect January 1, 2013 are required for all developments. Road impact fees are used to construct transportation improvements throughout the City. The road impact rate for single-family is $3,942 per unit. With 36 units, the calculated transportation impact fee is $141,912 (36 units x $3,942). Final impact fee shall be determined at building permit acceptance.

Staff Recommendations

Public Works Staff concludes that the proposed project will not create significant traffic impacts that would require specific off-site traffic mitigation. Staff recommends approval of the proposed project with the following mitigations:

- Pay Road Impact Fee.
- Connect 128th Avenue NE to NE 80th Street.
- Install a STOP sign on 128th Avenue NE at NE 75th Street.
- Install a STOP sign on the south leg of the existing intersection of NE 75th Street/128th Avenue NE.
- Install a sidewalk on the east side of the 128th Avenue NE between NE 80th Street and NE 75th Street.
- Complete the two small missing sections of sidewalks at the intersection of NE 80th Street/128th Avenue NE with the installation of the RRFB.

Staff supports the voluntary installation of the RRFB at the intersection of NE 80th Street /128th Avenue NE. If you have any questions, call me at (425) 587-3869.

cc: EnerGov filing
Rob Jammerman, Development Engineering Manager

Attachment 3

Transportation Impact Analysis

C AND G PROPERTY

Prepared for:
Cam West – A Toll Brothers Company

April 2013

Prepared by:

11730 118th Avenue NE, Suite 600
Kirkland, WA 98034-7120
Phone: 425-821-3665
Fax: 425-825-8434
www.transpogroup.com

11256.00

Table of Contents

Figures

Tables

Frequently Asked Questions

This section provides an overview of the following report through responses to frequently asked questions (FAQs).

Where is the project located?

The proposed development is located north of NE 75th Street and east of 126th Avenue NE in the South Rose Hill Neighborhood. Access to the development is provided via NE 75th Street and NE 80th Street.

What is the project land use and trip generation?

The proposed development is located north of NE 75th Street and east of 126th Avenue NE in the South Rose Hill Neighborhood and would include the construction of up to 35 single family homes. The development is anticipated to generate 400 daily trips with 34 weekday AM peak hour trips and 41 weekday PM peak hour trips.

What are the existing and future without-project conditions in the study area?

All study intersections currently operate at LOS C or better during the weekday AM, afternoon school peak, and PM peak hour. In 2015 without the proposed project, all study intersections will continue to operate at the same LOS as defined in existing conditions.

Would the project have any transportation impacts?

All study intersections and the site driveway is anticipated to operate at LOS C or better during the weekday peak hours after the project is completed and occupied.

What mitigation measures are recommended?

Based on the results of this analysis all intersections are expected to operate at LOS C or better with the proposed project. As such all intersections comply with City of Kirkland operational standards and no offs-site road improvements would be required of the project.

Introduction

The purpose of this transportation impact analysis (TIA) is to identify potential traffic-related impacts associated with the proposed residential development in Kirkland, WA. As necessary, mitigation measures are identified that would offset or reduce significant impacts.

Project Description

The proposed development is located north of NE 75th Street and east of 126th Avenue NE in the South Rose Hill Neighborhood and would include the construction of up to 35 single family homes. Access to the development is provided via NE 75th Street and NE 80th Street. The property is currently vacant. The proposed project is anticipated to be built and occupied by 2015. The site vicinity and the proposed site plan are illustrated in Figure 1 and Figure 2, respectively.

Study Approach

The scope and approach of this analysis was identified through coordination with City of Kirkland staff and complies with City of Kirkland requirements. Six off-site intersections during the weekday PM peak hour were identified for analysis. It should be noted that two intersections, 128th Avenue NE / NE 80th Street (site access) and 116th Avenue NE / NE 70th Street were identified as significant based on the City's proportional share impact worksheets shown in Appendix A, although five additional study intersections have been included to review potential impacts associated with the current access proposal. In total, the study intersections include:

1. 128th Avenue NE / NE 80th Street
2. 116th Avenue NE / NE 70th Street
3. 128th Avenue NE / NE 75th Street
4. 126th Avenue NE / NE 73rd Street
5. 130th Avenue NE / NE 80th Street
6. 130th Avenue NE / NE 75th Street
7. 126th Avenue NE / NE 80th Street

In addition to the analysis of the weekday PM peak hour, an additional analyses was conducted for the weekday AM and afternoon peak hour periods at the site access intersection of 128th Avenue NE / NE 80th Street to assess the impacts of the proposed projects during those critical time periods.

Site Vicinity

C and G Property

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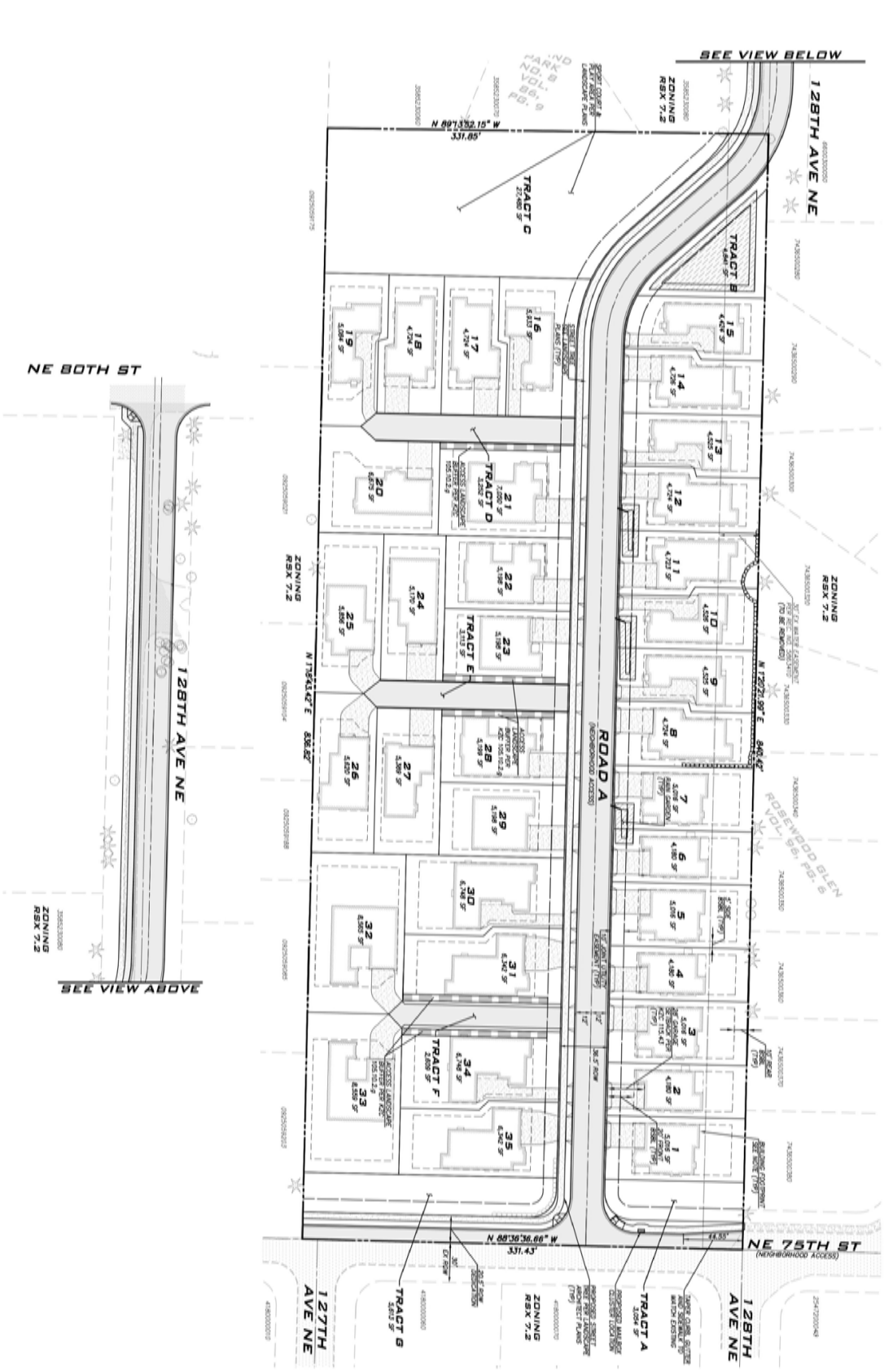
FIGURE

1



Site Plan

C and G Property

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FIGURE
2

Existing and Without-Project Conditions

This section describes both existing and 2015 without-project conditions within the identified study area. Study area characteristics are provided for the roadway network, planned improvements, existing and forecasted without-project volumes, traffic operations, and transit and non-motorized facilities.

Roadway Network

The existing roadway network is discussed along with planned improvements that would likely be complete before the proposed project horizon year, if any. In general, the roadway descriptions given apply to the portions of the roadways within the study area of the proposed project.

The street system providing access to the site includes two-way streets, with on-street parking on the local streets and sidewalks typically provided on arterial streets. The primary roadways within the vicinity of the site are described in Table 1.

Table 1. Roadway Network Existing Conditions Summary

Roadway	Street Classification	# Lanes	Pedestrian Facilities
128th Avenue NE	Collector	2	Sidewalks on both sides of street north of NE 80th Street
126th Avenue NE	Local	2	Sidewalks intermittent on the east and west side
130th Avenue NE	Local	2	Sidewalk located on west side
NE 73rd Street	Local	2	N/A
NE 75th Street	Local	2	Sidewalks on north side of street, except adjacent to site frontage
NE 80th Street	Collector	2	Sidewalks on north and south side. Eastbound and westbound bicycle lanes.
NE 70th Street	Minor Arterial	2-3	Sidewalks and bicycle lanes on both sides of roadway
116th Ave NE	Collector	2-3	Sidewalks south of NE 70th St; Bike lanes north of NE 70th St

Planned Improvements

The City of Kirkland *2011–2016 Capital Improvement Program* (CIP) was reviewed to identify transportation improvement projects planned for the study area. The CIP lists improvement projects that have been approved by the City and have identified funding sources within the next six years.

Based on this review, there are no street or intersection improvements in the project study area that are programmed to occur within the planning horizon for this analysis that would modify the channelization or increase the capacity at any of the study intersections.

Transit and Non-Motorized Facilities

In general, the project site is served by transit with one transit route (Route 238) operating within a short walking distance of the project site on NE 80th Street. Route 238 services Totem Lake, Kirkland, and Bothell with service provided approximately every 30 minutes on weekdays and every 60 minutes on weekends.

The project is located southwest of the Rose Hill Elementary School and pedestrian facilities between the project and the elementary school are provided. Pedestrian facilities exist on 128th Avenue NE north of the site and on NE 80th Street adjacent to the site and the school. In addition a marked crosswalk exists at the intersection of NE 80th Street / 128th Avenue NE, providing a pedestrian crossing between the proposed development and the school.

Limited pedestrian facilities exist within the neighborhood to the south, although pedestrian facilities are located on NE 75th Street east of the site. Sidewalks are also provided on 130th Avenue NE and 126th Avenue NE to the east and west of the site.

Traffic Volumes

Existing weekday PM peak hour traffic counts at study intersections were collected in February 2012 and 2013. Weekday AM and mid-day school peak hour counts were collected at the intersection of 128th Avenue NE / NE 80th Street in December 2012 while school was in session. The existing traffic volumes are shown in Figure 3. Count sheets are provided in Appendix B.

Consistent with City standards, 2015 without-project volumes were estimated by applying a general annual growth rate of 1.0-percent to existing volumes. This growth rate is consistent with the growth assumed in the concurrency model. In addition to the background growth rate, the City has requested that two pipeline projects be included, Potala Village and McCleod. Figure 4 illustrates 2015 without-project weekday peak hour traffic volumes at the study intersections.

Traffic Operations

The operational characteristics of an intersection are determined by calculating the intersection level of service (LOS). Level of service for intersection operations is described alphabetically (A through F). LOS is based on the calculated average control delay per vehicle and is typically reported for the whole intersection for signalized and all-way stop-controlled intersections, and by movement for two-way, stop-controlled intersections. Control delay is defined as the combination of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Appendix C provides a more detailed explanation of LOS.

As described in the City of Kirkland's *Traffic Impact Analysis Guidelines*, the City requires project developers to mitigate intersections operating at LOS E when the project's proportionate share exceeds 15 percent of the intersection's total entering volume. For intersections operating at LOS F, projects are required to mitigate impacts when the project's proportionate share is greater than 5 percent of the total entering volume. Intersections operating at LOS A through D require no mitigation.

Existing and 2015 without-project peak hour level of service was calculated at study intersections based on methodologies contained in the *Highway Capacity Manual* (Transportation Research Board, 2000). *Synchro 8.0* was used for the calculations. Signal timing at the intersection of 116th Avenue NE / NE 70th Street was obtained from WSDOT. Results for the weekday AM, afternoon school, and PM peak hour are summarized in Table 2. Detailed LOS worksheets are included in Appendix D.

Table 2. Existing and 2015 Without-Project LOS Summary

Intersection	Existing (2012)			2015 Without-Project		
	LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM
Weekday AM Peak Hour						
128th Avenue NE / NE 80th Street	C	16.5	NB	C	16.9	NB
Weekday Afternoon School Peak Hour						
128th Avenue NE / NE 80th Street	C	20.8	NB	C	22.9	NB
Weekday PM Peak Hour						
128th Avenue NE / NE 75th Street	A	8.9	EB	A	8.9	EB
126th Avenue NE / NE 73rd Street	A	9.4	WB	A	9.4	WB
126th Avenue NE / NE 80th Street	B	13.9	SB	B	14.0	SB
128th Avenue NE / NE 80th Street	B	13.6	NB	B	13.7	NB
130th Avenue NE / NE 80th Street	B	11.6	NB	B	11.7	NB
130th Avenue NE / NE 75th Street	A	8.5	EB	A	8.5	EB
116th Ave NE / NE 70th Street	C	31.0	0.83	C	31.0	0.88

1. Level of Service as defined in the *Highway Capacity Manual* (TRB, 2000)
2. Average delay per vehicle in seconds.
3. Worst movement or approach reported for unsignalized intersections.

As shown in Table 2, during the existing and 2015 without project weekday AM, afternoon, and PM peak hour, all study intersections currently operate at LOS C or better.

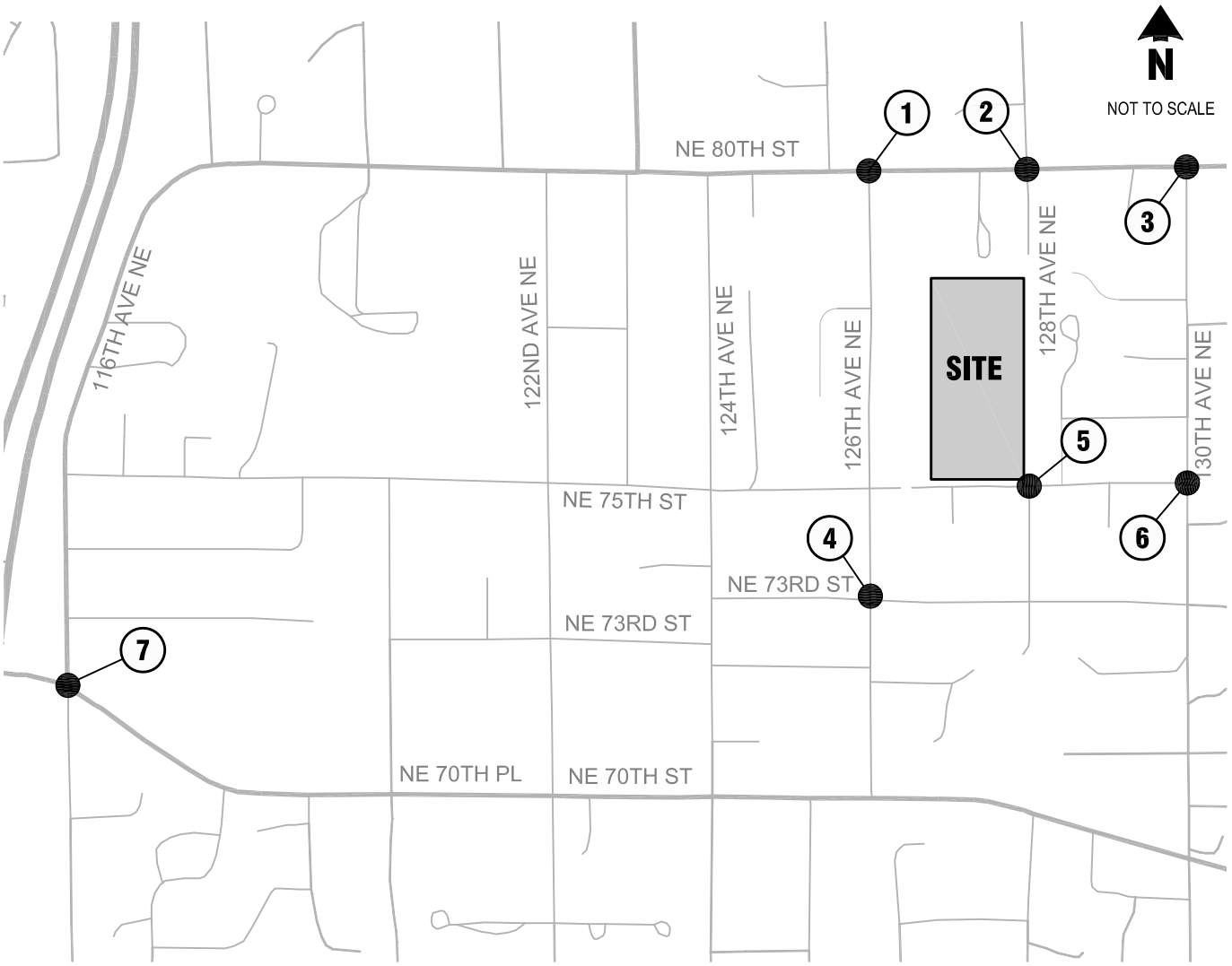
Traffic Safety

Recent collision records were reviewed within the study area to identify existing traffic safety issues. The most recent summary of collision data from the Washington Department of Transportation (WSDOT) is for the three-year period between January 1, 2009 and December 31, 2011. A summary of the total and average annual number of reported collisions at each study intersection is provided in Table 3.

Table 3. Intersection Collision Summary

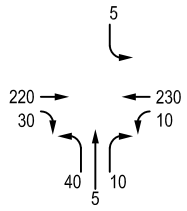
Intersection	Number of Collisions			Total	Annual Average
	2009	2010	2011		
128th Avenue NE / NE 75th Street	0	0	0	0	0
126th Avenue NE / NE 73rd Street	0	0	0	0	0
126th Avenue NE / NE 80th Street	1	0	0	1	0.33
128th Avenue NE / NE 80th Street	2	0	0	2	0.67
130th Avenue NE / NE 80th Street	0	0	0	0	0
130th Avenue NE / NE 75th Street	0	0	0	0	0
116th Avenue NE / NE 70th Street	9	6	12	27	9.0

As shown in Table 3, during the study time period collisions were reported at three of the study intersections, 126th Avenue NE / NE 80th Street, 128th Avenue NE / NE 80th Street, and 116th Avenue NE / NE 70th Street. Over the three year study period one collision occurred at 126th Avenue NE / NE 80th Street and two collisions occurred at 128th Avenue NE / NE 80th Street. The collisions included rear end and entering at an angle from the side street. No injuries were reported for any of the collisions. At the intersection of 116th Avenue NE / NE 70th Street 27 collisions occurred over the three year period with the predominant collision type involving rear end collisions. No fatalities occurred at this intersection.

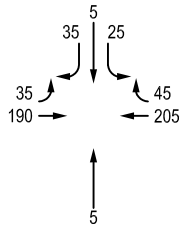


PM PEAK

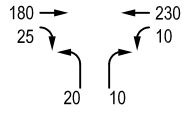
1 126TH AVE NE / NE 80TH ST



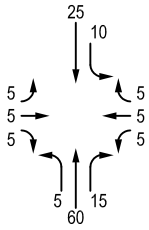
2 128TH AVE NE / NE 80TH ST



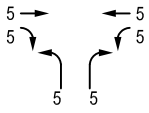
3 130TH AVE NE / NE 80TH ST



4 126TH AVE NE / NE 73RD ST

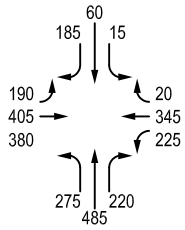


5 128TH AVE NE / NE 75TH ST



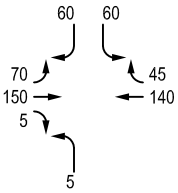
6 130TH AVE NE / NE 75TH ST

7 116TH AVE NE / NE 70TH ST



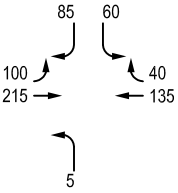
AM PEAK

2 128TH AVE NE / NE 80TH ST



AFTERNOON PEAK

2 128TH AVE NE / NE 80TH ST



Existing Weekday Peak Hour Traffic Volumes

FIGURE 3

C and G Property

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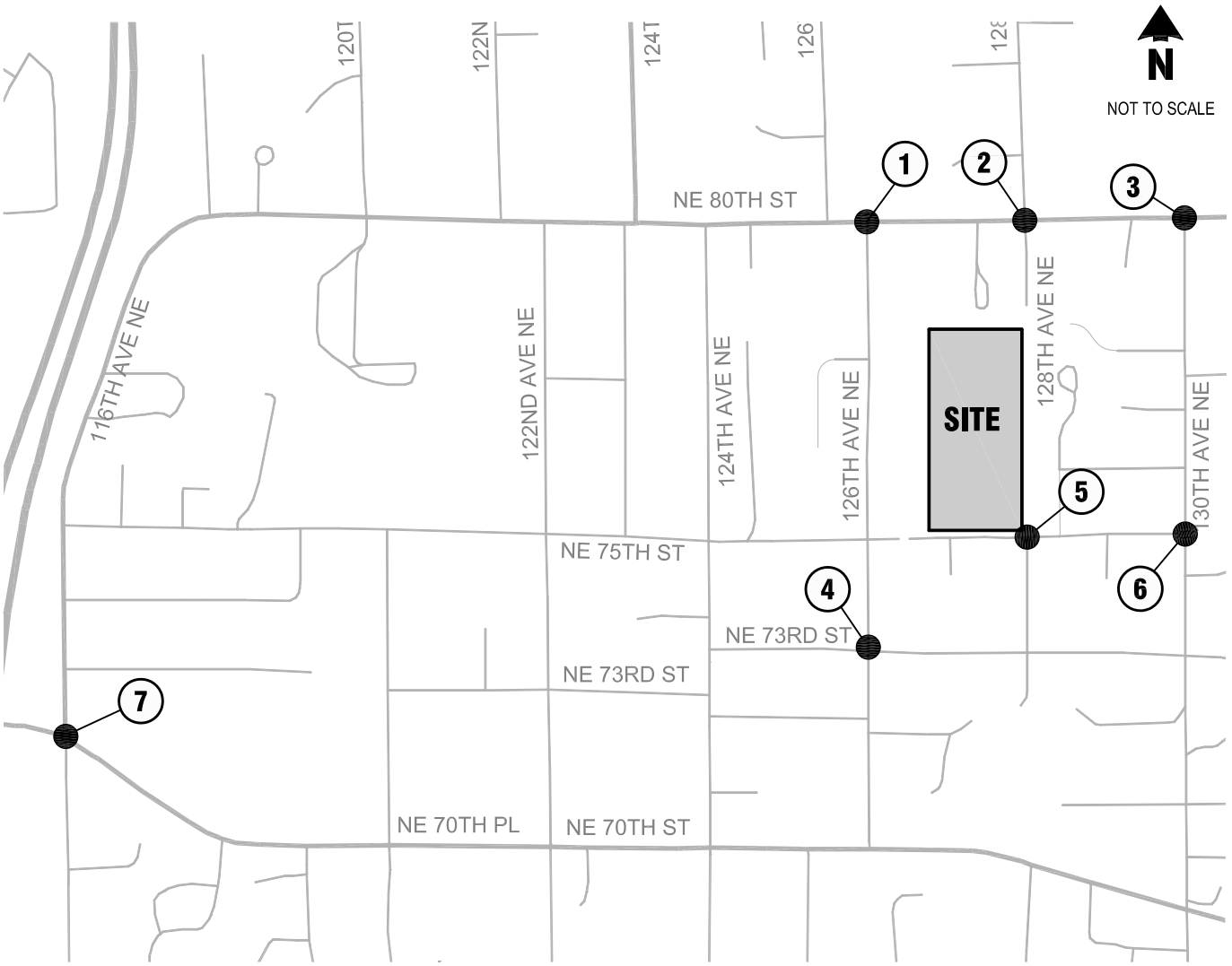
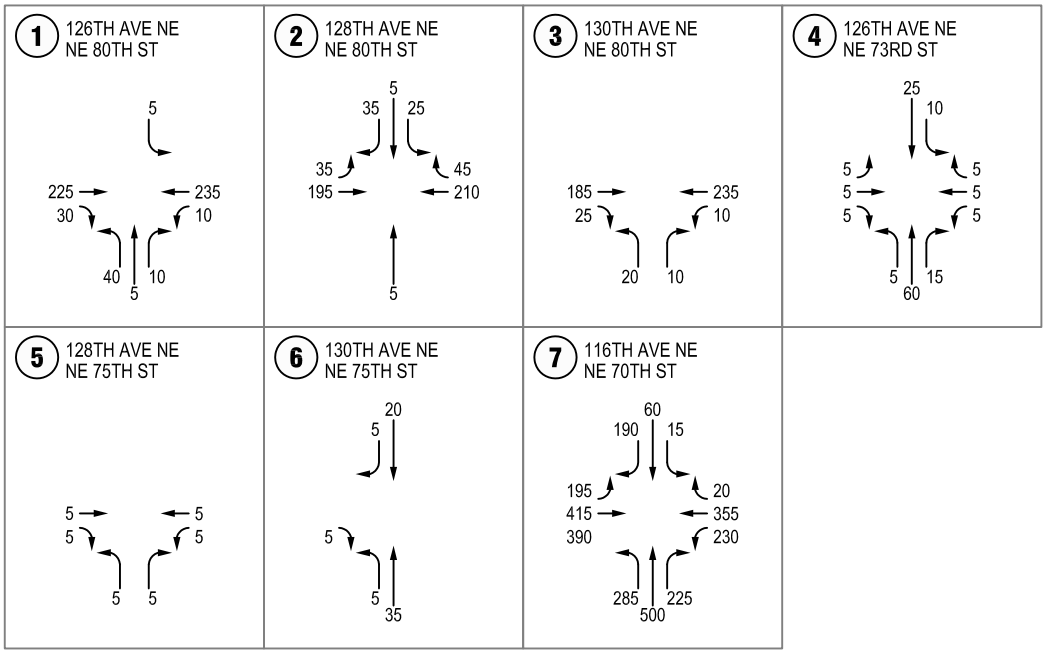
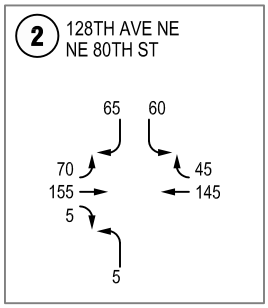


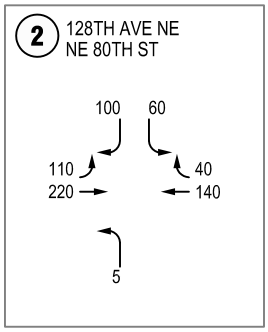
PM PEAK



AM PEAK



AFTERNOON PEAK



2015 Without-Project Weekday Peak Hour Traffic Volumes

FIGURE 4

C and G Property

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Project Impacts

This section of the analysis documents project-generated impacts within the study area. First, peak hour traffic volumes are estimated, distributed, and assigned to adjacent roadways and intersections within the study area. Next, 2015 volumes are projected and the potential impact to traffic volumes, traffic operations, safety, non-motorized facilities, and transit are identified. Where intersections are shown to not comply with City of Kirkland standards, mitigation measures are identified.

Trip Generation

Project trip generation was estimated for the single family land use based on equations published by the Institute of Transportation Engineers (ITE) in *Trip Generation* (9th Edition, 2012). The estimated trip generation for the current proposal was based on ITE land-use code 210 Single Family Detached Housing. Table 4 shows the resulting weekday AM and PM peak hour vehicle trip generation.

Table 4. Project Trip Generation Summary

Land Use	Size	Daily	Rate[1]	Primary Trips		
				Total	In	Out
Weekday PM Peak Hour[2]						
Single Family Detached (LU 210)	35 units	400	EQN	41	26	15
Weekday AM Peak Hour						
Single Family Detached (LU 210)	35 units	400	EQN	34	9	25

1. Rates based on ITE Trip Generation Manual, 9th Edition (2012).
2. Afternoon peak hour was conservatively assumed to be consistent with the weekday PM peak hour.

The development is anticipated generate 400 daily trips with 34 weekday AM peak hour trips and 41 weekday PM peak hour trips.

It should be noted that for the afternoon school peak hour analysis, no trip rate is provided in the ITE *Trip Generation*; therefore the weekday PM peak hour trip generation was used to provide a conservative analysis.

Trip Distribution and Assignment

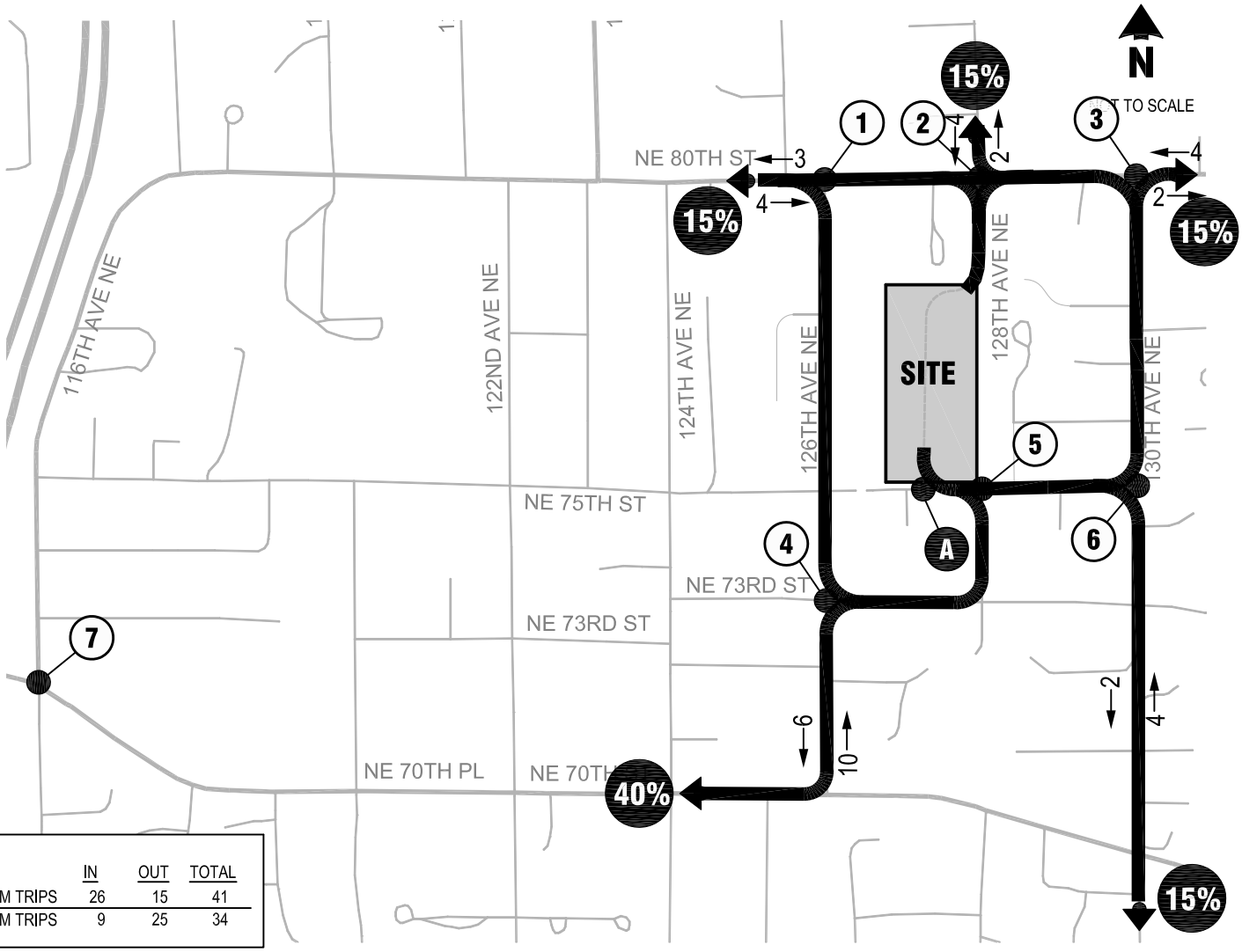
Project traffic generated by the proposed project was assigned to the surrounding roadway network based on the distribution provided by the City of Kirkland Concurrency Model as well as comments from neighborhood residents regarding travel patterns near the site. The resulting distribution is illustrated in Figure 5. Project trips were then assigned to the roadway network based on the distribution, and are also shown in Figure 5.

With-Project Traffic Volumes

Background traffic volumes were shifted assuming the 128th Avenue NE connection through the site, connecting with NE 80th Street. Based on a review of the roadway network and number of residences near the 128th Avenue connection an estimate of background trips utilizing the new 128th Avenue NE connection was made for the weekday PM peak hour period. The potential users of this new connection include the residences located on NE 75th Street between 128th Avenue NE and the roadway closure west of 127th Avenue NE, residences on 127th Avenue NE, and potentially a couple of residences on 128th Avenue NE

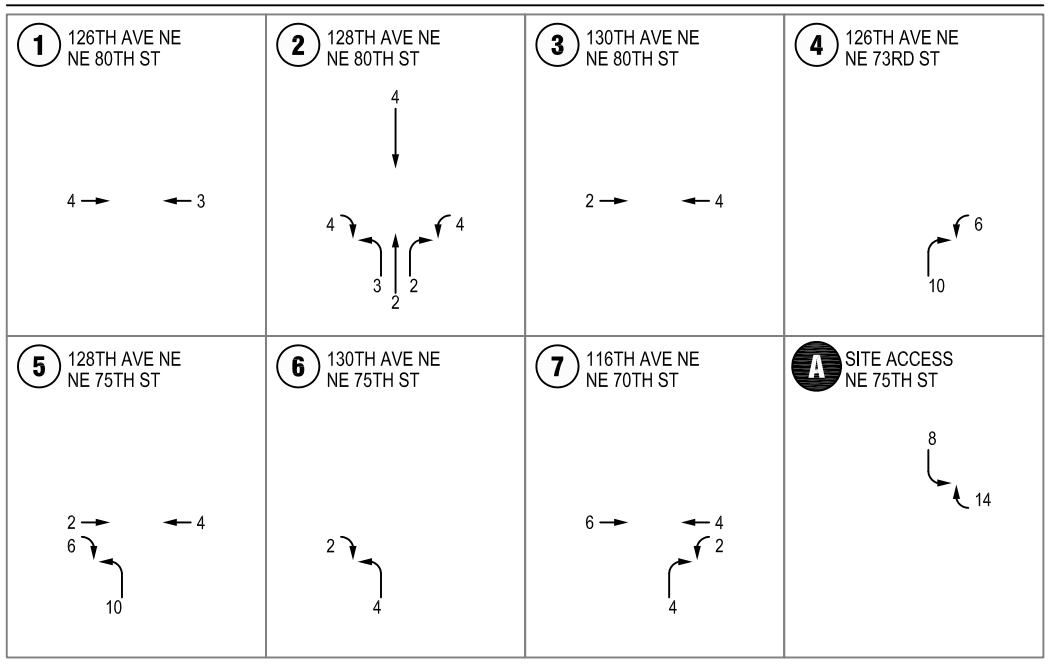
between NE 75th Street and NE 73rd Street. This results in approximately 9 - 12 residences totaling approximately 16 trips during the weekday PM peak hour (based on recent turning movement counts). The resulting traffic volume assignment and with-project volumes during the weekday AM, afternoon school peak, and PM peak hour with the 128th Avenue NE connection were adjusted to account for shifts in traffic. No reductions to existing traffic patterns from the residences were taken, resulting in a conservative analysis.

The net new project-generated traffic was added to without project traffic volumes to obtain 2015 with-project weekday peak hour traffic volumes for the study intersections and is illustrated in Figure 6.



	IN	OUT	TOTAL
PM TRIPS	26	15	41
AM TRIPS	9	25	34

PM PEAK



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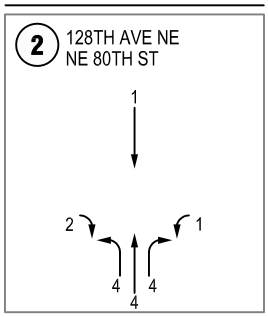
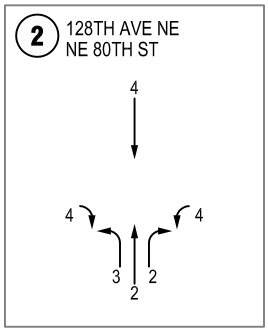


AFTERNOON PEAK



Trip Distribution and Assignment

FIGURE 5

C and G Property

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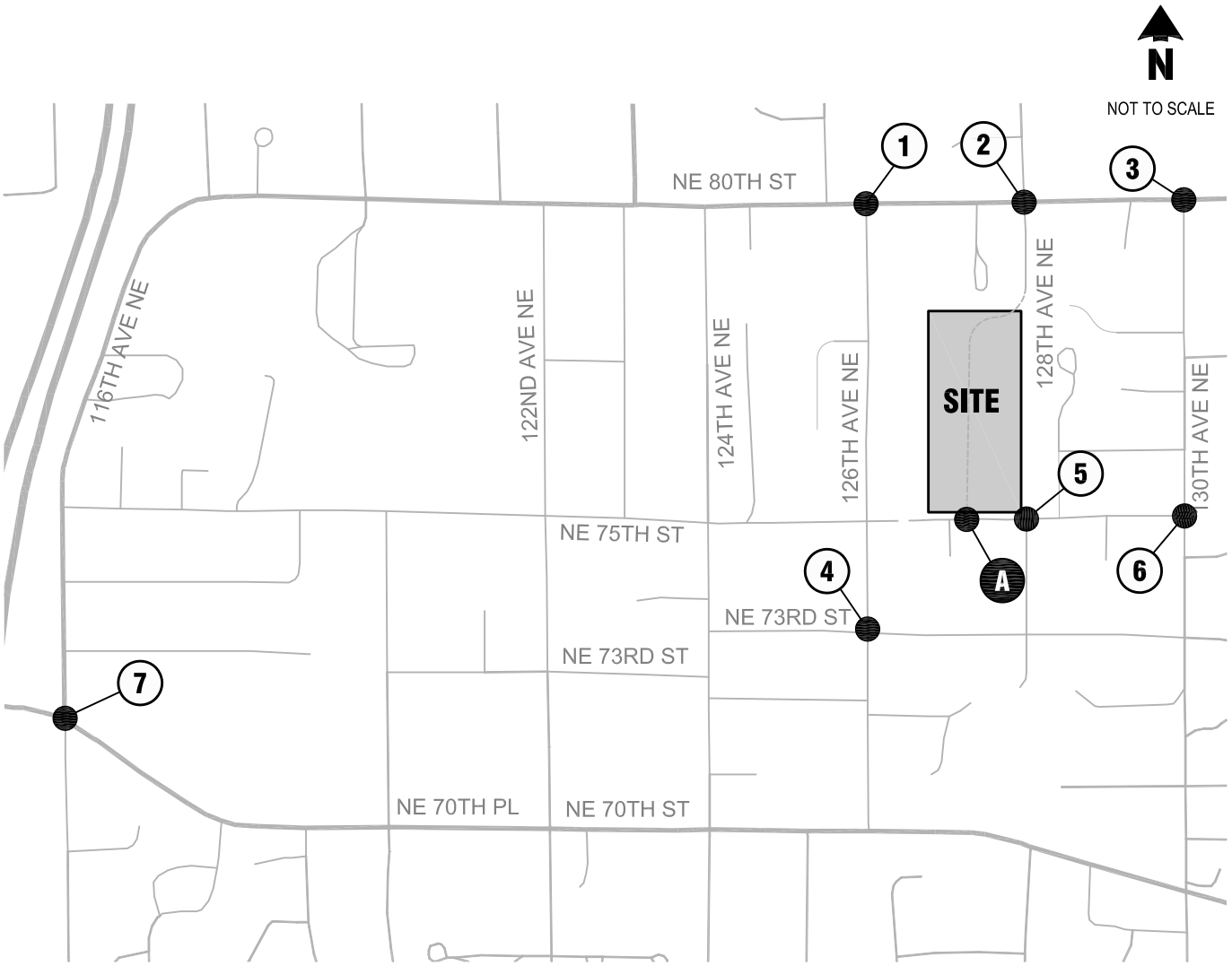
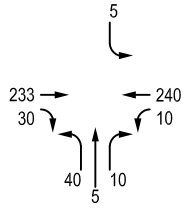
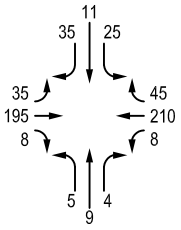


PM PEAK

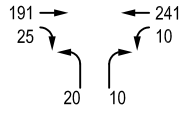
1 126TH AVE NE / NE 80TH ST



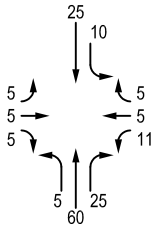
2 128TH AVE NE / NE 80TH ST



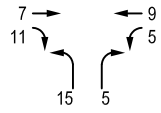
3 130TH AVE NE / NE 80TH ST



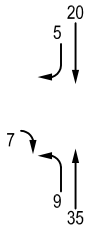
4 126TH AVE NE / NE 73RD ST



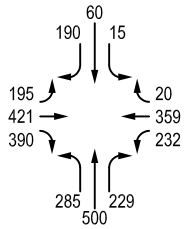
5 128TH AVE NE / NE 75TH ST



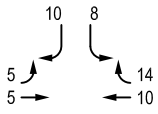
6 130TH AVE NE / NE 75TH ST



7 116TH AVE NE / NE 70TH ST

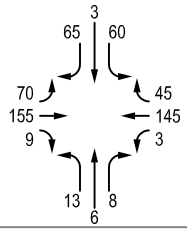


A SITE ACCESS / NE 75TH ST



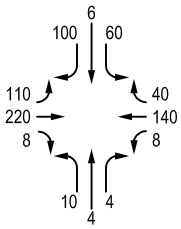
AM PEAK

2 128TH AVE NE / NE 80TH ST



AFTERNOON PEAK

2 128TH AVE NE / NE 80TH ST



Future With-Project Weekday Peak Hour Traffic Volumes

FIGURE 6

C and G Property

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Traffic Operations Impact

Future with-project level of service analysis was conducted for the weekday AM, afternoon school peak, and PM peak hour to analyze traffic impacts of the proposed project. The same methodologies were applied and all intersection parameters such as channelization and intersection control were held consistent with those used in the evaluation of existing and without project conditions. Signal timing at the intersection of 116th Avenue NE / NE 70th Street were not optimized between without and with-project conditions. Table 5 compares the 2015 without- and with-project traffic operations during the weekday AM, afternoon school peak, and PM peak hour. The detailed LOS worksheets are included in Appendix D.

Table 5. Future Without- and With-Project LOS Summary

Intersection	2015 Without-Project			2015 With-Project		
	LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM
Weekday AM Peak Hour						
128th Avenue NE / NE 80th Street	C	16.9	NB	C	16.5	SB
Weekday Afternoon Peak Hour						
128th Avenue NE / NE 80th Street	C	22.9	NB	C	20.7	NB
Weekday PM Peak Hour						
128th Avenue NE / NE 75th Street	A	8.9	EB	A	9.0	EB
126th Avenue NE / NE 73rd Street	A	9.4	WB	A	9.5	WB
126th Avenue NE / NE 80th Street	B	14.0	SB	B	14.2	SB
128th Avenue NE / NE 80th Street (Site Access)	B	13.7	NB	B	13.5	NB
130th Avenue NE / NE 80th Street	B	11.7	NB	B	11.8	NB
130th Avenue NE / NE 75th Street	A	8.5	EB	A	8.5	EB
116th Avenue NE / NE 70th Street	C	31.0	0.88	C	33.0	0.88
Site Access / NE 75th Street	-	-	-	A	8.6	SB

1. Level of Service as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst Movement reported for unsignalized intersections.

As shown in Table 5 all study intersections are anticipated to continue operating at the same LOS as without project conditions. The delay at the study intersections is expected to increase by less than two seconds from without to with-project conditions.

Site Access

Access to the site is provided via a full access driveway on NE 75th Street and NE 80th Street. As shown in Table 5 driveway operations at NE 75th Street are anticipated to operate at LOS B or better during the weekday PM peak hour. Intersection operations at NE 80th Street / 128th Avenue NE are anticipated to operate at LOS C or better during the weekday AM, afternoon school peak, and PM peak hour.

Sight Distance

A sight distance analysis was conducted at the site access points using the City of Kirkland *Sight Distance Guidelines*. Based on the side-street stop-controlled approach and the 25 mph speed limit on NE 80th Street and NE 75th Street, the required sight distance for a driver 14 feet back of the edge of traveled way is 280 feet east and west of the site access.

The edge of traveled way on NE 80th Street was assumed to be the bike lane, which is conservative as motorist often consider the edge of traveled way to be located at the edge of the vehicle travel lane. Results of the sight distance analysis are shown in Table 6. The sight distance triangles are shown in Figure 7.

Table 6. Driveway Sight Distance Analysis

Direction	Minimum (Required)[1]	Recommended (Desirable)[1]	Measured Distance	Met?
NE 80th Street / 128th Avenue NE				
East	150 feet	280 feet	270 feet	Yes
West	150 feet	280 feet	>300 feet	Yes
NE 75th Street / Site Access				
East	150 feet	280 feet	>280 feet	Yes
West	150 feet	280 feet	280 feet	Yes

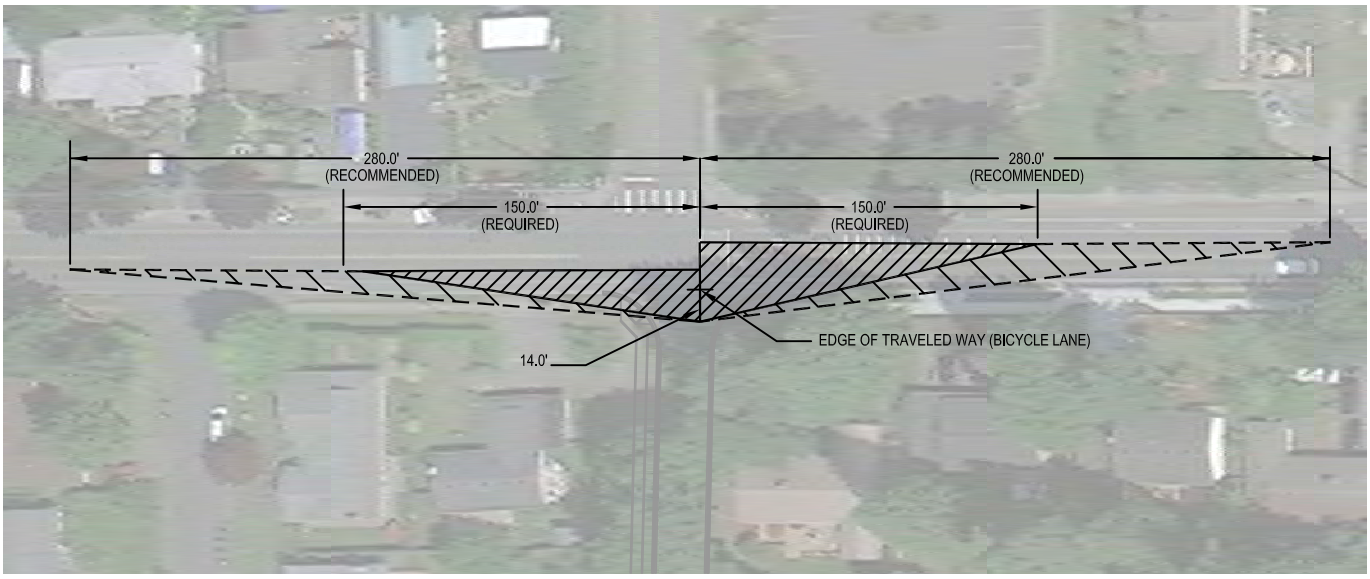
1. From City of Kirkland's *Sight Distance Guidelines* for intersection Type B (stop-controlled) with a roadway speed of 25 mph.

No vertical or horizontal obstructions from the roadway alignment within the defined sight triangle are present at the proposed site access locations. A tree east of the NE 80th Street access inhibits the view of drivers looking east when assuming the 14 foot setback from the edge of bike lane. With this obstruction, sight distance is reduced to 270 feet. Assuming the edge of traveled way is the vehicle travel lane increases sight distance to over 280 feet. With the development of the roadway frontage on NE 75th Street, landscaping and vegetation will need to be maintained to prevent any sight obstructions between 3 feet and 8 feet, per the City of Kirkland *Sight Distance Guidelines.*

N

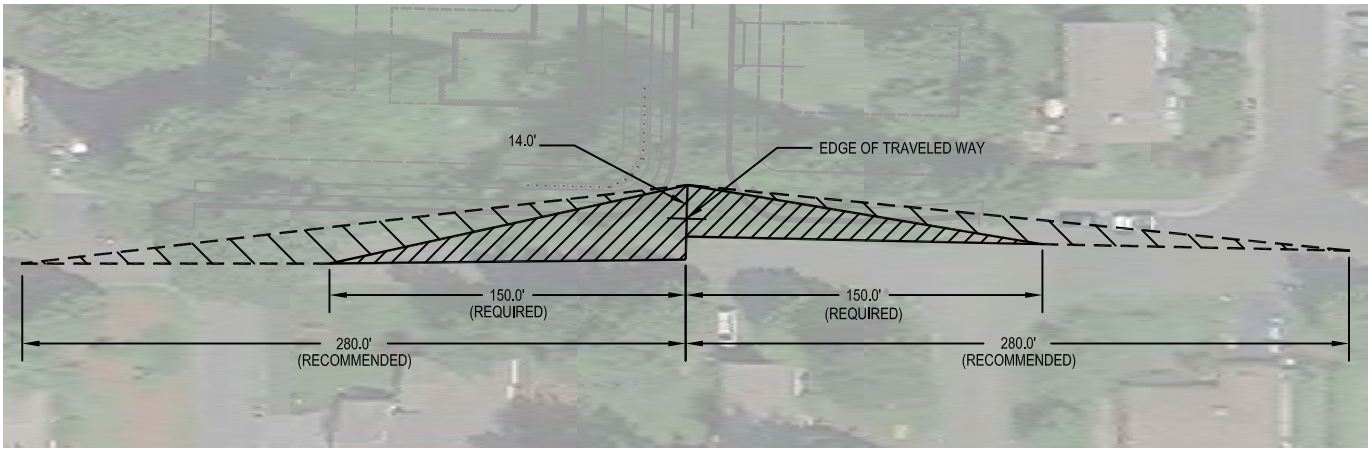
NOT TO SCALE

NE 80th Street



- RECOMMENDED VERTICAL SIGHT DISTANCE CURRENTLY MET IN BOTH DIRECTIONS.
- RECOMMENDED HORIZONTAL SIGHT DISTANCE CURRENTLY MET TOWARDS THE WEST.
- REQUIRED HORIZONATAL SIGHT DISTANCE CURRENTLY MET TOWARDS THE EAST. RECOMMENDED SIGHT DISTANCE IS BLOCKED AT APPROXIMATELY 270 FEET BY TREE.

NE 75th Street



- RECOMMENDED HORIZONTAL AND VERTICAL SIGHT DISTANCE CURRENTLY MET IN BOTH DIRECTIONS.
- VEGETATION ALONG ROADWAY MUST BE MAINTAINED WITHIN SIGHT TRIANGLES BETWEEN 3 FEET AND 8 FEET.

Sight Distance

FIGURE 7

C and G Property

M:\11\11256 C and G Property\Graphics\11256_graphic02 <Fig 7> kyles 01/09/13 17:10

transpoGROUP

Findings and Recommendations

This transportation impact analysis summarizes the potential project traffic related impacts of the proposed residential development in Kirkland, WA. The following outlines the general findings of the study.

- The proposed development is located north of NE 75th Street and east of 126th Avenue NE in the South Rose Hill Neighborhood and would include the construction of up to 35 single family homes. Access to the development is provided via NE 75th Street and NE 80th Street.
- The development is anticipated generate 400 daily trips with 34 weekday AM peak hour trips and 41 weekday PM peak hour trips.
- All study intersections would continue to operate at LOS C or better during with or without-project conditions.
- No off-site mitigation measures are required based on the analysis.
- Sight distance is met at both access driveways.

Appendix A: City of Kirkland Concurrency Results

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	85th St	# of Lanes*=	2
Minor Street[1]	128th Ave	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	15	24	6	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	15	30	0	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
1	***1***	***1***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.15%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.30%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.10%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.60%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.23%
$S_2=(P_3+P_4)/2$=	0.35%

Intersection Proportional Share = Maximum of S1 and S2 = 0.35%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	116th Street	# of Lanes*=	1
Minor Street[1]	I-405 NB	# of Lanes*=	1

DATE:
2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	15	30	0	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	15	30	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.18%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.30%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.12%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.60%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.24%
$S_2=(P_3+P_4)/2$=	0.36%

Intersection Proportional Share = Maximum of S1 and S2 = 0.36%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	70th Street	# of Lanes*=	1
Minor Street[1]	I-405 SB	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	30	50	10	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	25	50	0	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.36%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.50%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.24%
$P_4=V_2/(2{,}500 \times f_4)$ =	1.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.43%
$S_2=(P_3+P_4)/2$=	0.62%

Intersection Proportional Share = Maximum of S1 and S2 = 0.62%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 70th St	# of Lanes*=	1
Minor Street[1]	126th Ave	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	40	80	0	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	40	80	0	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.48%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.80%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.32%
$P_4=V_2/(2{,}500 \times f_4)$ =	1.60%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.64%
$S_2=(P_3+P_4)/2$=	0.96%

Intersection Proportional Share = Maximum of S1 and S2 = 0.96%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	116th Avenue NE	# of Lanes*=	1
Minor Street[1]	70th St	# of Lanes*=	1

DATE: 3/20/1900

Daily Project Traffic Entering the Intersection		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	25	50	0	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	65	50	80	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.30%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.30%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.20%
$P_4=V_2/(2{,}500 \times f_4)$ =	2.60%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.80%
$S_2=(P_3+P_4)/2$=	1.40%

Intersection Proportional Share = Maximum of S1 and S2 = 1.40%

Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 70th Street	# of Lanes*=	1
Minor Street[1]	132nd Avenue NE	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection		**Daily Volumes**	***Entering Leg Volumes****		
(Total of both approaches divided by two)	Major Street Volume V_1 =	15	30	0	***Major***
(Total of both approaches divided by two)	Minor Street Volume V_2 =	15	30	0	***Minor***

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.18%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.30%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.12%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.60%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.24%
$S_2=(P_3+P_4)/2$=	0.36%

Intersection Proportional Share = Maximum of S1 and S2 = 0.36%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	126th Ave Ne	# of Lanes*=	1
Minor Street[1]	NE 75th St	# of Lanes*=	1

DATE:
2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	0	0	0	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	0	0	0	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10,000 \times f_1)$ =	0.00%
$P_2=V_2/(5,000 \times f_2)$ =	0.00%
$P_3=V_1/(15,000 \times f_3)$ =	0.00%
$P_4=V_2/(2,500 \times f_4)$ =	0.00%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.00%
$S_2=(P_3+P_4)/2$=	0.00%

Intersection Proportional Share = Maximum of S1 and S2 = 0.00%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 80th St	# of Lanes*=	1
Minor Street[1]	128th Ave	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	30	30	30	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	60	90	30	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.36%
$P_2=V_2/(5{,}000 \times f_2)$ =	1.20%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.24%
$P_4=V_2/(2{,}500 \times f_4)$ =	2.40%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.78%
$S_2=(P_3+P_4)/2$=	1.32%

Intersection Proportional Share = Maximum of S1 and S2 = 1.32%

Significant Intersection? **yes**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 85th Street	# of Lanes*=	2
Minor Street[1]	120th Avenue NE	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	42.5	54	31	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	7.5	15	0	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
1	***1***	***1***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.43%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.15%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.28%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.30%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.29%
$S_2=(P_3+P_4)/2$=	0.29%

Intersection Proportional Share = Maximum of S1 and S2 = 0.29%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 85th Street	# of Lanes*=	2
Minor Street[1]	124th Avenue NE	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	31.5	39	24	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	11.5	8	15	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
1	***1***	***1***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.32%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.23%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.21%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.46%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.27%
$S_2=(P_3+P_4)/2$=	0.34%

Intersection Proportional Share = Maximum of S1 and S2 = 0.34%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

Proportional Share Impact Worksheet

Input appropriate information in green cells

[1] See "*Intersection Description*" worksheet for descriptions

1. May Change without notice, call Thang Nguyen 425-587-3869 with questions

			Through Lanes[1]
Project Name:	C and G Property		
Major Street[1]	NE 90th Street	# of Lanes*=	1
Minor Street[1]	124th Avenue NE	# of Lanes*=	1

DATE:

2/11/2013

Daily Project Traffic Entering the Intersection

		Daily Volumes	*Entering Leg Volumes* *		
(Total of both approaches divided by two)	Major Street Volume V_1 =	0	0	0	*Major*
(Total of both approaches divided by two)	Minor Street Volume V_2 =	8	8	8	*Minor*

***Do not leave cell empty for zero volume**

Determine Geometric Factors

Number of Lanes		Geometric Factors			
Major Street	Minor Street	f_1	f_2	f_3	f_4
2	2	1.000	1.330	1.000	1.330
2	1	1.000	1.000	1.000	1.000
1	2	0.833	1.330	0.833	1.330
1	1	0.833	1.000	0.833	1.000

f_1	f_2	f_3	f_4
0.833	***1***	***0.833***	***1***

Calculate Base Percentages

$P_1=V_1/(10{,}000 \times f_1)$ =	0.00%
$P_2=V_2/(5{,}000 \times f_2)$ =	0.16%
$P_3=V_1/(15{,}000 \times f_3)$ =	0.00%
$P_4=V_2/(2{,}500 \times f_4)$ =	0.32%

Calculate Proportional Share

$S_1=(P_1+P_2)/2$=	0.08%
$S_2=(P_3+P_4)/2$=	0.16%

Intersection Proportional Share = Maximum of S1 and S2 = 0.16%

Significant Intersection? **no**

1. Number of through lanes. Do not count exclusive turn lanes. Use the smaller number of lanes if the number of lanes is unequal on two legs. For Example, if one minor leg has two lanes and one minor leg has one lane, the number of lanes on the minor leg is one.

Computed By:	Scott Lee
Company:	Transpo Group

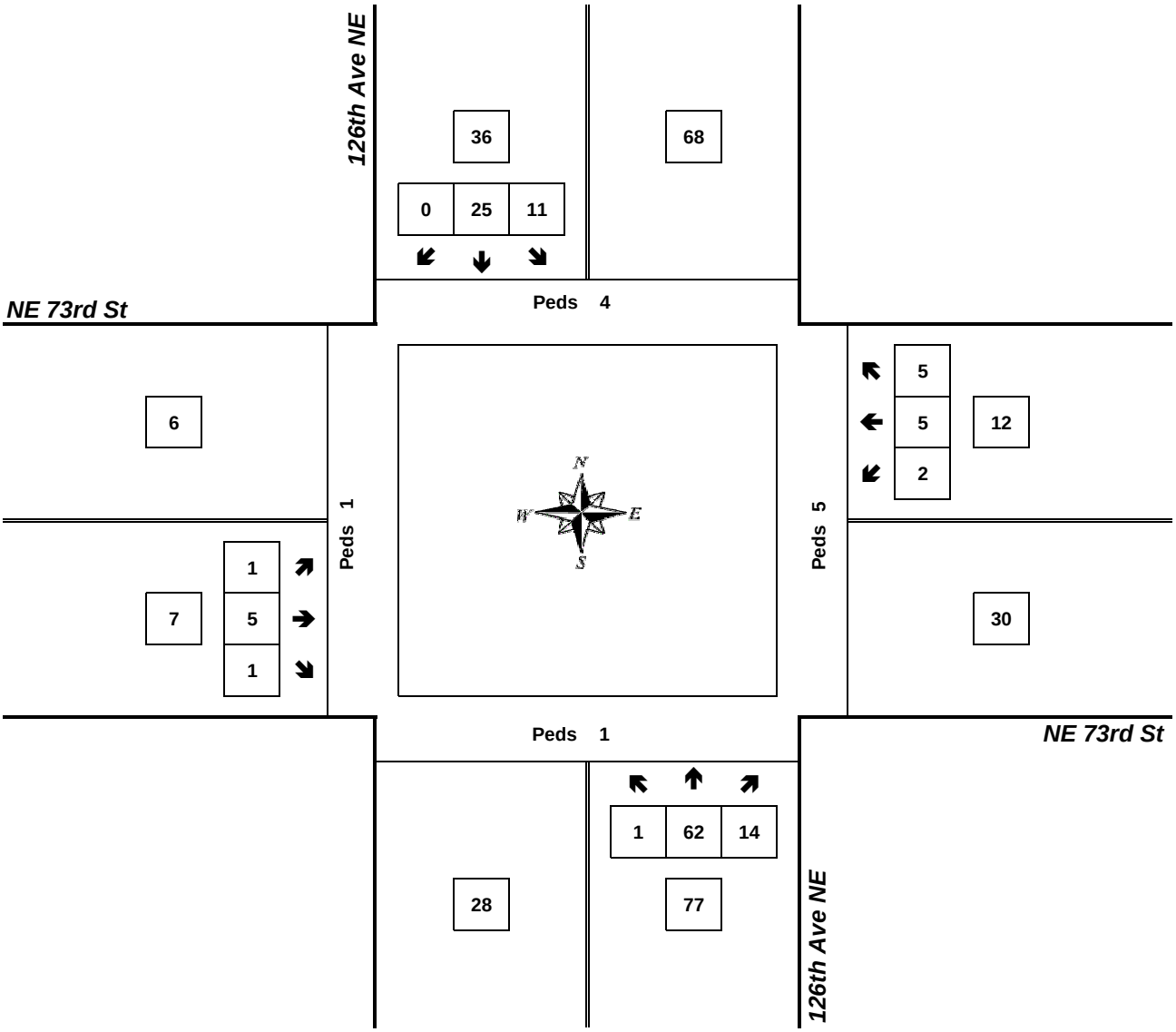
Appendix B: Traffic Volumes

Peak Hour Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300

126th Ave NE & NE 73rd St

5:00 PM to 6:00 PM
Wednesday, February 22, 2012

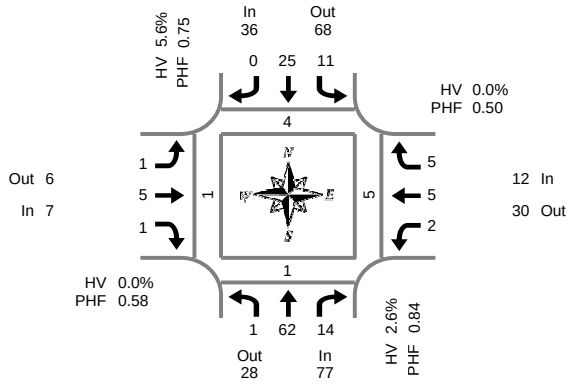


Approach	PHF	HV%	Volume
EB	0.58	0.0%	7
WB	0.50	0.0%	12
NB	0.84	2.6%	77
SB	0.75	5.6%	36
Intersection	0.92	3.0%	132

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
5:00 PM to 6:00 PM

126th Ave NE & NE 73rd St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	11	3	0	2	3	0	0	0	0	0	0	1	0	0	0	20	0	0	0	0
4:15 PM	0	4	2	0	0	4	0	0	0	0	0	0	0	1	2	0	13	0	1	1	0
4:30 PM	0	5	3	1	0	5	0	0	0	0	1	0	2	0	1	0	17	0	0	0	0
4:45 PM	0	13	3	0	2	4	1	0	0	1	0	0	0	4	0	0	28	0	0	0	0
5:00 PM	0	16	3	0	7	5	0	1	0	1	1	0	1	2	0	0	36	2	0	0	0
5:15 PM	1	14	3	0	1	8	0	0	0	3	0	0	1	1	4	0	36	1	0	4	0
5:30 PM	0	13	4	1	3	6	0	1	1	1	0	0	0	2	1	0	31	0	1	1	1
5:45 PM	0	19	4	1	0	6	0	0	0	0	0	0	0	0	0	0	29	1	0	0	0
Total Survey	1	95	25	3	15	41	1	2	1	6	2	0	5	10	8	0	210	4	2	6	1

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	77	28	105	2	36	68	104	2	7	6	13	0	12	30	42	0	132	4	1	5	1
%HV	2.6%				5.6%				0.0%				0.0%				3.0%				
PHF	0.84				0.75				0.58				0.50				0.92				

By Movement	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	62	14	77	11	25	0	36	1	5	1	7	2	5	5	12	132
PHF	0.25	0.82	0.88	0.84	0.39	0.78	0.00	0.75	0.25	0.42	0.25	0.58	0.50	0.63	0.31	0.50	0.92

Rolling Hour Summary
4:00 PM to 6:00 PM

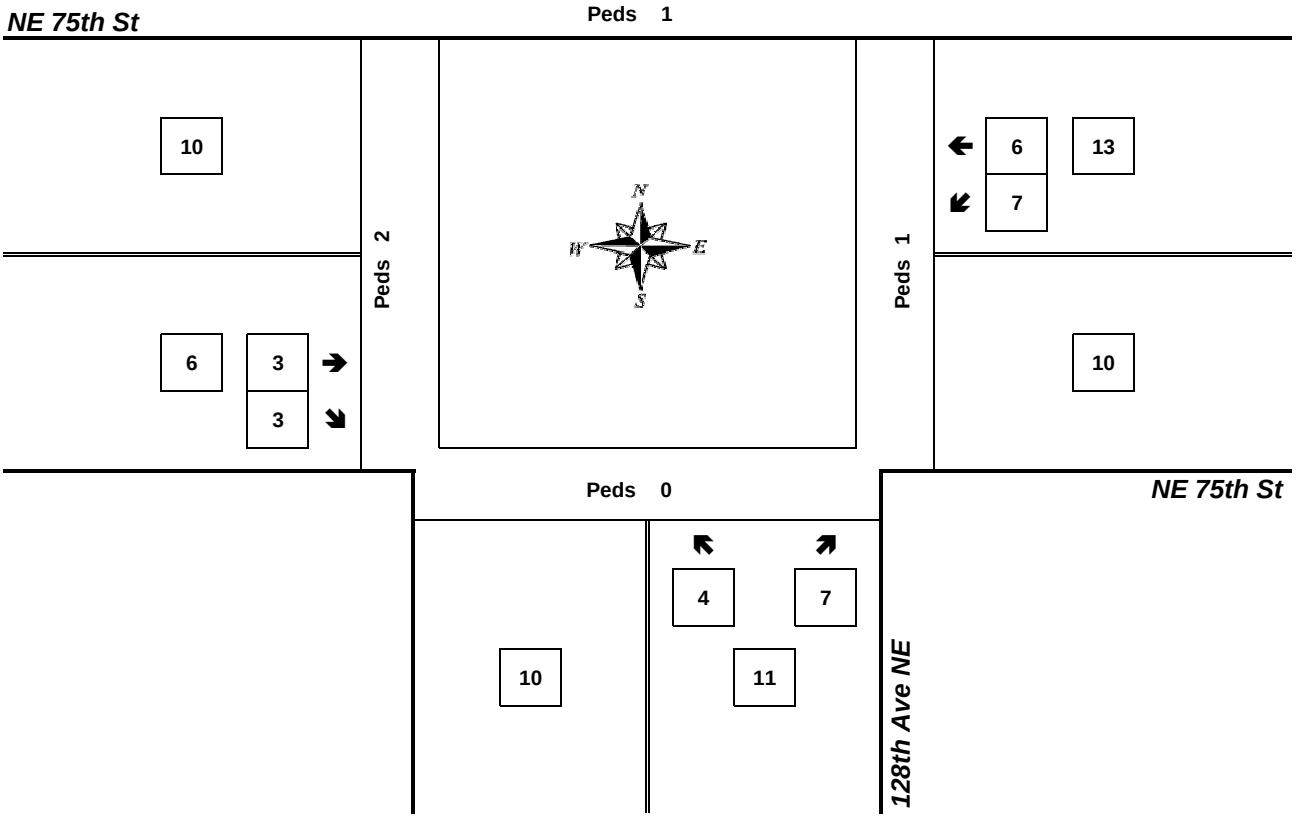
Interval Start Time	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	33	11	1	4	16	1	0	0	1	1	0	3	5	3	0	78	0	1	1	0
4:15 PM	0	38	11	1	9	18	1	1	0	2	2	0	3	7	3	0	94	2	1	1	0
4:30 PM	1	48	12	1	10	22	1	1	0	5	2	0	4	7	5	0	117	3	0	4	0
4:45 PM	1	56	13	1	13	23	1	2	1	6	1	0	2	9	5	0	131	3	1	5	1
5:00 PM	1	62	14	2	11	25	0	2	1	5	1	0	2	5	5	0	132	4	1	5	1

Peak Hour Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300

128th Ave NE & NE 75th St

4:30 PM to 5:30 PM
Wednesday, February 22, 2012

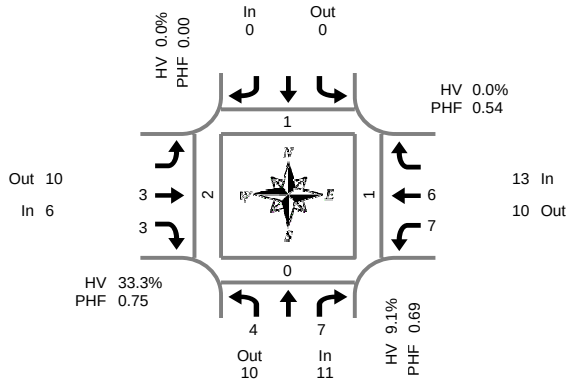


Approach	PHF	HV%	Volume
EB	0.75	33.3%	6
WB	0.54	0.0%	13
NB	0.69	9.1%	11
SB	0.00	0.0%	0
Intersection	0.75	10.0%	30

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
4:30 PM to 5:30 PM

128th Ave NE & NE 75th St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Interval Total	Pedestrians Crosswalk			
	L		R	HV					T	R	HV	L	T		HV			North	South	East	West
4:00 PM	2		1	0					2	0	0	0	0		0		5	0	0	0	0
4:15 PM	0		0	0					0	0	0	0	1		0		1	0	0	0	0
4:30 PM	2		1	1					0	2	2	1	1		0		7	0	0	0	0
4:45 PM	1		3	0					2	0	0	2	0		0		8	0	0	0	0
5:00 PM	0		2	0					0	0	0	3	0		0		5	1	0	1	2
5:15 PM	1		1	0					1	1	0	1	5		0		10	0	0	0	0
5:30 PM	1		2	0					0	0	0	0	0		0		3	0	0	0	0
5:45 PM	1		2	1					0	0	0	0	0		0		3	0	0	0	0
Total Survey	8		12	2					5	3	2	7	7		0		42	1	0	1	2

Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total		In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	11	10	21	1	0	0	0		6	10	16	2	13	10	23	0	30	1	0	1	2
%HV	9.1%				0.0%				33.3%				0.0%				10.0%				
PHF	0.69				0.00				0.75				0.54				0.75				

By Movement	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	4		7	11				0		3	3	6	7	6		13	30
PHF	0.50		0.58	0.69				0.00		0.38	0.38	0.75	0.58	0.30		0.54	0.75

Rolling Hour Summary
4:00 PM to 6:00 PM

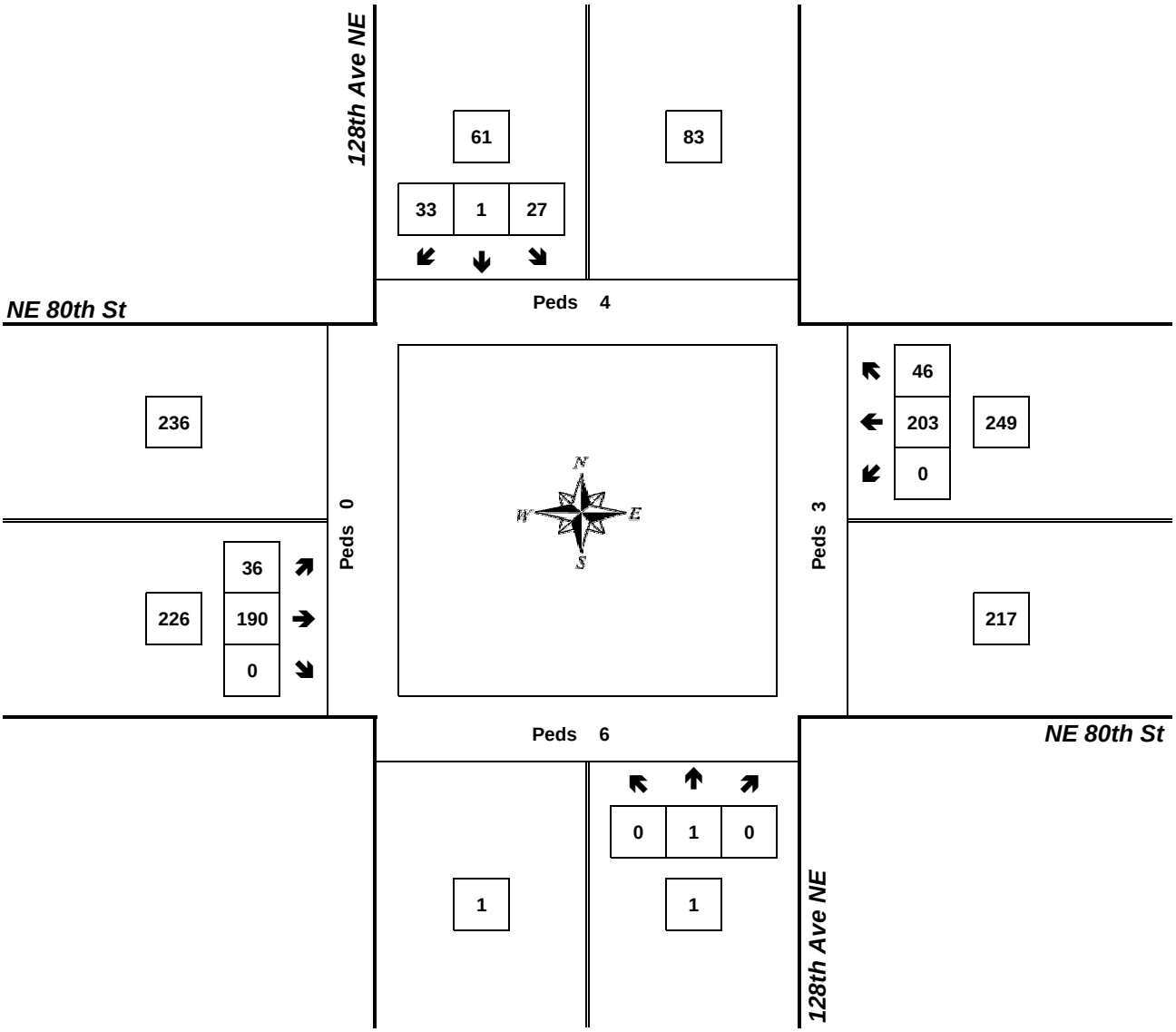
Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Interval Total	Pedestrians Crosswalk			
	L		R	HV					T	R	HV	L	T		HV			North	South	East	West
4:00 PM	5		5	1					4	2	2	3	2		0		21	0	0	0	0
4:15 PM	3		6	1					2	2	2	6	2		0		21	1	0	1	2
4:30 PM	4		7	1					3	3	2	7	6		0		30	1	0	1	2
4:45 PM	3		8	0					3	1	0	6	5		0		26	1	0	1	2
5:00 PM	3		7	1					1	1	0	4	5		0		21	1	0	1	2

Peak Hour Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300

128th Ave NE & NE 80th St

5:00 PM to 6:00 PM
Wednesday, February 22, 2012

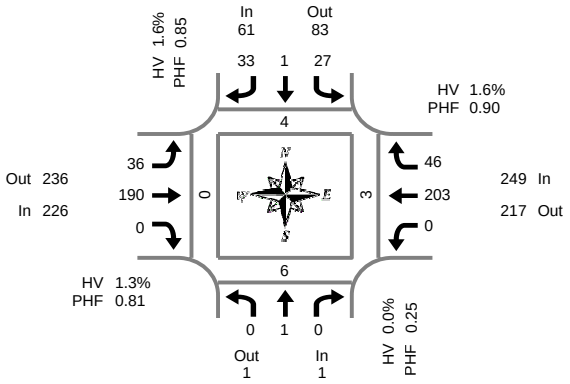


Approach	PHF	HV%	Volume
EB	0.81	1.3%	226
WB	0.90	1.6%	249
NB	0.25	0.0%	1
SB	0.85	1.6%	61
Intersection	0.93	1.5%	537

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
5:00 PM to 6:00 PM

128th Ave NE & NE 80th St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	0	0	0	4	0	6	0	4	19	0	1	0	27	9	0	69	3	4	4	0
4:15 PM	0	0	0	0	2	0	9	1	8	30	0	1	0	35	5	1	89	1	0	0	0
4:30 PM	0	0	0	0	3	0	3	0	5	28	0	1	0	30	2	0	71	4	5	0	0
4:45 PM	0	0	0	0	7	1	6	0	10	34	1	0	0	40	6	1	105	0	5	0	0
5:00 PM	0	0	0	0	3	1	8	0	5	47	0	1	0	54	10	0	128	0	1	2	0
5:15 PM	0	1	0	0	6	0	8	0	15	55	0	0	0	51	8	1	144	1	3	1	0
5:30 PM	0	0	0	0	9	0	9	1	7	49	0	1	0	55	14	1	143	2	2	0	0
5:45 PM	0	0	0	0	9	0	8	0	9	39	0	1	0	43	14	2	122	1	0	0	0
Total Survey	0	1	0	0	43	2	57	2	63	301	1	6	0	335	68	6	871	12	20	7	0

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	1	1	2	0	61	83	144	1	226	236	462	3	249	217	466	4	537	4	6	3	0
%HV	0.0%				1.6%				1.3%				1.6%				1.5%				
PHF	0.25				0.85				0.81				0.90				0.93				

By Movement	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	0	1	27	1	33	61	36	190	0	226	0	203	46	249	537
PHF	0.00	0.25	0.00	0.25	0.75	0.25	0.92	0.85	0.60	0.86	0.00	0.81	0.00	0.92	0.82	0.90	0.93

Rolling Hour Summary
4:00 PM to 6:00 PM

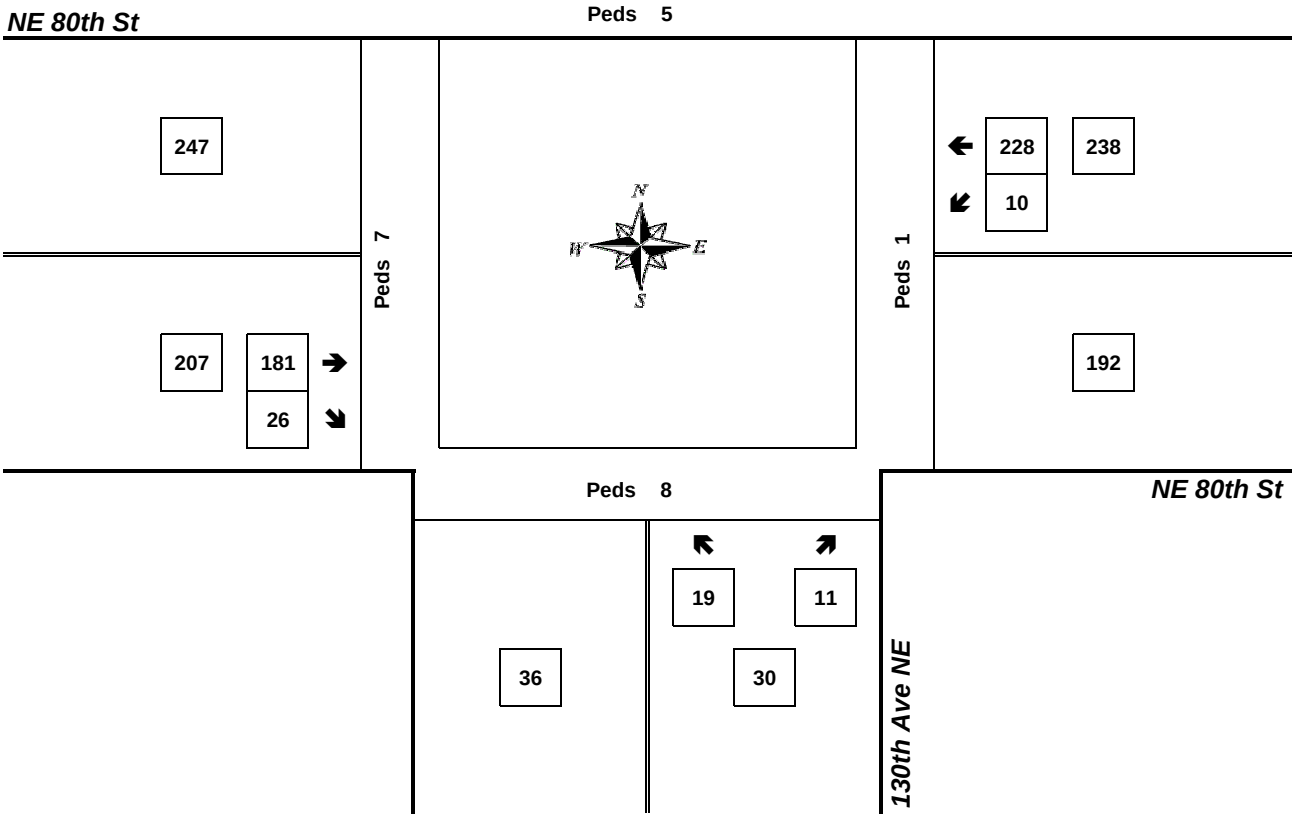
Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	0	0	0	16	1	24	1	27	111	1	3	0	132	22	2	334	8	14	4	0
4:15 PM	0	0	0	0	15	2	26	1	28	139	1	3	0	159	23	2	393	5	11	2	0
4:30 PM	0	1	0	0	19	2	25	0	35	164	1	2	0	175	26	2	448	5	14	3	0
4:45 PM	0	1	0	0	25	2	31	1	37	185	1	2	0	200	38	3	520	3	11	3	0
5:00 PM	0	1	0	0	27	1	33	1	36	190	0	3	0	203	46	4	537	4	6	3	0

Peak Hour Summary

Mark Skaggs
(206) 251-0300

130th Ave NE & NE 80th St

5:00 PM to 6:00 PM
Wednesday, February 22, 2012

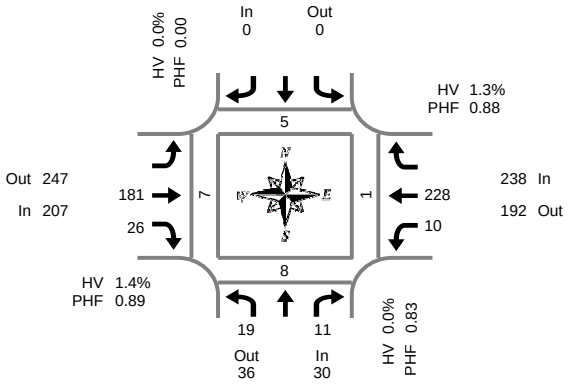


Approach	PHF	HV%	Volume
EB	0.89	1.4%	207
WB	0.88	1.3%	238
NB	0.83	0.0%	30
SB	0.00	0.0%	0
Intersection	0.88	1.3%	475

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
5:00 PM to 6:00 PM

130th Ave NE & NE 80th St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L		R	HV					T	R	HV	L	T		HV			North	South	East	West
4:00 PM	2		4	1					18	1	1	0	32		0		57	0	1	0	2
4:15 PM	3		4	0					31	2	0	4	33		0		77	4	0	0	1
4:30 PM	3		3	0					28	1	2	0	30		2		65	7	1	0	0
4:45 PM	5		4	1					39	4	0	2	45		0		99	0	2	0	0
5:00 PM	5		2	0					42	5	1	0	53		1		107	2	3	0	0
5:15 PM	4		2	0					48	9	0	4	53		1		120	0	1	0	2
5:30 PM	4		5	0					53	5	1	3	65		1		135	2	4	1	5
5:45 PM	6		2	0					38	7	1	3	57		0		113	1	0	0	0
Total Survey	32		26	2					297	34	6	16	368		5		773	16	12	1	10

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total		In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	30	36	66	0	0	0	0		207	247	454	3	238	192	430	3	475	5	8	1	7
%HV	0.0%				0.0%				1.4%				1.3%				1.3%				
PHF	0.83				0.00				0.89				0.88				0.88				

By Movement	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	19		11	30				0		181	26	207	10	228		238	475
PHF	0.79		0.55	0.83				0.00		0.85	0.72	0.89	0.63	0.88		0.88	0.88

Rolling Hour Summary
4:00 PM to 6:00 PM

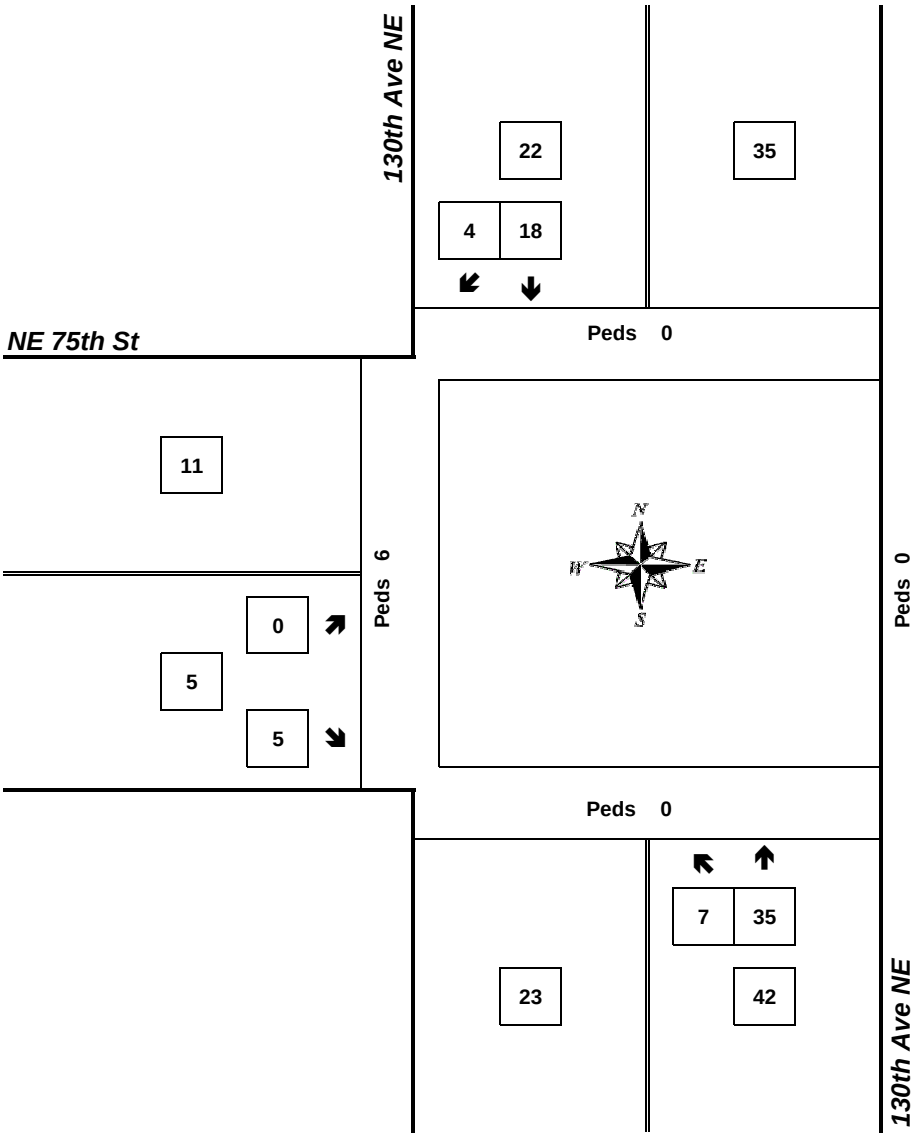
Interval Start Time	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 80th St			Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L		R	HV					T	R	HV	L	T		HV		North	South	East	West
4:00 PM	13		15	2					116	8	3	6	140		2	298	11	4	0	3
4:15 PM	16		13	1					140	12	3	6	161		3	348	13	6	0	1
4:30 PM	17		11	1					157	19	3	6	181		4	391	9	7	0	2
4:45 PM	18		13	1					182	23	2	9	216		3	461	4	10	1	7
5:00 PM	19		11	0					181	26	3	10	228		3	475	5	8	1	7

Peak Hour Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300

130th Ave NE & NE 75th St

4:45 PM to 5:45 PM
Wednesday, February 22, 2012

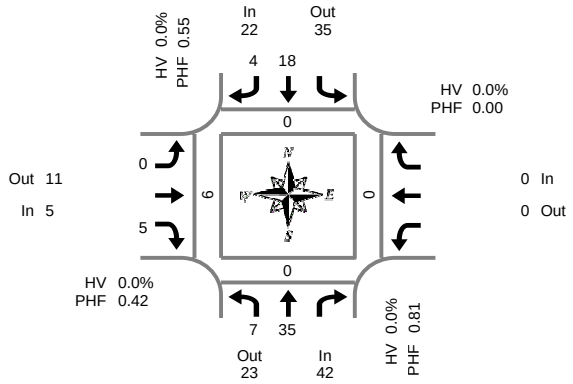


Approach	PHF	HV%	Volume
EB	0.42	0.0%	5
WB	0.00	0.0%	0
NB	0.81	0.0%	42
SB	0.55	0.0%	22
Intersection	0.75	0.0%	69

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
4:45 PM to 5:45 PM

130th Ave NE & NE 75th St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Interval Total	Pedestrians Crosswalk			
	L	T		HV		T	R	HV	L		R	HV						North	South	East	West
4:00 PM	2	6		0		3	0	0	1		1	0					13	0	0	0	2
4:15 PM	1	7		0		5	1	0	1		1	0					16	0	0	0	0
4:30 PM	1	2		0		0	0	0	0		1	1					4	0	0	0	1
4:45 PM	1	8		0		4	1	0	0		2	0					16	0	0	0	1
5:00 PM	0	8		0		1	1	0	0		3	0					13	0	0	0	3
5:15 PM	3	10		0		8	2	0	0		0	0					23	0	0	0	0
5:30 PM	3	9		0		5	0	0	0		0	0					17	0	0	0	2
5:45 PM	2	4		0		5	1	0	1		0	0					13	0	0	0	0
Total Survey	13	54		0		31	6	0	3		8	1					115	0	0	0	9

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total			North	South	East	West
Volume	42	23	65	0	22	35	57	0	5	11	16	0	0	0	0		69	0	0	0	6
%HV	0.0%				0.0%				0.0%				0.0%				0.0%				
PHF	0.81				0.55				0.42				0.00				0.75				

By Movement	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	7	35		42		18	4	22	0		5	5				0	69
PHF	0.58	0.88		0.81		0.56	0.50	0.55	0.00		0.42	0.42				0.00	0.75

Rolling Hour Summary
4:00 PM to 6:00 PM

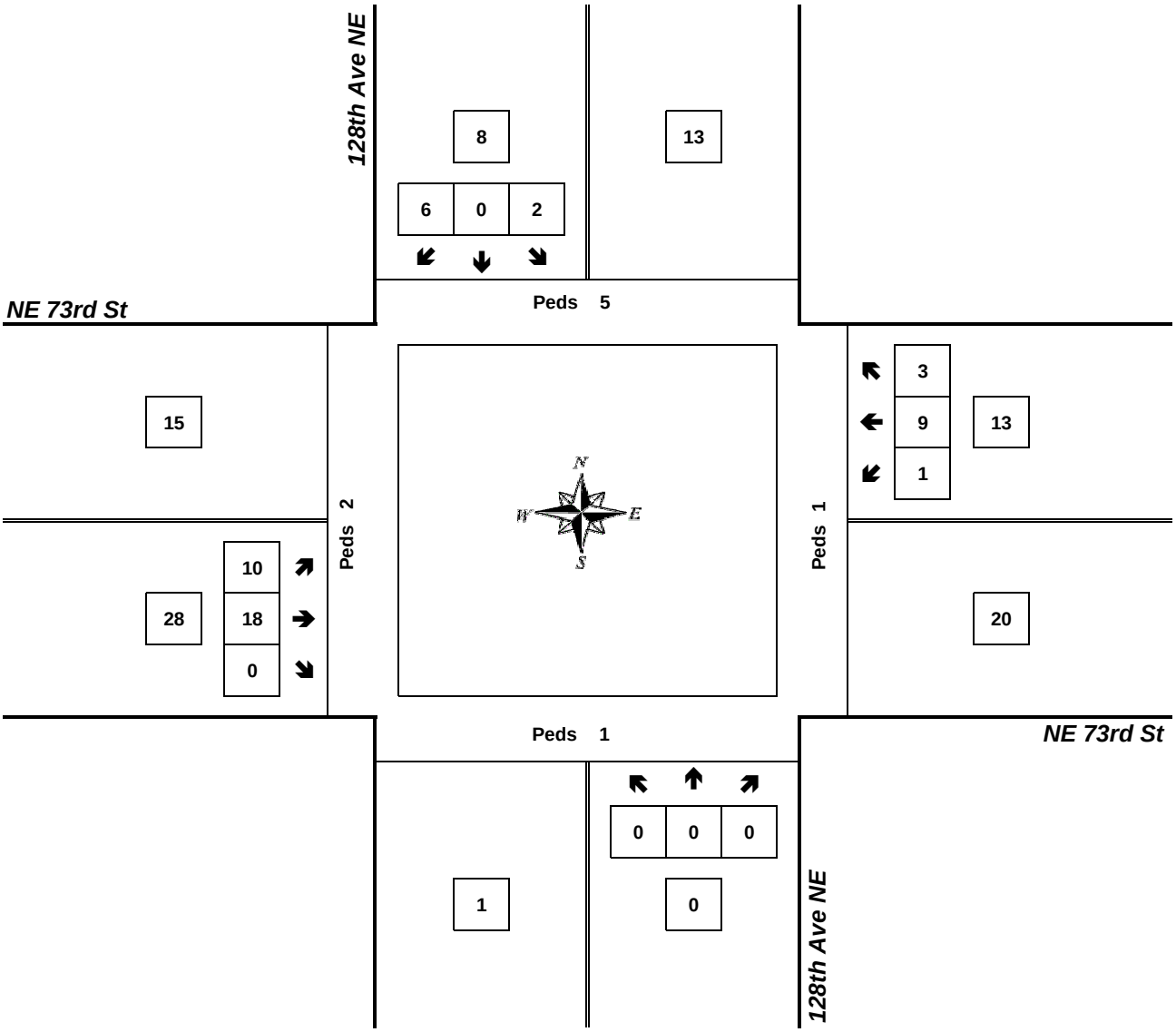
Interval Start Time	Northbound 130th Ave NE				Southbound 130th Ave NE				Eastbound NE 75th St				Westbound NE 75th St				Interval Total	Pedestrians Crosswalk			
	L	T		HV		T	R	HV	L		R	HV						North	South	East	West
4:00 PM	5	23		0		12	2	0	2		5	1					49	0	0	0	4
4:15 PM	3	25		0		10	3	0	1		7	1					49	0	0	0	5
4:30 PM	5	28		0		13	4	0	0		6	1					56	0	0	0	5
4:45 PM	7	35		0		18	4	0	0		5	0					69	0	0	0	6
5:00 PM	8	31		0		19	4	0	1		3	0					66	0	0	0	5

Peak Hour Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300

128th Ave NE & NE 73rd St

4:45 PM to 5:45 PM
Wednesday, February 22, 2012

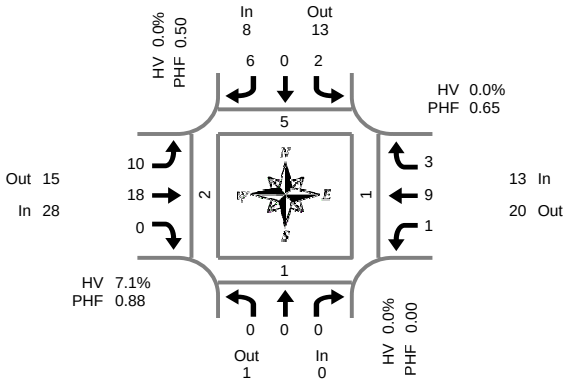


Approach	PHF	HV%	Volume
EB	0.88	7.1%	28
WB	0.65	0.0%	13
NB	0.00	0.0%	0
SB	0.50	0.0%	8
Intersection	0.94	4.1%	49

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
4:45 PM to 5:45 PM

128th Ave NE & NE 73rd St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	0	0	0	1	0	1	0	4	2	0	1	0	1	1	1	10	4	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	4	1	0	1	1
4:45 PM	0	0	0	0	0	0	1	0	3	3	0	0	0	4	1	0	12	1	0	1	1
5:00 PM	0	0	0	0	2	0	2	0	3	5	0	1	0	1	0	0	13	2	0	0	1
5:15 PM	0	0	0	0	0	0	3	0	2	4	0	0	1	1	1	0	12	1	1	0	0
5:30 PM	0	0	0	0	0	0	0	0	2	6	0	1	0	3	1	0	12	1	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	3	2	0	1	0	1	1	0	7	3	4	0	0
Total Survey	0	0	0	0	3	0	8	0	18	23	1	4	1	14	5	1	73	13	5	2	3

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	0	1	1	0	8	13	21	0	28	15	43	2	13	20	33	0	49	5	1	1	2
%HV	0.0%				0.0%				7.1%				0.0%				4.1%				
PHF	0.00				0.50				0.88				0.65				0.94				

By Movement	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	2	0	6	8	10	18	0	28	1	9	3	13	49
PHF	0.00	0.00	0.00	0.00	0.25	0.00	0.50	0.50	0.83	0.75	0.00	0.88	0.25	0.56	0.75	0.65	0.94

Rolling Hour Summary
4:00 PM to 6:00 PM

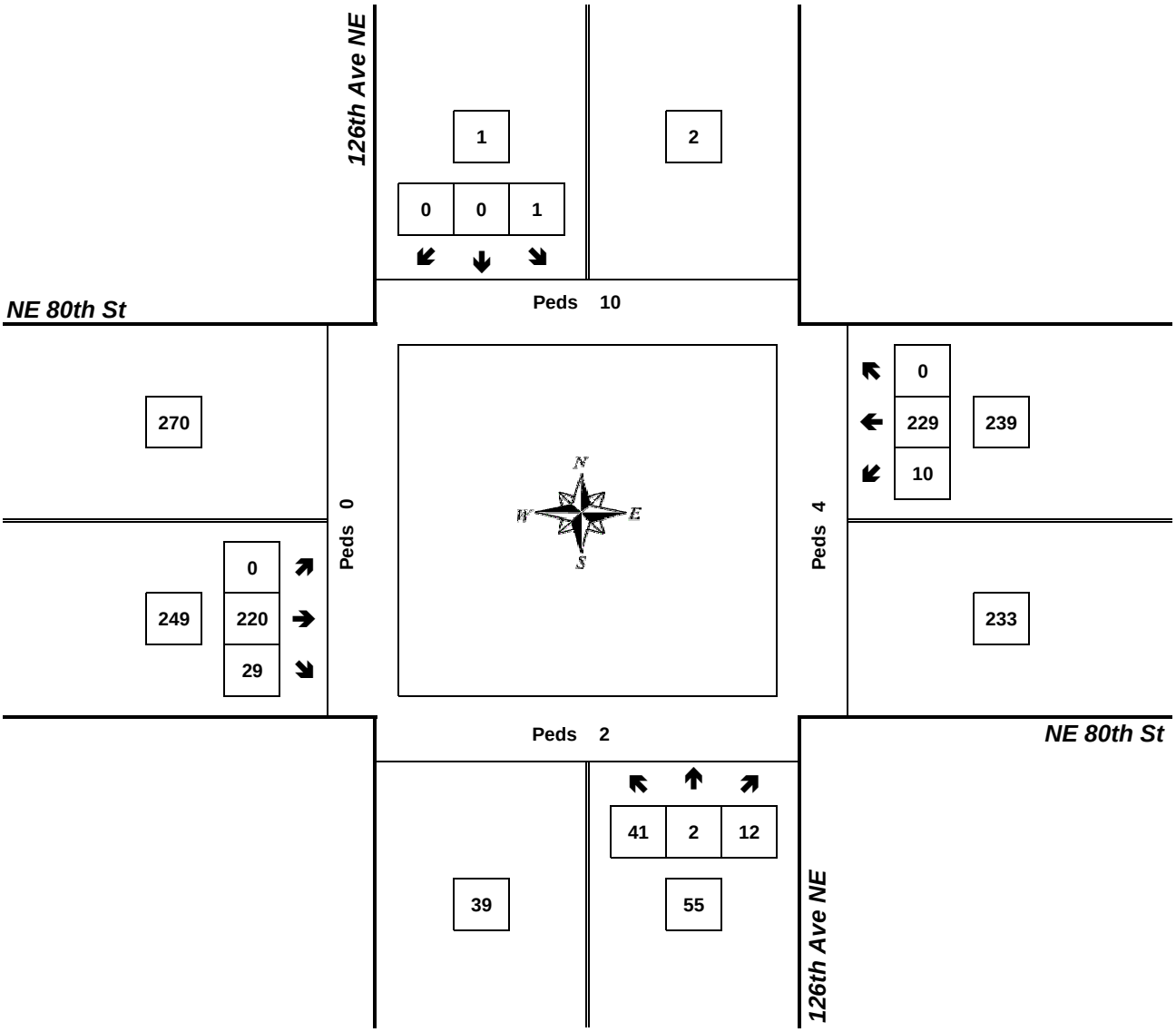
Interval Start Time	Northbound 128th Ave NE				Southbound 128th Ave NE				Eastbound NE 73rd St				Westbound NE 73rd St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	0	0	0	0	1	0	3	0	8	6	1	1	0	8	2	1	29	6	0	2	2
4:15 PM	0	0	0	0	2	0	4	0	7	9	1	1	0	8	1	0	32	4	0	2	3
4:30 PM	0	0	0	0	2	0	7	0	9	12	1	1	1	7	2	0	41	5	1	2	3
4:45 PM	0	0	0	0	2	0	6	0	10	18	0	2	1	9	3	0	49	5	1	1	2
5:00 PM	0	0	0	0	2	0	5	0	10	17	0	3	1	6	3	0	44	7	5	0	1

Peak Hour Summary

Mark Skaggs
(206) 251-0300

126th Ave NE & NE 80th St

5:00 PM to 6:00 PM
Wednesday, February 22, 2012

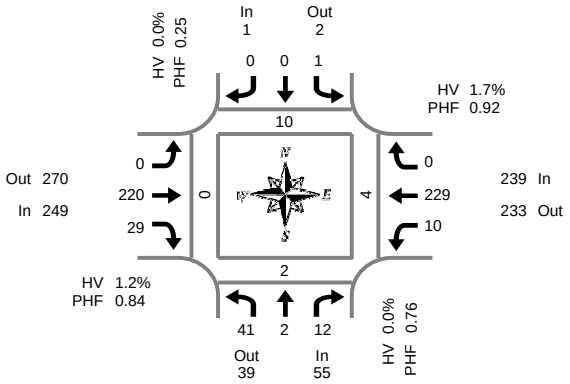


Approach	PHF	HV%	Volume
EB	0.84	1.2%	249
WB	0.92	1.7%	239
NB	0.76	0.0%	55
SB	0.25	0.0%	1
Intersection	0.89	1.3%	544

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Mark Skaggs
(206) 251-0300



Peak Hour Summary
5:00 PM to 6:00 PM

126th Ave NE & NE 80th St

Wednesday, February 22, 2012
4:00 PM to 6:00 PM

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	8	0	1	0	0	0	0	0	0	19	6	2	1	31	0	0	66	0	2	0	0
4:15 PM	3	0	3	0	0	0	0	0	0	37	4	1	1	42	0	1	90	2	0	1	1
4:30 PM	7	0	2	1	0	0	0	0	0	30	5	1	4	30	0	0	78	4	0	0	0
4:45 PM	10	0	2	0	0	0	0	0	0	44	5	0	1	43	0	1	105	2	0	2	0
5:00 PM	10	2	3	0	1	0	0	0	0	53	9	0	3	61	0	0	142	0	0	0	0
5:15 PM	14	0	4	0	0	0	0	0	0	67	7	1	5	55	0	1	152	4	1	0	0
5:30 PM	8	0	1	0	0	0	0	0	0	61	6	1	1	64	0	2	141	2	1	2	0
5:45 PM	9	0	4	0	0	0	0	0	0	39	7	1	1	49	0	1	109	4	0	2	0
Total Survey	69	2	20	1	1	0	0	0	0	350	49	7	17	375	0	6	883	18	4	7	1

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	55	39	94	0	1	2	3	0	249	270	519	3	239	233	472	4	544	10	2	4	0
%HV	0.0%				0.0%				1.2%				1.7%				1.3%				
PHF	0.76				0.25				0.84				0.92				0.89				

By Movement	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	41	2	12	55	1	0	0	1	0	220	29	249	10	229	0	239	544
PHF	0.73	0.25	0.75	0.76	0.25	0.00	0.00	0.25	0.00	0.82	0.81	0.84	0.50	0.89	0.00	0.92	0.89

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 126th Ave NE				Southbound 126th Ave NE				Eastbound NE 80th St				Westbound NE 80th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	28	0	8	1	0	0	0	0	0	130	20	4	7	146	0	2	339	8	2	3	1
4:15 PM	30	2	10	1	1	0	0	0	0	164	23	2	9	176	0	2	415	8	0	3	1
4:30 PM	41	2	11	1	1	0	0	0	0	194	26	2	13	189	0	2	477	10	1	2	0
4:45 PM	42	2	10	0	1	0	0	0	0	225	27	2	10	223	0	4	540	8	2	4	0
5:00 PM	41	2	12	0	1	0	0	0	0	220	29	3	10	229	0	4	544	10	2	4	0

Prepared for: **Transpo Group**

Traffic Count Consultants, Inc.

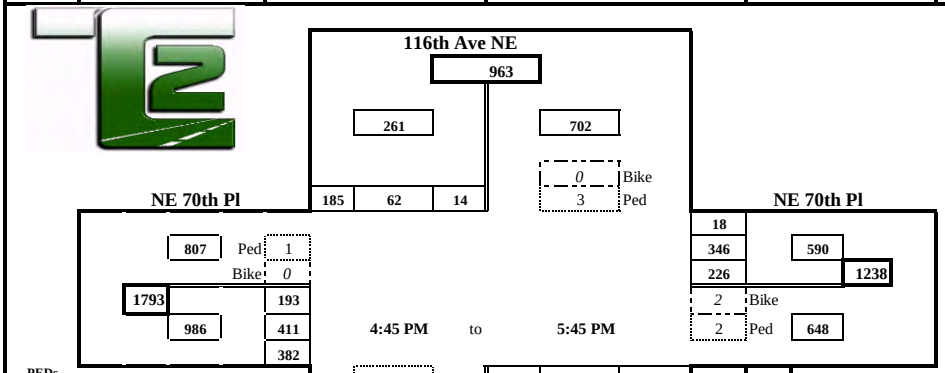
Phone: (253) 926-6009 FAX: (253) 922-7211 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: 116th Ave NE & NE 70th Pl **Date of Count:** Wed 02/13/2013

Location: Kirkland, Washington **Checked By:** Jess

Time Interval	From North on (SB) 116th Ave NE				From South on (NB) 116th Ave NE				From East on (WB) NE 70th Pl				From West on (EB) NE 70th Pl				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	4	28	20	6	81	100	44	3	42	81	4	3	29	95	104	632
4:30 P	0	5	15	20	5	93	117	46	0	46	77	11	2	36	111	90	667
4:45 P	2	5	16	42	5	66	95	60	1	56	83	5	2	35	93	87	643
5:00 P	0	1	18	62	2	68	123	56	0	52	75	3	3	47	85	98	688
5:15 P	1	5	10	42	7	67	111	62	0	65	75	3	2	56	105	84	685
5:30 P	1	3	15	45	2	66	125	55	0	60	96	7	1	43	115	103	733
5:45 P	1	5	19	36	5	75	132	50	0	49	100	5	2	47	106	97	721
6:00 P	1	3	23	42	4	50	91	78	0	61	113	2	1	31	102	85	681
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	7	31	144	309	36	566	894	451	4	431	700	40	16	324	812	748	5450
	Peak Hour: 4:45 PM to 5:45 PM																
Total	3	14	62	185	16	276	491	223	0	226	346	18	8	193	411	382	2827
Approach	261				990				590				986				2827
%HV	1.1%				1.6%				n/a				0.8%				1.0%
PHF	0.81				0.96				0.90				0.94				0.96



2932 *1.0 PHF Peak Hour Volume*

PEDs Across:	N	S	E	W	
INT 01	1	5			6
INT 02	1	1		2	4
INT 03			1		1
INT 04					0
INT 05	1	7			8
INT 06	2	3	2	1	8
INT 07		1			1
INT 08	2				2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	7	17	3	3	**30**

Bicycles From:	N	S	E	W	
INT 01					0
INT 02					0
INT 03				1	1
INT 04					0
INT 05					0
INT 06		1	1		2
INT 07			1		1
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	1	2	1	4

		PHF	%HV
	EB	0.94	0.8%
Check	**WB**	0.90	n/a
In: 2827	**NB**	0.96	1.6%
Out: 2827	**SB**	0.81	1.1%
	T Int.	0.96	1.0%

Conditions:

Special Notes

TPG13026M_01p

Appendix C: LOS Definitions

Highway Capacity Manual, 2000

Signalized intersection level of service (LOS) is defined in terms of the average total vehicle delay of all movements through an intersection. Vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average delay per vehicle during a specified time period (for example, the PM peak hour). Vehicle delay is a complex measure based on many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, and traffic volumes with respect to intersection capacity. Table 1 shows LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* (Transportation Research Board, Special Report 209, 2000).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

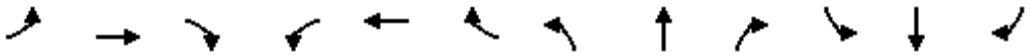
Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table 2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

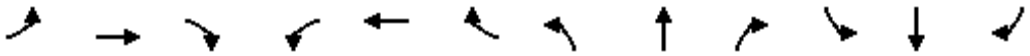
Appendix D: LOS Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	150	5	0	140	45	5	0	0	60	0	60
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	86	185	6	0	173	56	6	0	0	74	0	74
Pedestrians					12			11			30	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	258			202			647	631	211	604	606	231
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	258			202			647	631	211	604	606	231
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			98	100	100	80	100	91
cM capacity (veh/h)	1262			1328			321	361	818	363	368	784

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	278	228	6	148
Volume Left	86	0	6	74
Volume Right	6	56	0	74
cSH	1262	1328	321	496
Volume to Capacity	0.07	0.00	0.02	0.30
Queue Length 95th (ft)	6	0	1	31
Control Delay (s)	2.9	0.0	16.5	15.3
Lane LOS	A		C	C
Approach Delay (s)	2.9	0.0	16.5	15.3
Approach LOS			C	C

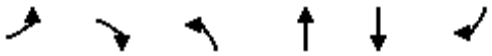
Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	215	0	0	135	40	5	0	0	60	0	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	118	253	0	0	159	47	6	0	0	71	0	100
Pedestrians					15			32			25	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	231			285			803	751	300	711	728	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	231			285			803	751	300	711	728	207
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			100			97	100	100	76	100	88
cM capacity (veh/h)	1303			1238			233	296	715	299	301	808

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	371	206	6	171
Volume Left	118	0	6	71
Volume Right	0	47	0	100
cSH	1303	1238	233	474
Volume to Capacity	0.09	0.00	0.03	0.36
Queue Length 95th (ft)	7	0	2	40
Control Delay (s)	3.1	0.0	20.8	16.8
Lane LOS	A		C	C
Approach Delay (s)	3.1	0.0	20.8	16.8
Approach LOS			C	C

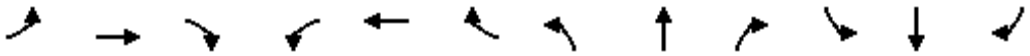
Intersection Summary				
Average Delay	5.5			
Intersection Capacity Utilization	46.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	5	5	5	5	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	7	7	7	7	7
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	33	12	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	33	12	15			
tC, single (s)	6.7	6.5	4.2			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	901	984	1555			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	13	13
Volume Left	7	7	0
Volume Right	7	0	7
cSH	940	1555	1700
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	3.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	3.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	5	5	5	5	60	15	10	25	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	5	5	5	5	5	65	16	11	27	0
Pedestrians		1			5			1			4	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	146	147	29	147	139	82	28			87		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	146	147	29	147	139	82	28			87		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	99	99	99	99	99	99	100			99		
cM capacity (veh/h)	805	736	1050	803	744	975	1577			1479		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	16	87	38
Volume Left	5	5	5	11
Volume Right	5	5	16	0
cSH	844	830	1577	1479
Volume to Capacity	0.02	0.02	0.00	0.01
Queue Length 95th (ft)	1	2	0	1
Control Delay (s)	9.3	9.4	0.5	2.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.4	0.5	2.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	17.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	190	0	0	205	45	0	5	0	25	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	38	204	0	0	220	48	0	5	0	27	5	38
Pedestrians					3			6			4	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	273			210			571	558	213	534	534	249
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273			210			571	558	213	534	534	249
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	99	100	94	99	95
cM capacity (veh/h)	1292			1354			397	424	826	437	435	787

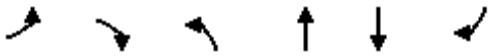
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	242	269	5	70
Volume Left	38	0	0	27
Volume Right	0	48	0	38
cSH	1292	1354	424	575
Volume to Capacity	0.03	0.00	0.01	0.12
Queue Length 95th (ft)	2	0	1	10
Control Delay (s)	1.4	0.0	13.6	12.1
Lane LOS	A		B	B
Approach Delay (s)	1.4	0.0	13.6	12.1
Approach LOS			B	B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	180	25	10	230	20	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	205	28	11	261	23	11
Pedestrians	7			1	8	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			241		518	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			241		518	228
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	99
cM capacity (veh/h)			1323		510	810

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	233	273	34
Volume Left	0	11	23
Volume Right	28	0	11
cSH	1700	1323	582
Volume to Capacity	0.14	0.01	0.06
Queue Length 95th (ft)	0	1	5
Control Delay (s)	0.0	0.4	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.6
Approach LOS			B

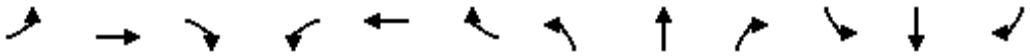
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	5	5	35	20	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	7	7	47	27	7
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	96	36	39			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96	36	39			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	900	1037	1576			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	7	53	33
Volume Left	0	7	0
Volume Right	7	0	7
cSH	1037	1576	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.5	0.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	0.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	16.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	405	380	225	345	20	275	485	220	15	60	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1787	1866		1787	1881	1599	1770	1651	
Flt Permitted	0.29	1.00	1.00	0.23	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	556	1900	1615	425	1866		1787	1881	1599	1770	1651	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	198	422	396	234	359	21	286	505	229	16	62	193
RTOR Reduction (vph)	0	0	229	0	3	0	0	0	146	0	145	0
Lane Group Flow (vph)	198	422	167	234	377	0	286	505	83	16	110	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8					2			
Actuated Green, G (s)	21.8	16.7	28.9	23.8	17.7		12.2	24.9	24.9	0.8	13.5	
Effective Green, g (s)	21.8	16.7	28.9	23.8	17.7		12.2	24.9	24.9	0.8	13.5	
Actuated g/C Ratio	0.32	0.24	0.42	0.35	0.26		0.18	0.36	0.36	0.01	0.20	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	2.0	2.0	0.2	0.2	
Lane Grp Cap (vph)	269	463	799	268	482		318	683	581	20	325	
v/s Ratio Prot	0.05	0.22	0.04	c0.08	0.20		c0.16	c0.27		0.01	c0.07	
v/s Ratio Perm	0.18		0.07	c0.22					0.05			
v/c Ratio	0.74	0.91	0.21	0.87	0.78		0.90	0.74	0.14	0.80	0.34	
Uniform Delay, d1	19.2	25.2	12.6	18.9	23.6		27.5	19.0	14.6	33.8	23.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.7	21.7	0.0	24.7	7.5		25.8	3.6	0.0	105.9	0.2	
Delay (s)	27.9	46.9	12.6	43.6	31.1		53.4	22.6	14.7	139.6	23.9	
Level of Service	C	D	B	D	C		D	C	B	F	C	
Approach Delay (s)		29.8			35.9			29.5			30.7	
Approach LOS		C			D			C			C	

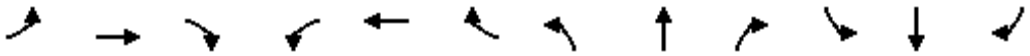
Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	220	30	10	230	0	40	5	10	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	247	34	11	258	0	45	6	11	6	0	0
Pedestrians					4			2			10	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	268			283			547	557	270	573	574	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			283			547	557	270	573	574	268
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			90	99	99	99	100	100
cM capacity (veh/h)	1290			1277			444	433	770	412	424	769

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	281	270	62	6
Volume Left	0	11	45	6
Volume Right	34	0	11	0
cSH	1290	1277	480	412
Volume to Capacity	0.00	0.01	0.13	0.01
Queue Length 95th (ft)	0	1	11	1
Control Delay (s)	0.0	0.4	13.6	13.9
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.4	13.6	13.9
Approach LOS			B	B

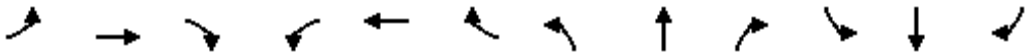
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	155	5	0	145	45	5	0	0	60	0	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	86	191	6	0	179	56	6	0	0	74	0	80
Pedestrians					12			11			30	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			1			3	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	265			209			665	643	217	616	618	237
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			209			665	643	217	616	618	237
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			98	100	100	79	100	90
cM capacity (veh/h)	1256			1321			308	355	812	356	362	777

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	284	235	6	154
Volume Left	86	0	6	74
Volume Right	6	56	0	80
cSH	1256	1321	308	496
Volume to Capacity	0.07	0.00	0.02	0.31
Queue Length 95th (ft)	6	0	2	33
Control Delay (s)	2.9	0.0	16.9	15.5
Lane LOS	A		C	C
Approach Delay (s)	2.9	0.0	16.9	15.5
Approach LOS			C	C

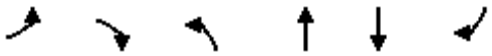
Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	220	0	0	140	40	5	0	0	60	0	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	129	259	0	0	165	47	6	0	0	71	0	118
Pedestrians					15			32			25	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	237			291			856	786	306	746	763	213
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			291			856	786	306	746	763	213
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			97	100	100	75	100	85
cM capacity (veh/h)	1297			1231			207	280	710	281	284	802

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	388	212	6	188
Volume Left	129	0	6	71
Volume Right	0	47	0	118
cSH	1297	1231	207	473
Volume to Capacity	0.10	0.00	0.03	0.40
Queue Length 95th (ft)	8	0	2	47
Control Delay (s)	3.3	0.0	22.9	17.6
Lane LOS	A		C	C
Approach Delay (s)	3.3	0.0	22.9	17.6
Approach LOS			C	C

Intersection Summary				
Average Delay	6.0			
Intersection Capacity Utilization	48.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	5	5	5	5	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	7	7	7	7	7
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	33	12	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	33	12	15			
tC, single (s)	6.7	6.5	4.2			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.3			
p0 queue free %	99	99	100			
cM capacity (veh/h)	901	984	1555			

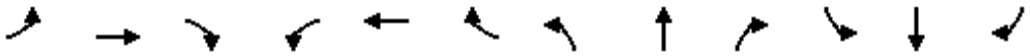
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	13	13	13
Volume Left	7	7	0
Volume Right	7	0	7
cSH	940	1555	1700
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	3.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	3.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	5	5	5	5	60	15	10	25	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	5	5	5	5	5	65	16	11	27	0
Pedestrians		1			5			1			4	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	146	147	29	147	139	82	28			87		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	146	147	29	147	139	82	28			87		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	99	99	99	99	99	99	100			99		
cM capacity (veh/h)	805	736	1050	803	744	975	1577			1479		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	16	87	38
Volume Left	5	5	5	11
Volume Right	5	5	16	0
cSH	844	830	1577	1479
Volume to Capacity	0.02	0.02	0.00	0.01
Queue Length 95th (ft)	1	2	0	1
Control Delay (s)	9.3	9.4	0.5	2.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.3	9.4	0.5	2.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	17.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	195	0	0	210	45	0	5	0	25	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	38	210	0	0	226	48	0	5	0	27	5	38
Pedestrians					3			6			4	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	278			216			581	569	219	545	545	254
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	278			216			581	569	219	545	545	254
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	99	100	94	99	95
cM capacity (veh/h)	1286			1347			390	418	820	430	429	782

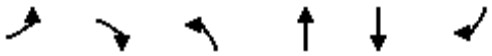
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	247	274	5	70
Volume Left	38	0	0	27
Volume Right	0	48	0	38
cSH	1286	1347	418	567
Volume to Capacity	0.03	0.00	0.01	0.12
Queue Length 95th (ft)	2	0	1	10
Control Delay (s)	1.4	0.0	13.7	12.2
Lane LOS	A		B	B
Approach Delay (s)	1.4	0.0	13.7	12.2
Approach LOS			B	B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	185	25	10	235	20	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	210	28	11	267	23	11
Pedestrians	7			1	8	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			247		529	233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			247		529	233
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	99
cM capacity (veh/h)			1316		503	805

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	239	278	34
Volume Left	0	11	23
Volume Right	28	0	11
cSH	1700	1316	575
Volume to Capacity	0.14	0.01	0.06
Queue Length 95th (ft)	0	1	5
Control Delay (s)	0.0	0.4	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.7
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	5	5	35	20	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	7	7	47	27	7
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	96	36	39			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96	36	39			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	900	1037	1576			

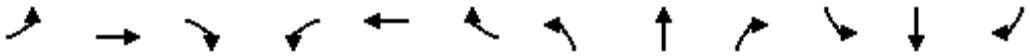
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	7	53	33
Volume Left	0	7	0
Volume Right	7	0	7
cSH	1037	1576	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.5	0.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	0.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	16.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	225	30	10	235	0	40	5	10	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	253	34	11	264	0	45	6	11	6	0	0
Pedestrians					4			2			10	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	274			289			558	568	276	584	585	274
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274			289			558	568	276	584	585	274
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			90	99	99	99	100	100
cM capacity (veh/h)	1284			1271			436	427	764	405	418	763

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	287	275	62	6
Volume Left	0	11	45	6
Volume Right	34	0	11	0
cSH	1284	1271	472	405
Volume to Capacity	0.00	0.01	0.13	0.01
Queue Length 95th (ft)	0	1	11	1
Control Delay (s)	0.0	0.4	13.8	14.0
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.4	13.8	14.0
Approach LOS			B	B

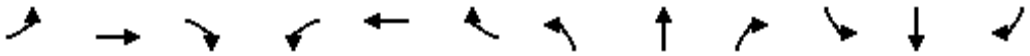
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	415	390	230	355	20	285	500	225	15	60	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1787	1866		1787	1881	1599	1770	1650	
Flt Permitted	0.33	1.00	1.00	0.21	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	621	1900	1615	388	1866		1787	1881	1599	1770	1650	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	432	406	240	370	21	297	521	234	16	62	198
RTOR Reduction (vph)	0	0	225	0	3	0	0	0	150	0	153	0
Lane Group Flow (vph)	203	432	181	240	388	0	297	521	84	16	107	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8					2			
Actuated Green, G (s)	21.5	17.4	30.7	25.5	19.4		13.3	24.6	24.6	0.6	11.9	
Effective Green, g (s)	21.5	17.4	30.7	25.5	19.4		13.3	24.6	24.6	0.6	11.9	
Actuated g/C Ratio	0.31	0.25	0.45	0.37	0.28		0.19	0.36	0.36	0.01	0.17	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	2.0	2.0	0.2	0.2	
Lane Grp Cap (vph)	265	481	839	268	526		345	673	572	15	285	
v/s Ratio Prot	0.05	0.23	0.04	c0.08	0.21		0.17	c0.28		0.01	c0.06	
v/s Ratio Perm	0.19		0.07	c0.25					0.05			
v/c Ratio	0.77	0.90	0.22	0.90	0.74		0.86	0.77	0.15	1.07	0.38	
Uniform Delay, d1	20.7	24.8	11.6	18.2	22.3		26.8	19.6	14.9	34.1	25.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.3	18.8	0.0	28.7	4.6		18.6	5.1	0.0	255.5	0.3	
Delay (s)	31.9	43.6	11.7	46.9	27.0		45.4	24.6	15.0	289.5	25.4	
Level of Service	C	D	B	D	C		D	C	B	F	C	
Approach Delay (s)		28.9			34.6			28.4			40.7	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



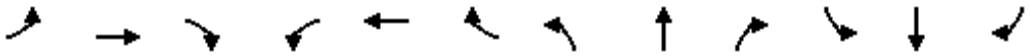
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	155	9	3	145	45	13	6	8	60	3	65
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	86	191	11	4	179	56	16	7	10	74	4	80
Pedestrians					12			11			30	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	265			213			677	653	220	640	631	237
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			213			677	653	220	640	631	237
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			95	98	99	78	99	90
cM capacity (veh/h)	1256			1315			300	349	809	333	355	777

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	289	238	33	158
Volume Left	86	4	16	74
Volume Right	11	56	10	80
cSH	1256	1315	384	470
Volume to Capacity	0.07	0.00	0.09	0.34
Queue Length 95th (ft)	6	0	7	37
Control Delay (s)	2.9	0.1	15.3	16.5
Lane LOS	A	A	C	C
Approach Delay (s)	2.9	0.1	15.3	16.5
Approach LOS			C	C

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: 128th Ave NE & NE 80th St

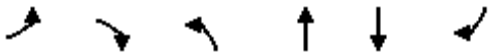
4/20/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	220	8	8	140	40	10	4	4	60	6	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	129	259	9	9	165	47	12	5	5	71	7	118
Pedestrians					15			32			25	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					1			3			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	237			300			883	810	311	776	791	213
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			300			883	810	311	776	791	213
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			99			94	98	99	73	97	85
cM capacity (veh/h)	1297			1222			194	269	706	261	271	802

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	398	221	21	195
Volume Left	129	9	12	71
Volume Right	9	47	5	118
cSH	1297	1222	250	441
Volume to Capacity	0.10	0.01	0.08	0.44
Queue Length 95th (ft)	8	1	7	56
Control Delay (s)	3.3	0.4	20.7	19.5
Lane LOS	A	A	C	C
Approach Delay (s)	3.3	0.4	20.7	19.5
Approach LOS			C	C

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	51.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	11	15	5	5	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	9	15	20	7	7	12
Pedestrians	2				1	
Lane Width (ft)	12.0				12.0	
Walking Speed (ft/s)	4.0				4.0	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	62	15	21			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62	15	21			
tC, single (s)	6.7	6.5	4.2			
tC, 2 stage (s)						
tF (s)	3.8	3.6	2.3			
p0 queue free %	99	99	99			
cM capacity (veh/h)	858	980	1548			

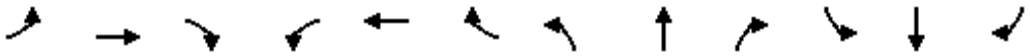
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	24	27	19
Volume Left	9	20	0
Volume Right	15	0	12
cSH	929	1548	1700
Volume to Capacity	0.03	0.01	0.01
Queue Length 95th (ft)	2	1	0
Control Delay (s)	9.0	5.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	5.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	5	5	11	5	5	5	60	25	10	25	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	5	5	12	5	5	5	65	27	11	27	0
Pedestrians		1			5			1			4	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	152	158	29	153	145	88	28			97		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152	158	29	153	145	88	28			97		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	99	99	99	98	99	99	100			99		
cM capacity (veh/h)	798	726	1050	796	739	969	1577			1465		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	23	98	38
Volume Left	5	12	5	11
Volume Right	5	5	27	0
cSH	837	816	1577	1465
Volume to Capacity	0.02	0.03	0.00	0.01
Queue Length 95th (ft)	1	2	0	1
Control Delay (s)	9.4	9.5	0.4	2.2
Lane LOS	A	A	A	A
Approach Delay (s)	9.4	9.5	0.4	2.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	17.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	195	8	8	210	45	5	9	4	25	11	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	38	210	9	9	226	48	5	10	4	27	12	38
Pedestrians					3			6			4	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	278			224			606	591	223	573	571	254
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	278			224			606	591	223	573	571	254
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			99	98	99	93	97	95
cM capacity (veh/h)	1286			1338			369	404	815	404	412	782

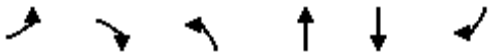
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	256	283	19	76
Volume Left	38	9	5	27
Volume Right	9	48	4	38
cSH	1286	1338	442	533
Volume to Capacity	0.03	0.01	0.04	0.14
Queue Length 95th (ft)	2	0	3	12
Control Delay (s)	1.4	0.3	13.5	12.9
Lane LOS	A	A	B	B
Approach Delay (s)	1.4	0.3	13.5	12.9
Approach LOS			B	B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	40.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	191	25	10	241	20	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	217	28	11	274	23	11
Pedestrians	7			1	8	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			253		543	240
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			253		543	240
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	99
cM capacity (veh/h)			1309		494	798

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	245	285	34
Volume Left	0	11	23
Volume Right	28	0	11
cSH	1700	1309	566
Volume to Capacity	0.14	0.01	0.06
Queue Length 95th (ft)	0	1	5
Control Delay (s)	0.0	0.4	11.8
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.8
Approach LOS			B

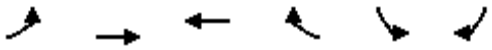
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	7	9	35	20	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	9	12	47	27	7
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	107	36	39			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107	36	39			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	885	1037	1576			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	59	33
Volume Left	0	12	0
Volume Right	9	0	7
cSH	1037	1576	1700
Volume to Capacity	0.01	0.01	0.02
Queue Length 95th (ft)	1	1	0
Control Delay (s)	8.5	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	1.5	0.0
Approach LOS	A		

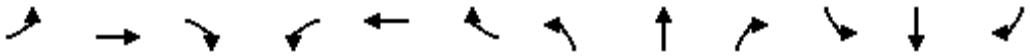
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	5	5	10	14	8	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	7	13	19	11	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	32				43	23
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32				43	23
tC, single (s)	4.4				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.5				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1402				964	1054

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	13	32	24
Volume Left	7	0	11
Volume Right	0	19	13
cSH	1402	1700	1012
Volume to Capacity	0.00	0.02	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	3.8	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	8.6
Approach LOS			A

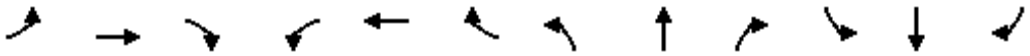
Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	233	30	10	240	0	40	5	10	5	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	262	34	11	270	0	45	6	11	6	0	0
Pedestrians					4			2			10	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	280			298			573	583	285	599	600	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280			298			573	583	285	599	600	280
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			89	99	99	99	100	100
cM capacity (veh/h)	1278			1262			427	419	755	396	410	758

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	296	281	62	6
Volume Left	0	11	45	6
Volume Right	34	0	11	0
cSH	1278	1262	462	396
Volume to Capacity	0.00	0.01	0.13	0.01
Queue Length 95th (ft)	0	1	11	1
Control Delay (s)	0.0	0.4	14.0	14.2
Lane LOS		A	B	B
Approach Delay (s)	0.0	0.4	14.0	14.2
Approach LOS			B	B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	421	390	232	359	20	285	500	229	15	60	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1787	1866		1787	1881	1599	1770	1650	
Flt Permitted	0.31	1.00	1.00	0.20	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	595	1900	1615	378	1866		1787	1881	1599	1770	1650	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	203	439	406	242	374	21	297	521	239	16	62	198
RTOR Reduction (vph)	0	0	228	0	3	0	0	0	151	0	149	0
Lane Group Flow (vph)	203	439	178	242	392	0	297	521	88	16	111	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8					2			
Actuated Green, G (s)	22.0	17.9	31.1	26.0	19.9		13.2	26.1	26.1	0.7	13.6	
Effective Green, g (s)	22.0	17.9	31.1	26.0	19.9		13.2	26.1	26.1	0.7	13.6	
Actuated g/C Ratio	0.31	0.25	0.44	0.37	0.28		0.19	0.37	0.37	0.01	0.19	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	2.0	2.0	0.2	0.2	
Lane Grp Cap (vph)	254	480	823	260	524		333	693	589	17	316	
v/s Ratio Prot	0.05	0.23	0.04	c0.08	0.21		0.17	c0.28		0.01	c0.07	
v/s Ratio Perm	0.20		0.07	c0.26					0.06			
v/c Ratio	0.80	0.91	0.22	0.93	0.75		0.89	0.75	0.15	0.94	0.35	
Uniform Delay, d1	21.8	25.7	12.3	19.6	23.2		28.1	19.5	14.9	35.0	24.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.0	21.6	0.0	37.1	5.1		24.0	4.1	0.0	187.2	0.2	
Delay (s)	36.8	47.3	12.3	56.7	28.3		52.1	23.6	15.0	222.2	25.0	
Level of Service	D	D	B	E	C		D	C	B	F	C	
Approach Delay (s)		31.7			39.1			29.7			36.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group