

**TECHNICAL INFORMATION REPORT**

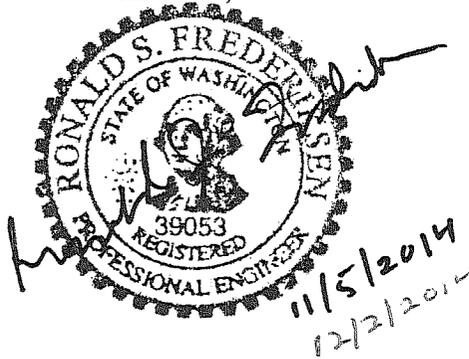
**FOR**

**Kirkland Townhouses  
10143 NE 64<sup>th</sup> St  
Kirkland, WA**

**Parcel No. 2649500095**

**City of Kirkland File No.  
Eastside Consultants, Inc. File No. 14069**

**November 4, 2014**



**Prepared by:**

*Eastside Consultants, Inc.  
1320 NW Mall Street, Ste B  
Issaquah, WA 98027  
(425) 392-5351*

**Prepared for:**

*Danielle 5803 Ballard, LLC  
Attn: Mr. Nebil Dikmen, Managing Director  
1623 43<sup>rd</sup> Avenue East #1  
Seattle, WA 98112*

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## **T.I.R. Section I: Project Overview**

### **Existing Conditions:**

The project consists of removing an existing 1087\_sf house (impervious roof area), 389 sf of concrete driveway, and 164 sf concrete patio, and a 127 sf deck and replacing it with 2 new townhouses. The new impervious surface consists of 3,019 sf of townhouses, 192 sf of deck, 630.50 sf of driveway, and 500 sf of hardscapes. This amounts to a total of 4,341.50 sf of new and/or replaced. Since we are more than 2,000 sf of new, or a combination of new plus replaced impervious but less than 5,000 sf we are under Small Project Drainage Type II per Policy D-2.

The physical location of the site is 10143 NE 64<sup>th</sup> St in Kirkland, WA. There townhouses currently being constructed to the west and condominiums to the south. The site borders Northeast 64<sup>th</sup> Street to the North and 102<sup>nd</sup> Ave NE (Lakeview Drive) to the east.

It is proposed to demolish the existing single family residence and replace it with 2 new townhouses. The runoff will primarily sheet flow off the roof into gutters and be transported via downspouts towards the west side of the townhouses into a catch basin and shall be minimal based on the existing flow that already goes to this system from the home.

Generally, the site slopes westerly at 2% to 5% with underlying Alderwood soils to 4 to 5 feet then glacial till.

## **HYDROLOGIC CONDITIONS**

### **A. Existing Runoff Conditions**

The project consists of removing an existing 1087\_sf house (impervious roof area), 389 sf of concrete driveway, and 164 sf concrete patio, and a 127 sf deck and replacing it with 2 new townhouses. The stormwater currently sheet flows off the site now and enters the drainage system in the condo parking lot

### **B. Proposed Runoff Conditions**

The drainage patterns for the proposed development will be to pick-up the roof, patios, driveway, in gutters, downspouts and catchbasins and discharge it to the drainage system in NE 64<sup>th</sup> Street. Since we are required to use a BMP to handle an area of 10-20 percent of the total impervious we are requesting a Surface Water Design Standards Adjustment because the soils on the site are not suitable for infiltration per the attached Geotech Report by Geotech Consultants, Inc. as the water table is only 16-inches deep. The site is to constrained to allow dispersion. We will be implementing Amended Soils as a BMP though on any pervious surfaces to help with water absorption.

## **T.I.R. Section II: Preliminary Conditions Summary**

### **Core Requirement #1: Discharge at the Natural Location**

The site will be discharged to NE 64<sup>th</sup> Street because of the outfall. This eventually intersects with the natural flowpath in less than a quarter mile.

### **Core Requirement #2: Off-Site Analysis**

See T.I.R. Section III for the Downstream Analysis.

### **Core Requirement #3: Runoff Control**

A drainage plan is included in the engineering plan submittal along with supporting calculations in Section IV of this T.I.R. We are requesting an adjustment due to the poor soils and lack of dispersion area. The site is discharging to the storm system in NE 64<sup>th</sup> Street

### **Core Requirement #4: Conveyance System**

Runoff will be conveyed using 4-12" diameter pipes.

### **Core Requirement #5: Erosion/Sedimentation Control Plan**

A Temporary Erosion and Sediment Control (TESC) Plan is included in the engineering plan submittal.

### **Core Requirement #6: Maintenance & Operation**

The owner/developer will comply as required.

### **Core Requirement #7: Bonds & Liability**

The owner/developer will comply as required.

### **Core Requirement #8: Water Quality**

A drainage plan is included in the engineering plan submittal along with supporting calculations in Section IV of this T.I.R.

### **Special Requirement # 1: Other Adopted Area Specific Requirements**

There are no other Area Specific requirements we are aware of.

### **Special Requirement # 2: Flood Hazard Area Delineation**

There is no 100 year floodplain on or near the site

Special Requirement # 3: Flood Protection Facilities

There are no flood protection facilities near the property

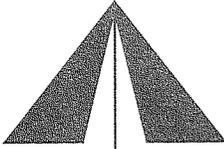
Special Requirement # 4: Source Control

This is not a commercial facility so this does not apply

Special Requirement # 5: Oil Control

This project does not require any oil control facilities due to the limited number of vehicles and it is not a commercial project.

**T.I.R. Section III: Off-Site Analysis**



**EASTSIDE CONSULTANTS, INC.**

www.eastsideconsultants.com

ENGINEERS-  
SURVEYORS

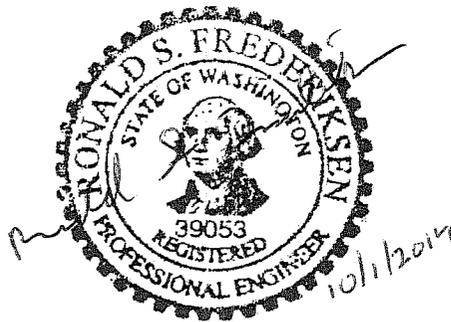
## LEVEL 1 DRAINAGE ANALYSIS

FOR

Danielle 5803 Ballard, LLC

Eastside Consultants, Inc. File No. 14069

October 1, 2014



**Prepared by:**

Eastside Consultants, Inc.  
1320 NW Mall Street, Ste B.  
Issaquah, WA 98027  
(425) 392-5351

**Prepared for:**

Danielle 5803 Ballard, LLC  
Attn: Mr. Nebil Dikmen, Managing Director  
1623 43<sup>rd</sup> Avenue East #1  
Seattle, WA 98112

### **Task 1 – Define Map and Study Area**

The downstream drainage path consists of only one flowpath where the stormwater sheetflows across the property to the northwest corner. The flowpath is defined by the stormwater system that flows west and south and discharges into Lake Washington. The site is located within the East Lake Washington-Bellevue North drainage basin.

### **Task 2 – Resource Review**

A review of the IMAP Sensitive Area Map Folio's revealed that Sensitive Seismic, Landslide, Coal Mine, or Wetland areas do not exist on or near the site. An Erosion Area is not located on the site, but there is one located 443 feet to the southeast. It is not a concern because it is not in the downstream flowpath. A Sensitive Stream is located 376 feet south of the project site. The stream is not a concern because it does not interfere with the downstream flowpath as well.

A review of the IMAP Drainage Complaint Reports showed Drainage Complaints do not exist on or near the site. The closest drainage complaint (Complaint No. 2011-1089) is located 230 feet southeast of the property. Since it is not close to the project site or in near the flowpath of the downstream, it is not a concern.

### **Task 3 – Field Inspection**

#### **Upstream basin**

The upstream basin extends east of the site. See the Upstream Drainage Map Section for a map defining the area.

## Downstream Basin

The downstream flowpath and basin are described in the following section.

During the field inspection, no problems seemed to exist in the basin. See the

Downstream Drainage Map Section for a map defining the area.

## **Task 4 – Drainage System Description**

### Downstream Basin

#### Flowpath 1

The stormwater runoff for Flowpath 1 sheetflows to the northwest corner and leaves the site (Point A) and flows west in the curb and gutter on NE 64<sup>th</sup> Street for approximately 63 feet before entering a 12-inch CMP through a catch basin (Point B) and flows for 7 feet before entering another catchbasin (Point C). From there, the runoff flows west for 155 feet through a 15-inch concrete pipe before entering another catchbasin (Point D) and flows west for 83 feet in a 12-inch concrete pipe before entering another catchbasin (Point E) and flows west for 34 feet in a 12-inch concrete pipe before entering another catchbasin (Point F). Then, the stormwater continues west for 101 feet in a 15-inch concrete pipe to another catchbasin (Point G) before turning southwest in a 12-inch concrete pipe and flowing 54 feet to the next catchbasin (Point H) before turning south under Lake Washington Boulevard NE and flowing 29 feet in a 15-inch concrete pipe to a T-connection (Point I). The stormwater continues to flow south for 197 feet in an 18-inch concrete pipe to another catchbasin (Point J) and turns west and enters an easement as it reaches another catchbasin (Point K) in 73 feet in a 36-inch concrete pipe before traveling the last 220 feet in a 36-inch concrete pipe to an outfall (Point L). The

stormwater discharges into Lake Washington from this point and the flowpath reaches a total distance of 1016 feet. This does not reach the quarter mile requirement for a downstream analysis, but the flowpath discharges into a large body of water. Thus, this is the end of the downstream analysis.

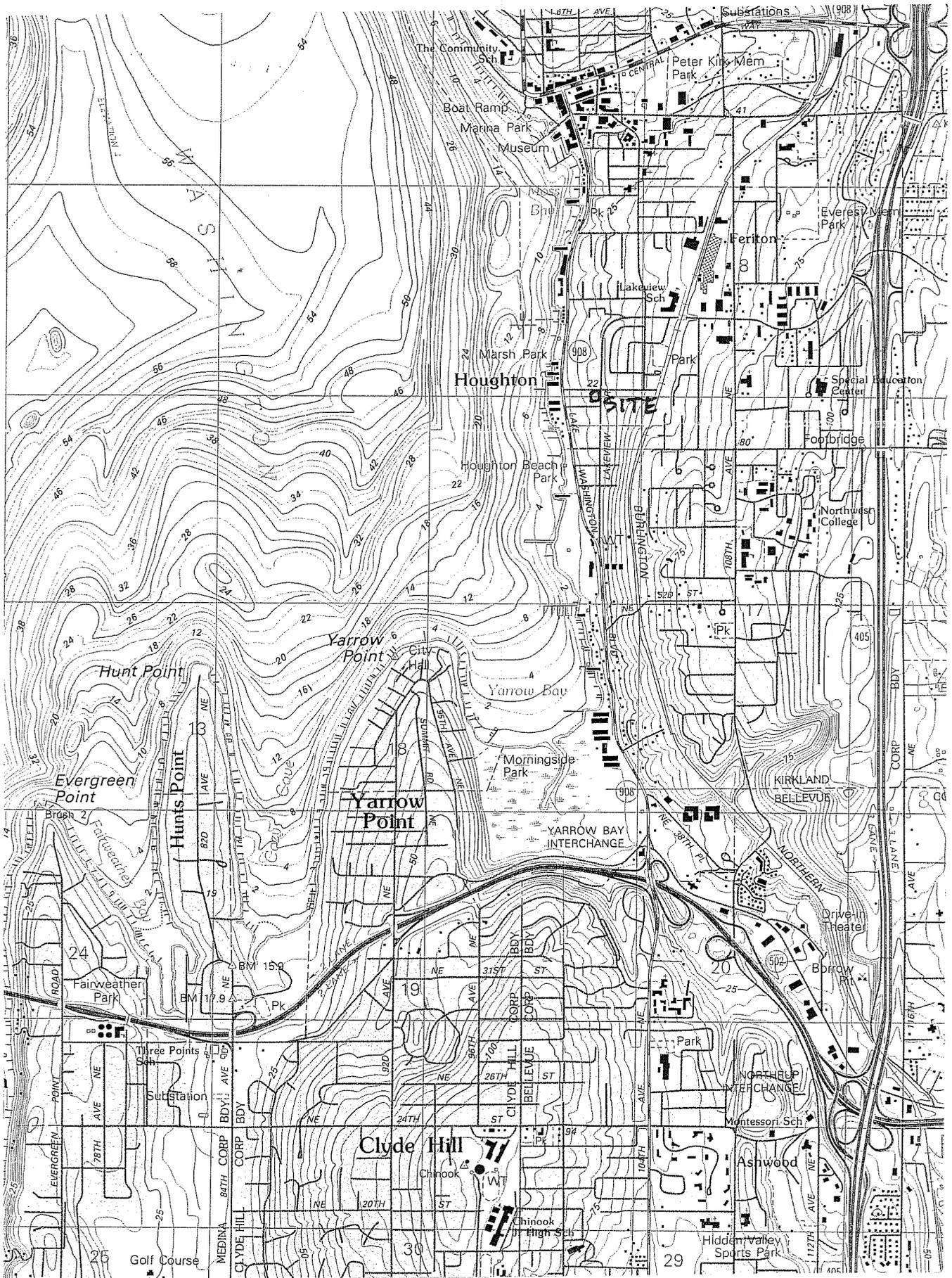
#### **Task 5 – Mitigation of Existing or Potential Problems**

The project does not seem to have any existing or potential problems. This project will not create a significant impact to the downstream conveyance system.

**QUAD, SOILS, AND VICINITY MAPS**

# QUAD MAP

N.T.S.

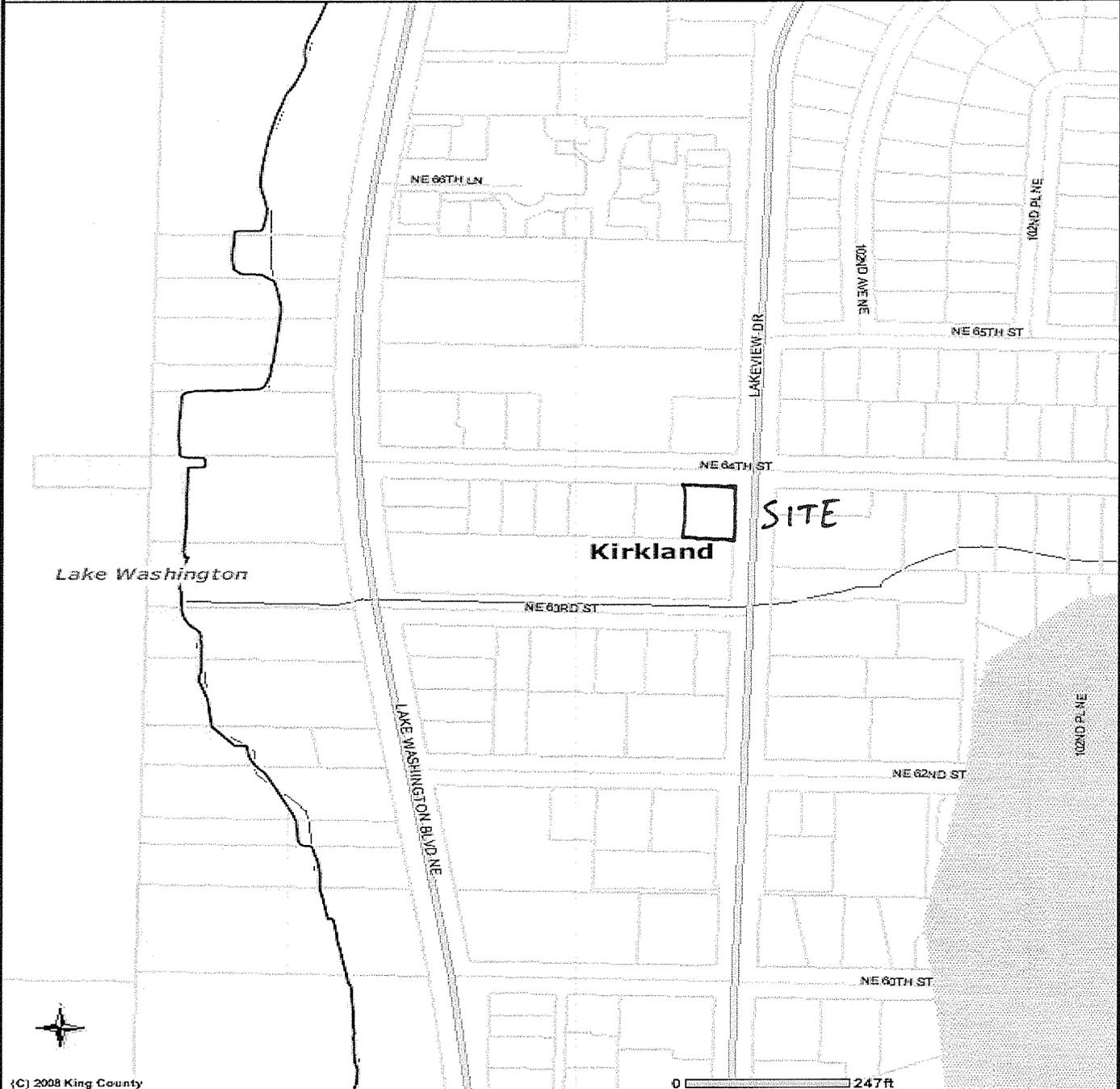






**1990 SENSITIVE AREA FOLIO MAPS**

# SAO EROSION



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0 247 ft

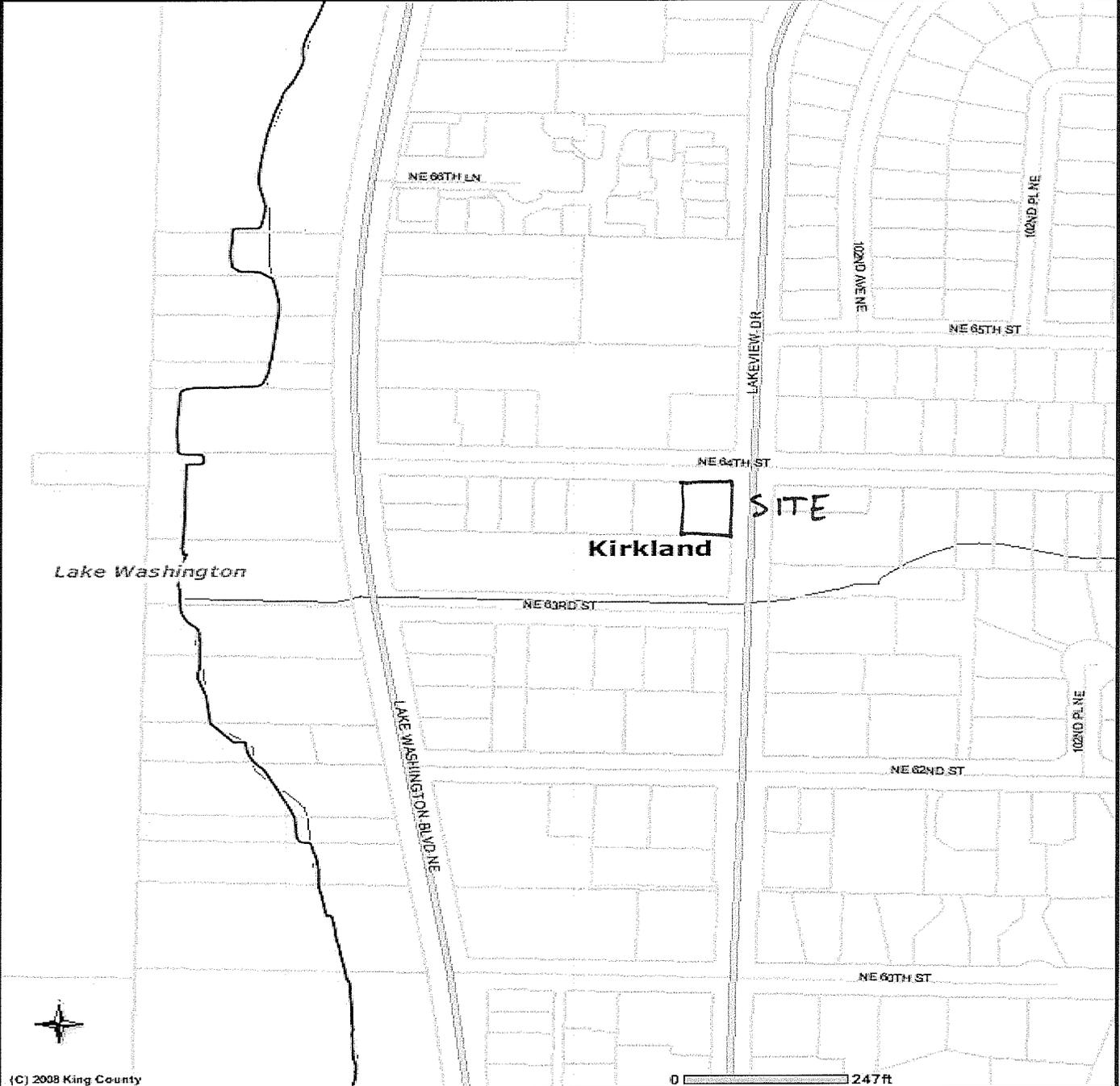
## Legend

- |  |                   |  |                        |  |             |
|--|-------------------|--|------------------------|--|-------------|
|  | County Boundary   |  | Arterials              |  | SAO Erosion |
|  | Highways          |  | Local                  |  |             |
|  | Incorporated Area |  | Parcels                |  |             |
|  | Streets           |  | Lakes and Large Rivers |  |             |
|  | Highway (cont)    |  | Streams                |  |             |

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# SAO SEISMIC



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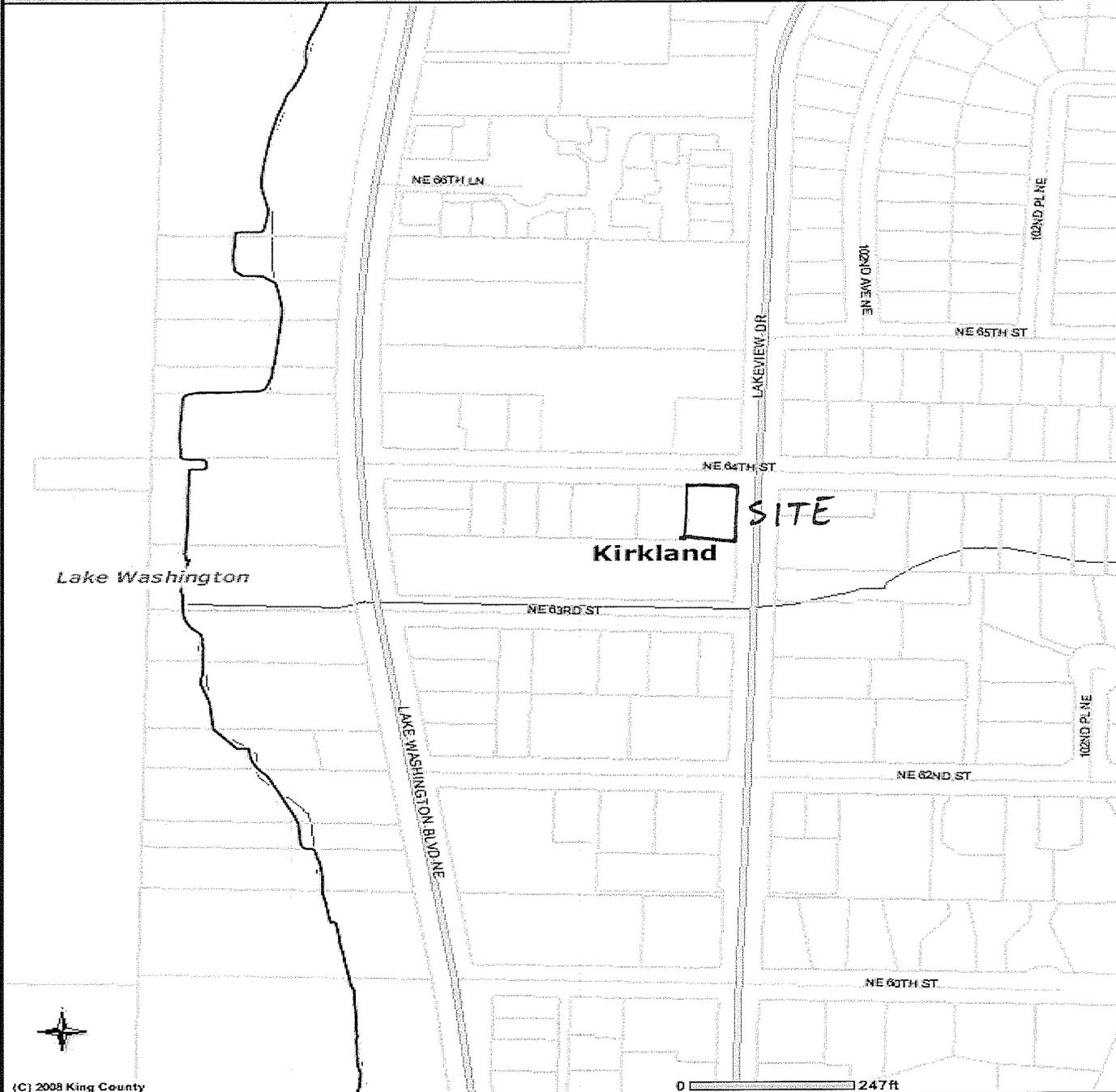
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|-------------------|------------------------|-------------|
| County Boundary   | Arterials              | SAO Seismic |
| Highways          | Local                  |             |
| Incorporated Area | Parcels                |             |
| Streets           | Lakes and Large Rivers |             |
| Highway (cont)    | Streams                |             |

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# SAO LANDSLIDE



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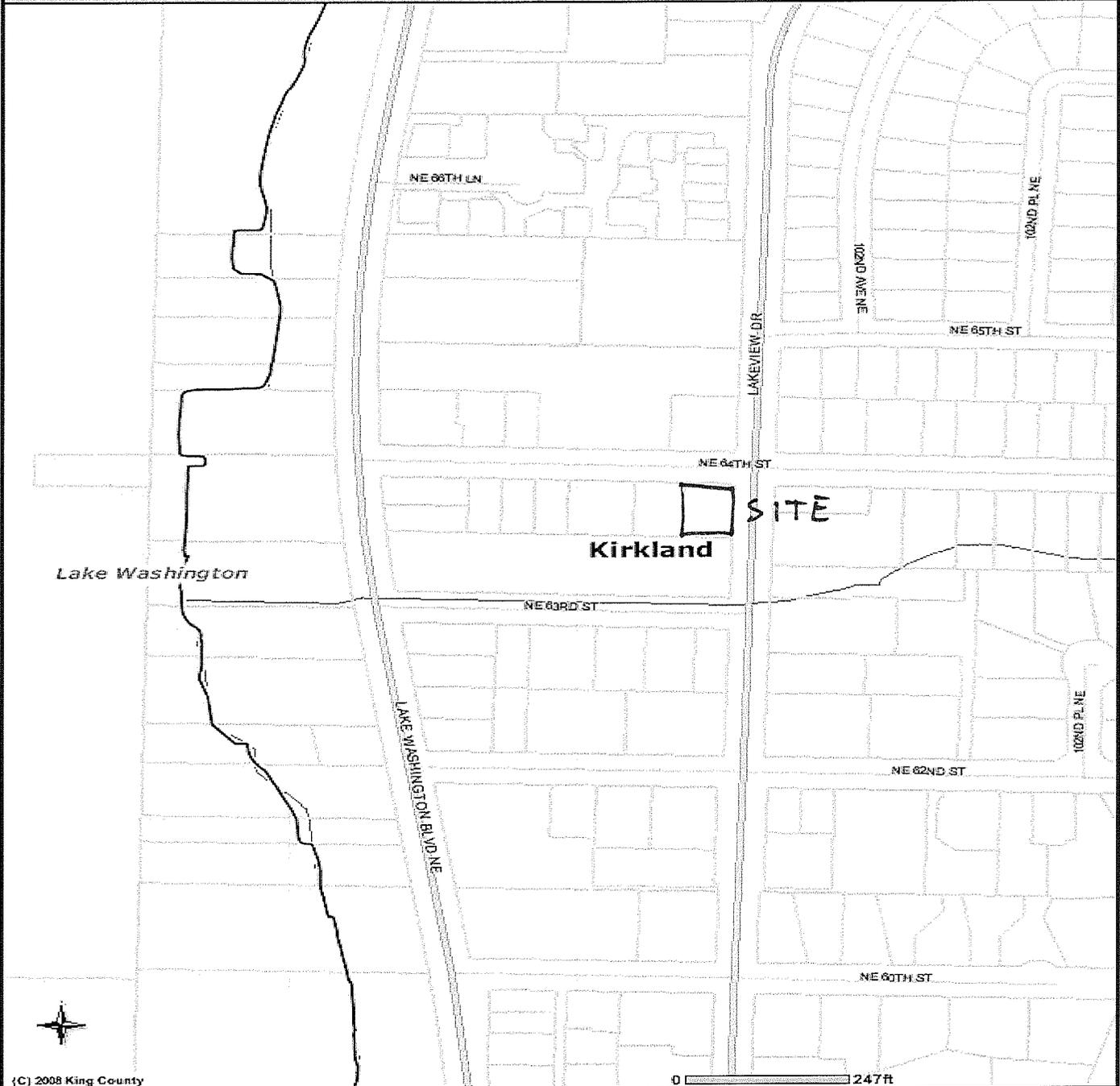
## Legend

- |                   |                        |               |
|-------------------|------------------------|---------------|
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| Highways          | Local                  |               |
| Incorporated Area | Parcels                |               |
| Streets           | Lakes and Large Rivers |               |
| Highway (cont)    | Streams                |               |

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# SAO COAL MINE



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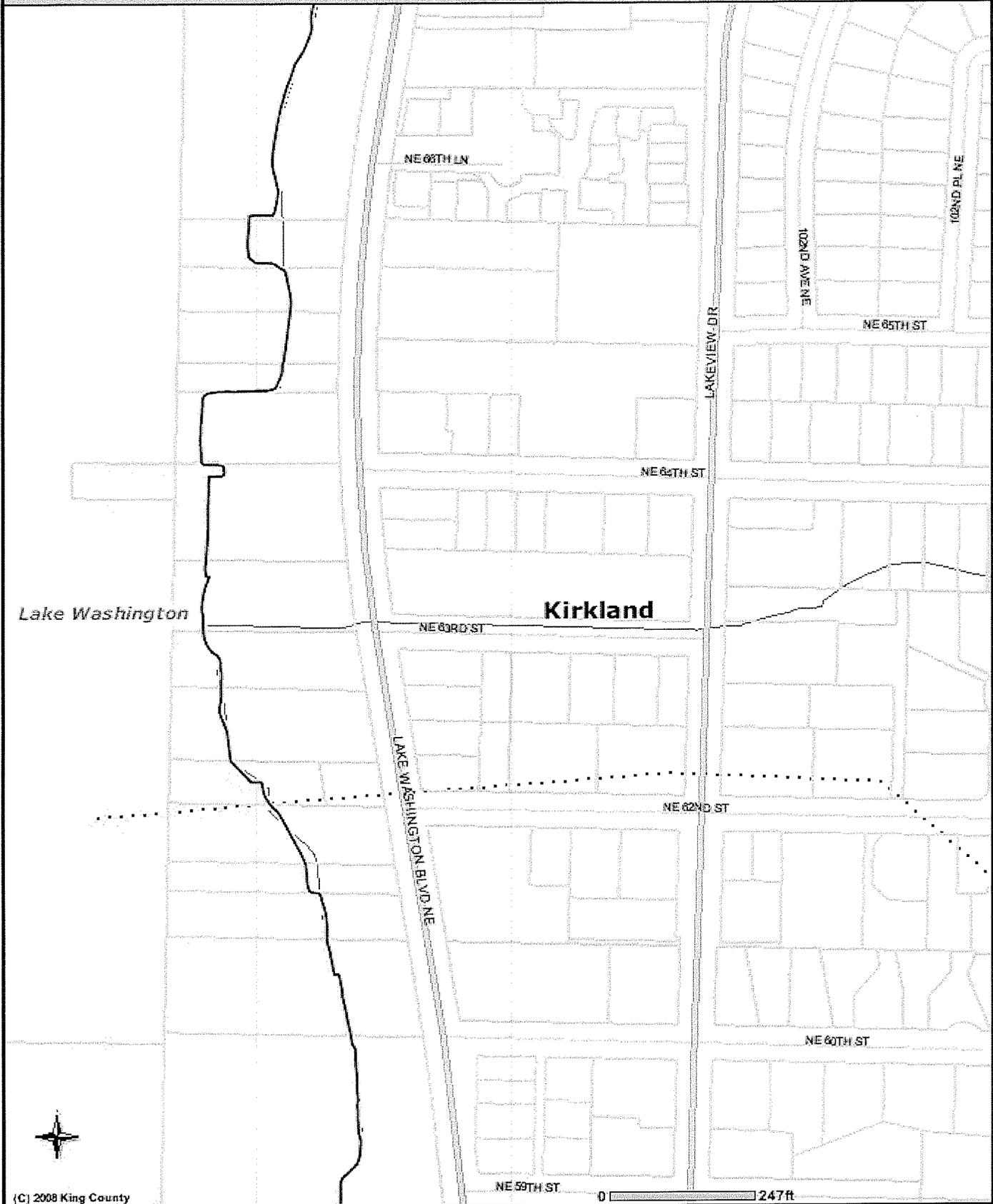
## Legend

- |                   |                        |               |
|-------------------|------------------------|---------------|
| County Boundary   | Arterials              | SAO Coal Mine |
| Highways          | Local                  |               |
| Incorporated Area | Parcels                |               |
| Streets           | Lakes and Large Rivers |               |
| Highway (cont)    | Streams                |               |

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# SAO STREAMS



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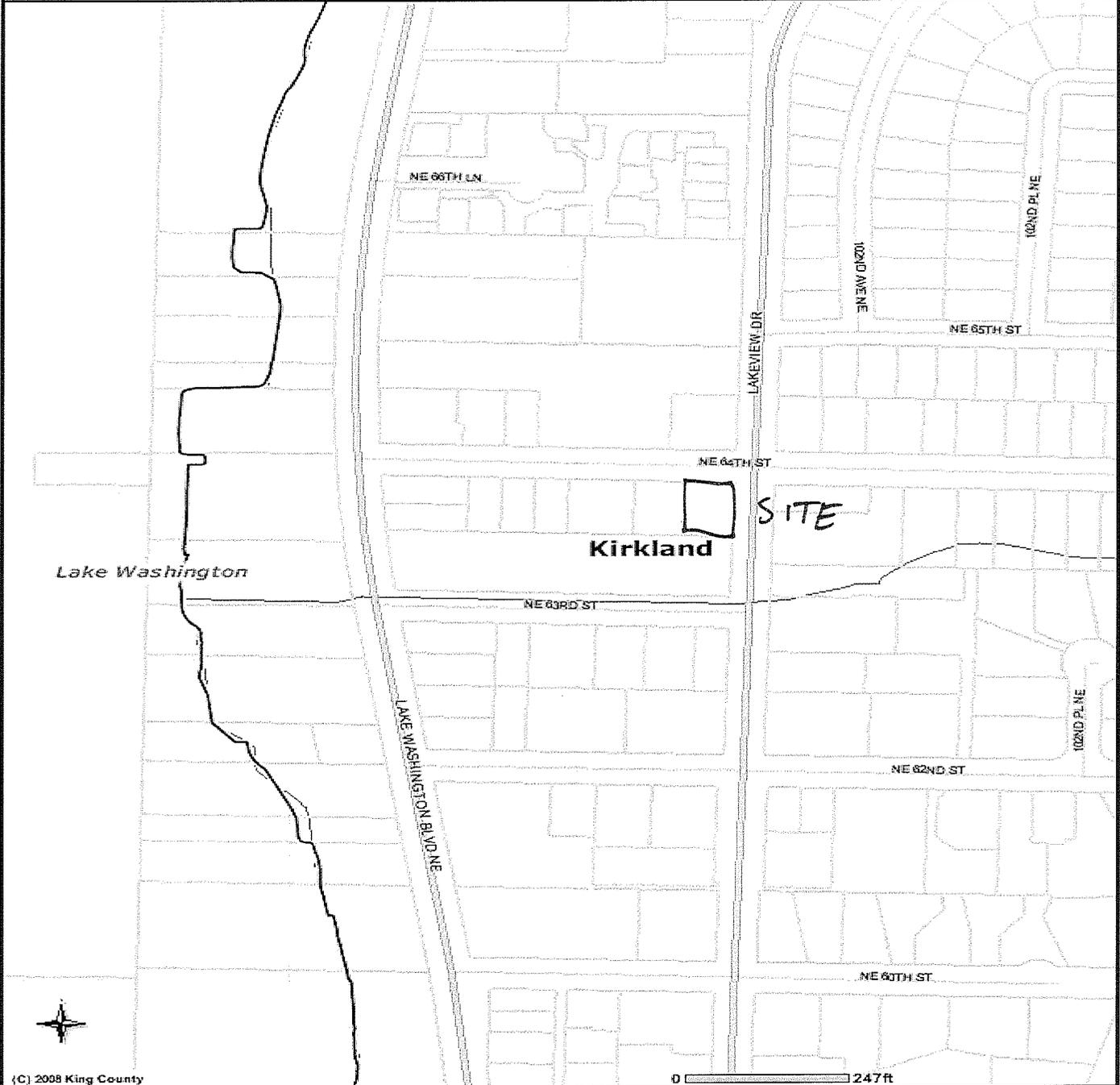
Date: 10/1/2014

Source: King County iMAP - Sensitive Areas (<http://www.metrokc.gov/GIS/iMAP>)



**King County**

# SAO WETLAND



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## Legend

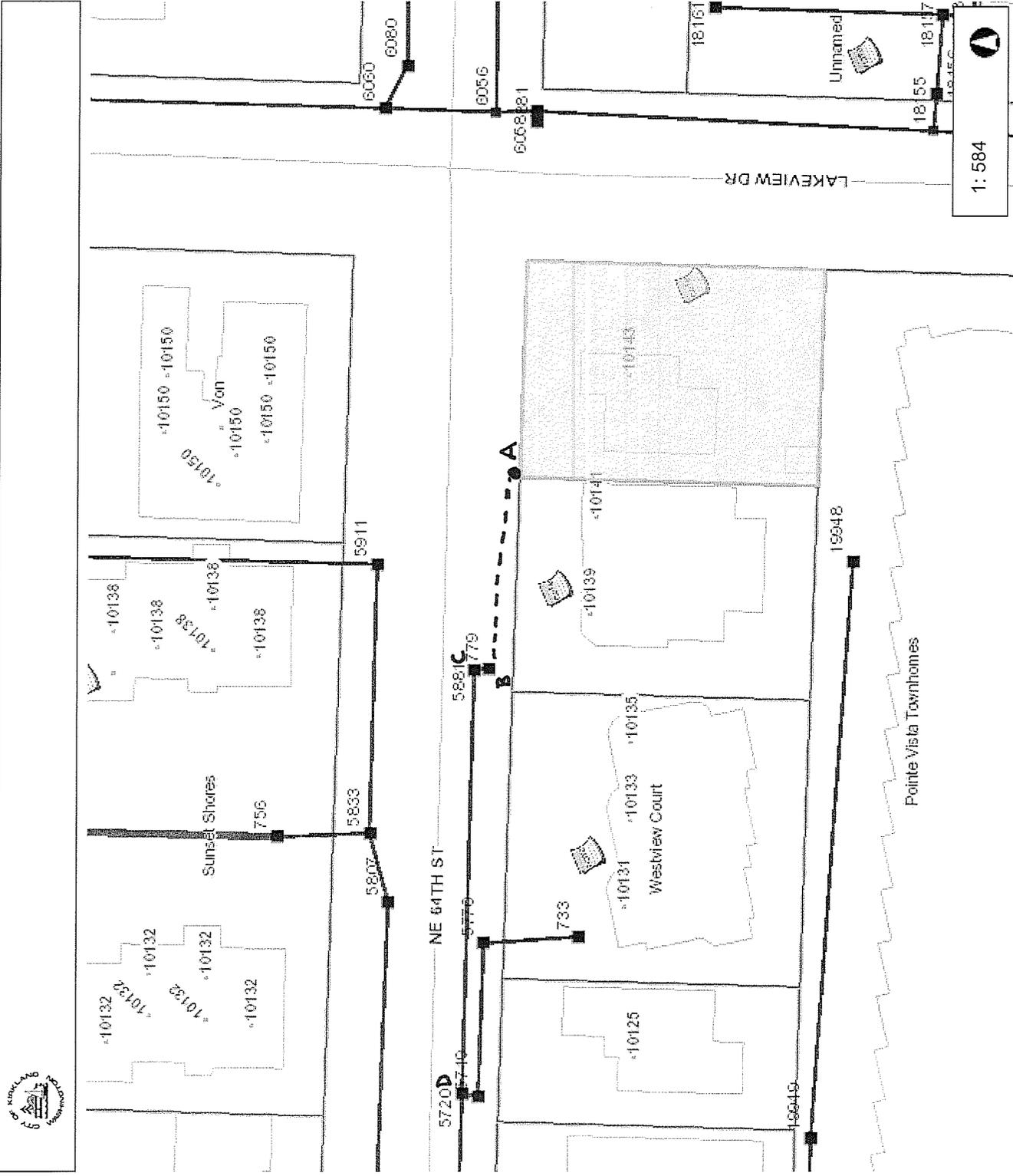
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|-------------------|------------------------|-------------|
| County Boundary   | Arterials              | SAO Wetland |
| Highways          | Local                  |             |
| Incorporated Area | Parcels                |             |
| Streets           | Lakes and Large Rivers |             |
| Highway (cont)    | Streams                |             |

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## **DOWNSTREAM DRAINAGE MAPS**

# DOWNSTREAM DRAINAGE MAP FLOWPATH #1

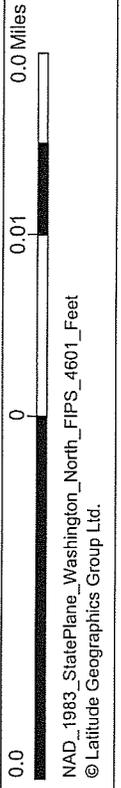


- Legend**
- Catch Basin
  - Other Points
  - Pipes Tanks Etc
  - SW Pipe
  - SW Tank or Vault
  - Stream Ditch Etc
  - Storm Record Drawing
  - Ponds Vaults Etc
  - Address
  - City Limits
  - Cross Kirkland Corridor
  - Regional Rail Corridor
  - Streets
  - Parcels
  - Place Names
  - Buildings
  - Lakes
  - Parks
  - Schools

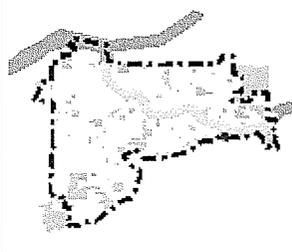
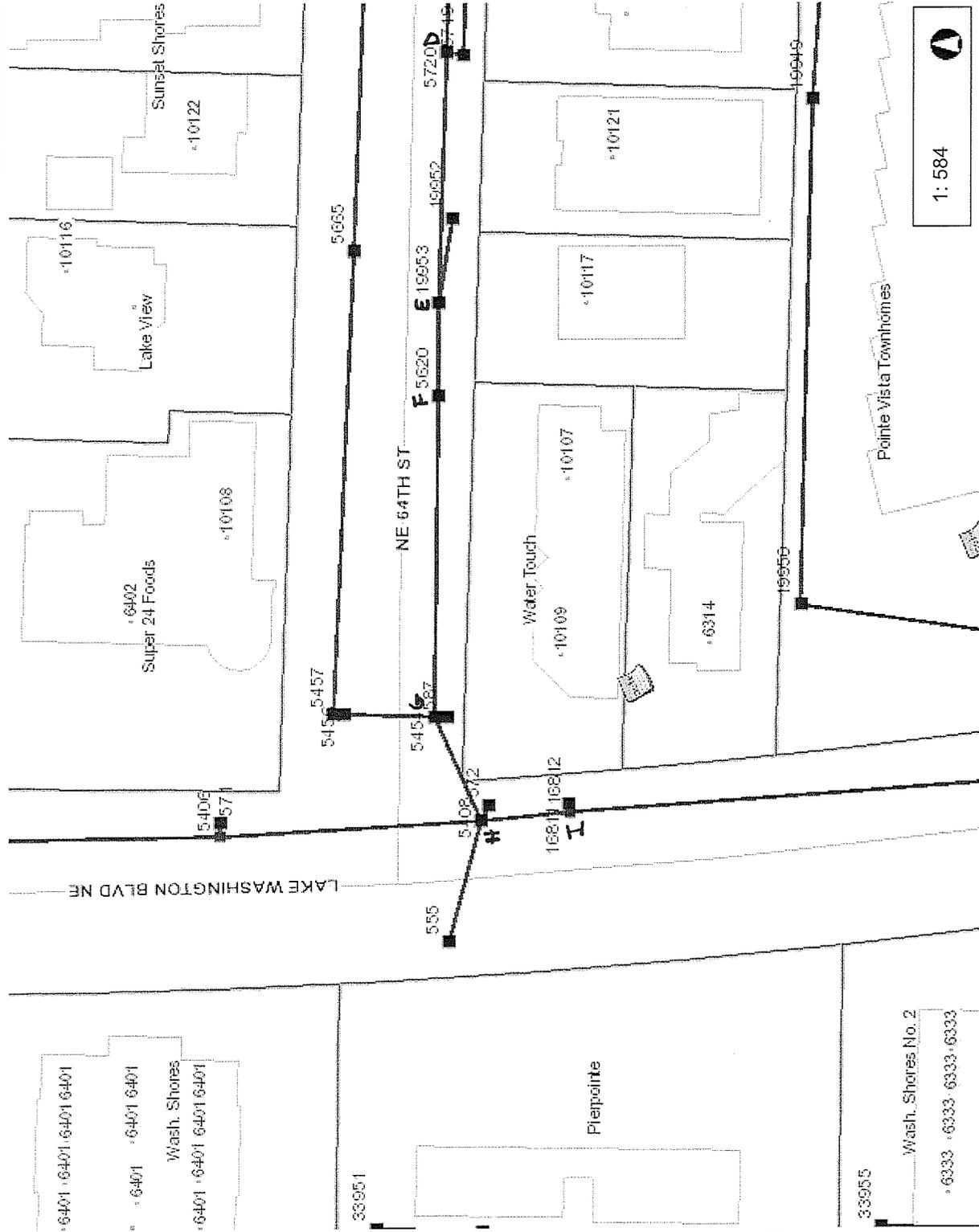
**Notes**

1: 584

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THIS MAP IS NOT TO BE USED FOR NAVIGATION



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**Legend**

- Catch Basin
- Other Points
- Pipes Tanks Etc
- SW Pipe
- SW Tank or Vault
- Stream Ditch Etc
- Storm Record Drawing
- Ponds Vaults Etc
- Address
- City Limits
- Cross Kirkland Corridor
- Regional Rail Corridor
- Streets
- Parcels
- Place Names
- Buildings
- Lakes
- Parks
- Schools

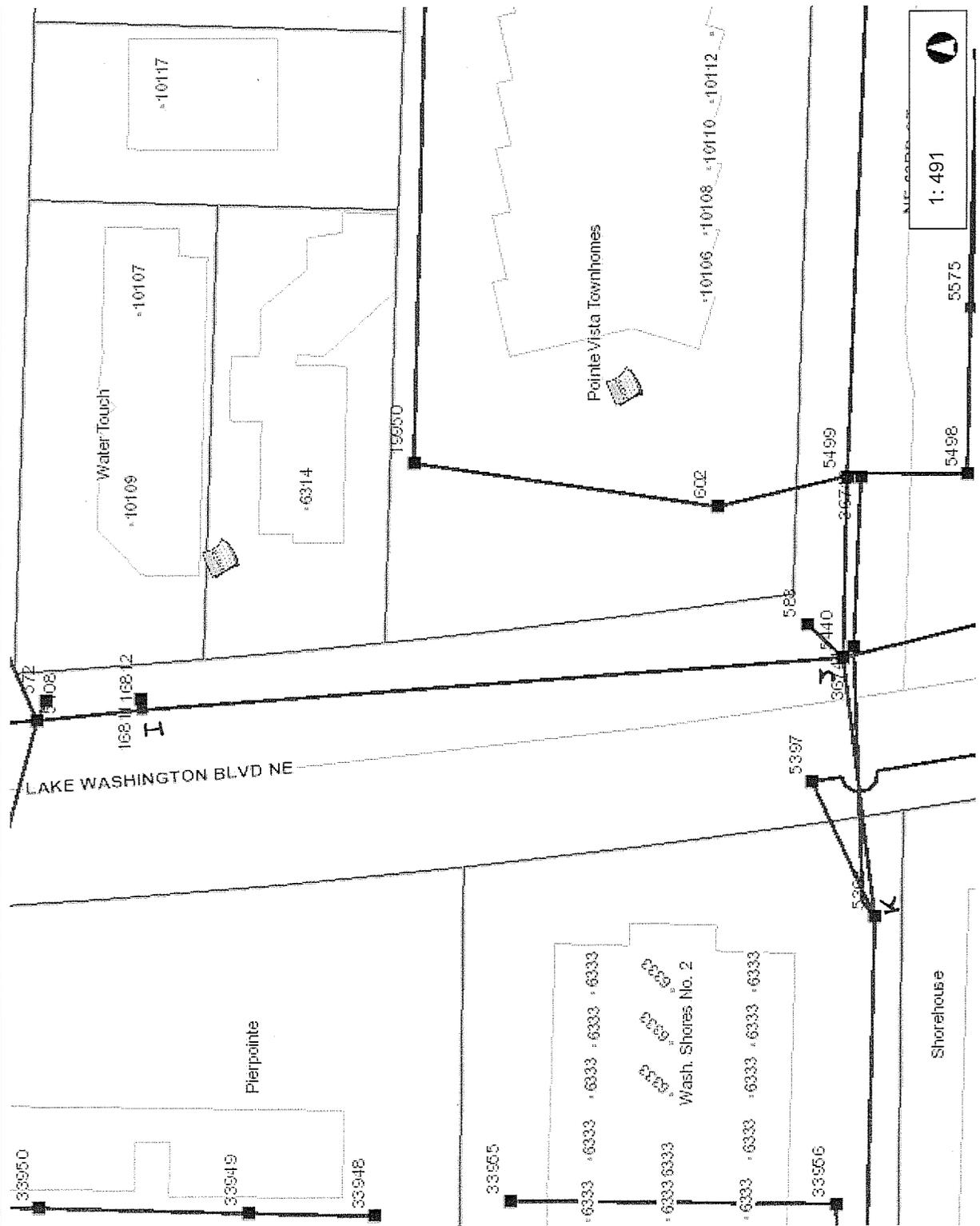
**Notes**

1: 584

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### Legend

- Catch Basin
- Other Points
- Pipes Tanks Etc
  - SW Pipe
  - SW Tank or Vault
- Stream Ditch Etc
- Storm Record Drawing
- Ponds Vaults Etc
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- Cross Kirkland Corridor
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- Streets
- Parcels
- Place Names
- Buildings
- Lakes
- Parks
- Schools

### Notes

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1: 491

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**OFF-SITE ANALYSIS DRAINAGE SYSTEM TABLE**

**OFF-SITE ANALYSIS DRAINAGE SYSTEM TABLE  
SURFACE WATER DESIGN MANUAL, CORE REQUIREMENT #2**

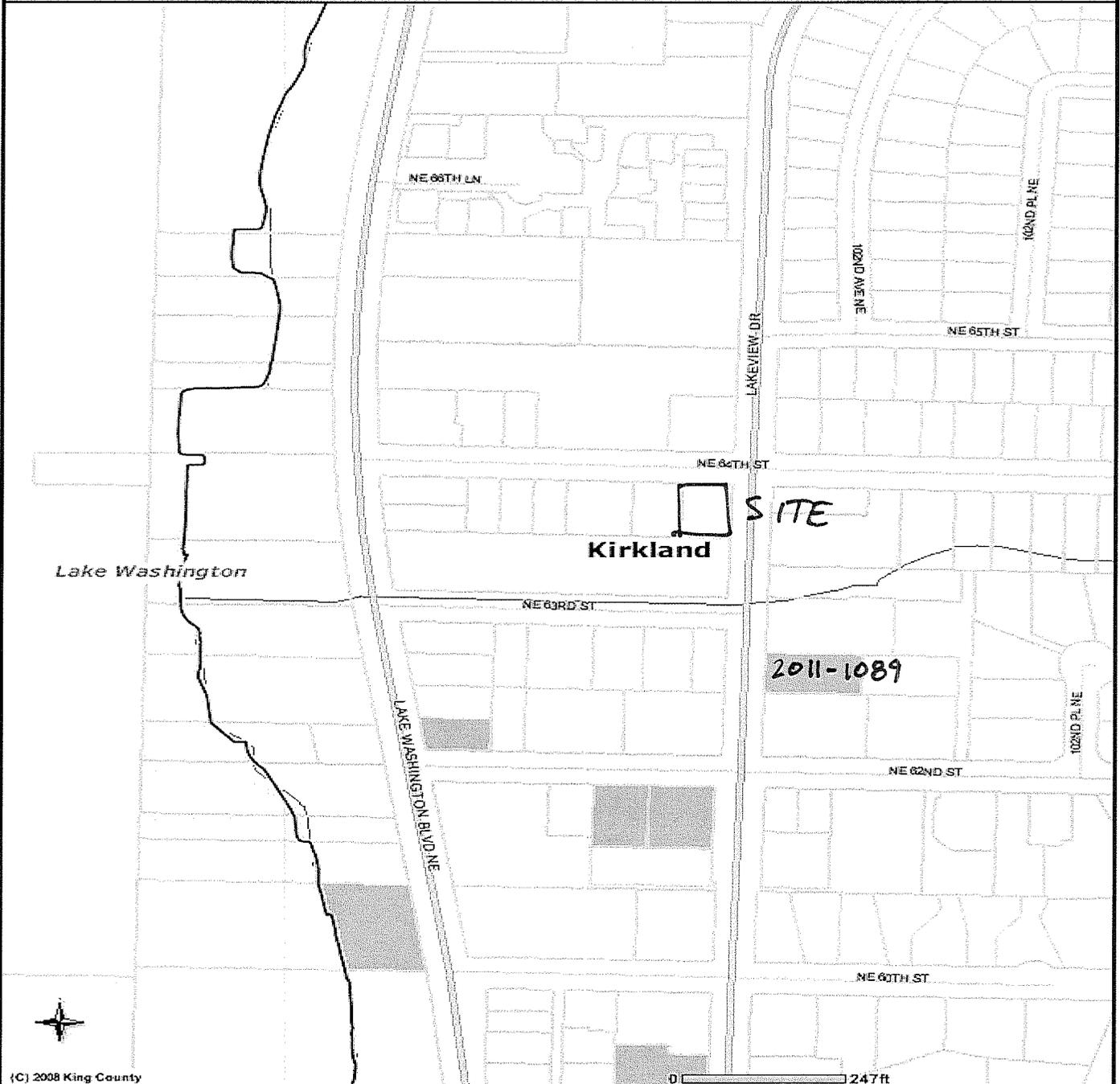
**Basin:** Lake Washington      **Subbasin Name:** Flowpath 1      **Subbasin Number:**

<b>Symbol</b>	<b>Drainage Component Type, Name, and Size</b>	<b>Drainage Component Description</b>	<b>Slope</b>	<b>Distance from site discharge</b>	<b>Existing Problems</b>	<b>Potential Problems</b>	<b>Observations of field inspector, resource reviewer, or resident</b>
see map	Type: sheet flow, swale, stream, channel, pipe, pond; Size: diameter, surface area	drainage basin, vegetation, cover, depth, type of sensitive area, volume	%	¼ mi = 1,320 ft.	constrictions, under capacity, ponding, overtopping, flooding, habitat or organism destruction, scouring, bank sloughing, sedimentation, incision, other erosion		tributary area, likelihood of problem, overflow pathways, potential impacts
A	Site Discharge				None observed	None	Looked in good condition
A-B	Curb and Gutter Flow	West along NE 64 <sup>th</sup> ST		0'-63'	None observed	None	Looked in good condition
B-C	12" CMP	North under NE 64 <sup>th</sup> ST		63'-70'	None observed	None	Looked in good condition
C-D	15" Conc Pipe	West under NE 64 <sup>th</sup> ST		70'-255'	None observed	None	Looked in good condition
D-E	12" Conc Pipe	West under NE 64 <sup>th</sup> ST		255'-308'	None observed	None	Looked in good condition
E-F	12" Conc Pipe	West under NE 64 <sup>th</sup> ST		308'-342'	None observed	None	Looked in good condition
F-G	15" Conc Pipe	West under NE 64 <sup>th</sup> ST		342'-443'	None observed	None	Looked in good condition
G-H	12" Conc Pipe	SW to Lake Washington BLVD NE		443'-497'	None observed	None	Looked in good condition

H-I	15" Conc Pipe	South under Lake Washington BLVD NE		497' -526'	None observed	None	Looked in good condition
I-J	18" Conc Pipe	South under Lake Washington BLVD NE		526' -723'	None observed	None	Looked in good condition
J-K	36" Conc Pipe	West under easement at the end of NE 63 <sup>rd</sup> ST		723' -796'	None observed	None	Looked in good condition
K-L	36" Conc Pipe	West under easement toward Lake Washington		796' -1016'	None observed	None	Looked in good condition
L	Outfall	Discharges to Lake Washington		1,016'	None observed	None	Looked in good condition

## **DRAINAGE COMPLAINTS**

# DRAINAGE COMPLAINTS



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## Legend

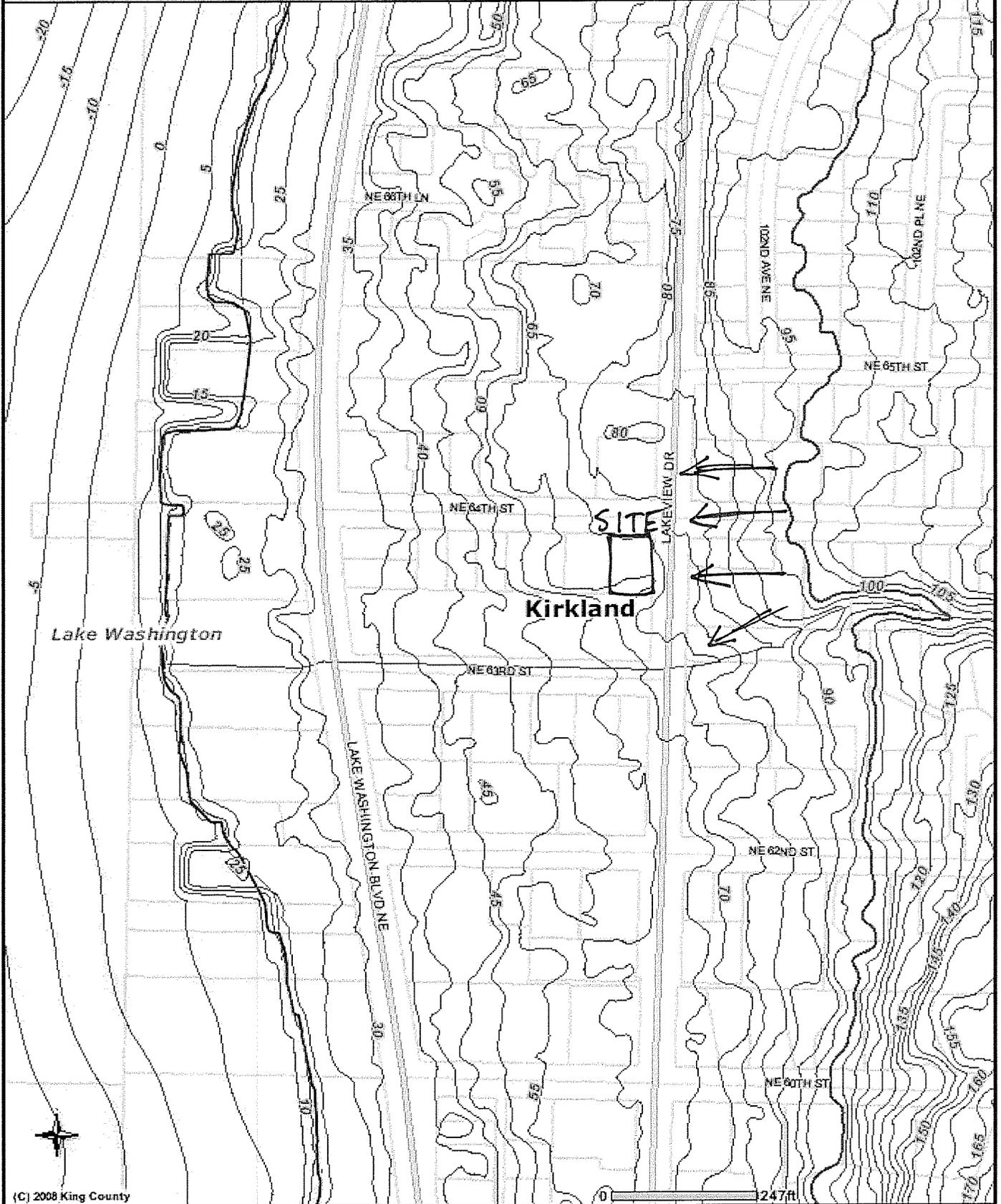
- |                   |                        |                     |
|-------------------|------------------------|---------------------|
| County Boundary   | Arterials              | Drainage Complaints |
| Highways          | Local                  |                     |
| Incorporated Area | Parcels                |                     |
| Streets           | Lakes and Large Rivers |                     |
| Highway (cont)    | Streams                |                     |

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## **UPSTREAM DRAINAGE MAPS**

# UPSTREAM DRAINAGE MAP



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#### **T.I.R. Section IV: Retention/Detention System Analysis & Design**

The drainage patterns for the proposed development will be to pick-up the roof, patios, driveway, in gutters, downspouts and catchbasins and discharge it to the drainage system in NE 64<sup>th</sup> Street.

Since we are over 2,000 sf of new impervious, but less than 10,000 sf of total impervious surface, and less than 5,000 sf of new impervious surface, we are implementing Small Site Drainage Review BMP's. Since we are required to use a BMP to handle an area of 10-20 percent of the total impervious we are requesting a Surface Water Design Standards Adjustment (See Section V1) because the soils on the site are not suitable for infiltration per the attached Geotech Report by Geotech Consultants, Inc. as the water table is only 16-inches deep. The site is too constrained to allow dispersion. We will be implementing Amended Soils as a BMP though on any pervious surfaces to help with water absorption.

We are exempt from Core Requirement #8: Water Quality, Exemptions from Core Requirement #8, Number 1. Surface Area Exemption. Since we have a total of 1,409 sf of PGIS, which is less than the 5,000 sf threshold, we are exempt from Water Quality.



## **T.I.R. Section V: Conveyance System Analysis & Design**

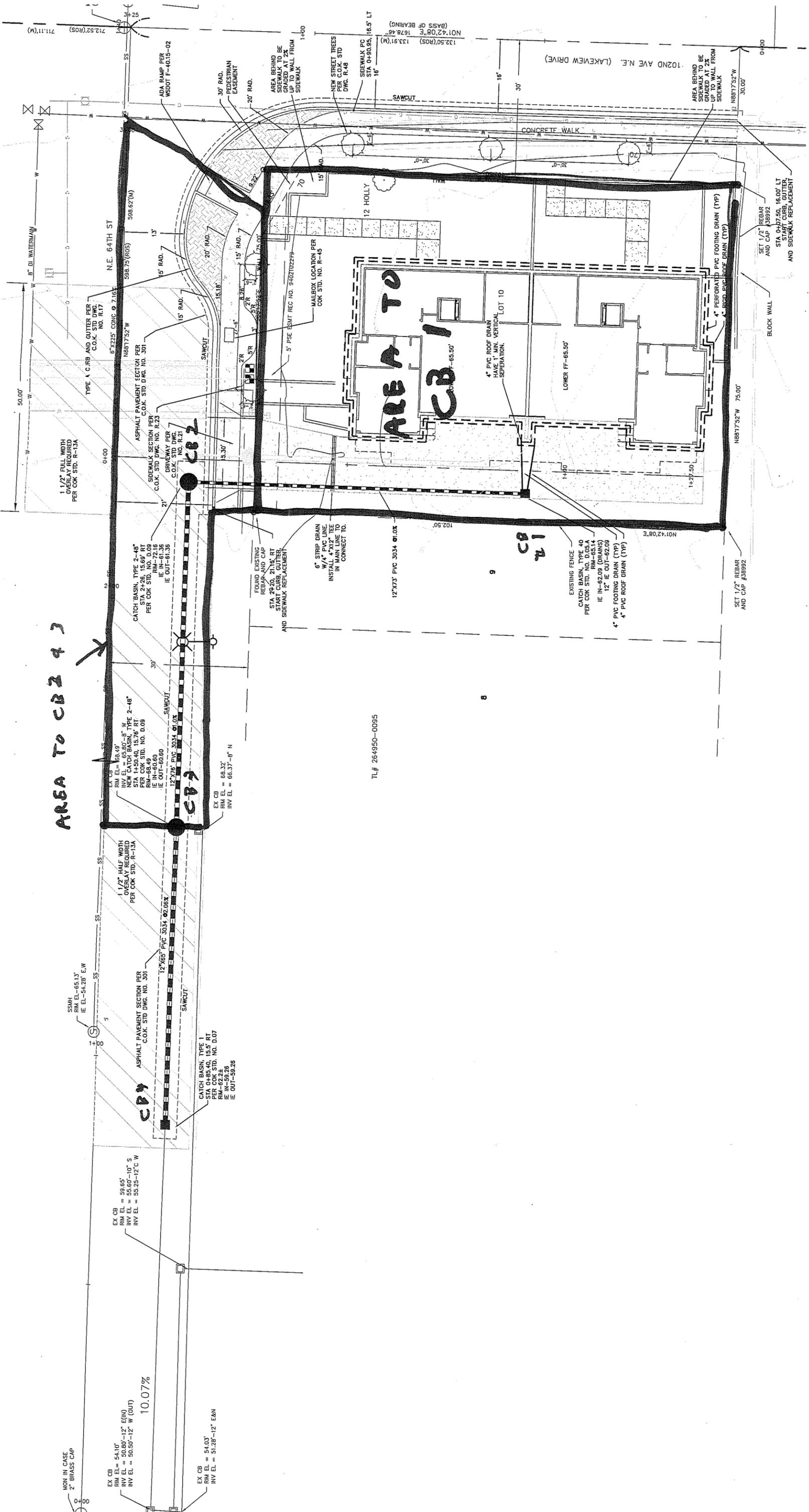
An 4-inch PVC downspout line and 4-inch PVC footing drain will convey stormwater from the houses to a catchbasin in the driveway. An 12-inch PVC pipe from the driveway catchbasin will convey runoff from the driveway and houses. A new 12-pvc storm drain will be installed along the curb and in the street to pick up this stormwater. It will tied into the existing storm line in NE 64<sup>th</sup> Street.

See attached calculations for conveyance sizing.

CONVEYANCE MAP  
SCALE: 1" = 20'

AREA TO CB2 43

TL# 264950-0095



MON IN CASE  
2" BRASS CAP  
EX CB  
RIM EL = 54.10'  
INV EL = 55.60'-10" E(W)  
INV EL = 50.90'-12" W (OUT)  
10.07%

ASPHALT PAVEMENT SECTION PER C.O.K. STD. DWG. NO. 301  
SSMH  
RIM EL = 65.13'  
IE EL = 54.28' E,W

1 1/2" HALF WIDTH OVERLAY REQUIRED PER C.O.K. STD. R-13A  
EX CB  
RIM EL = 68.49'  
INV EL = 60.00'-12" W (OUT)  
STA 1+50.40, 15.76' RT  
PER C.O.K. STD. NO. D.09  
IE IN-60.60  
IE OUT-60.60

CATCH BASIN, TYPE 2-48"  
STA 2+26, 15.69' RT  
PER C.O.K. STD. NO. D.09  
IE IN-61.96  
IE OUT-61.96

NEW CATCH BASIN, TYPE 2-48"  
RIM EL = 68.49'  
INV EL = 60.00'-12" W (OUT)  
STA 1+50.40, 15.76' RT  
PER C.O.K. STD. NO. D.09  
IE IN-60.60  
IE OUT-60.60

ASPHALT PAVEMENT SECTION PER C.O.K. STD. DWG. NO. 301  
SSMH  
RIM EL = 65.13'  
IE EL = 54.28' E,W

1 1/2" FULL WIDTH OVERLAY REQUIRED PER C.O.K. STD. R-13A  
EX CB  
RIM EL = 68.49'  
INV EL = 60.00'-12" W (OUT)  
STA 1+50.40, 15.76' RT  
PER C.O.K. STD. NO. D.09  
IE IN-60.60  
IE OUT-60.60

CATCH BASIN, TYPE 1  
STA 0+85.40, 15.5' RT  
PER C.O.K. STD. NO. D.07  
IE IN-59.26  
IE OUT-59.26

EX CB  
RIM EL = 54.03'  
INV EL = 51.28'-12" E&N

EX CB  
RIM EL = 68.32'  
INV EL = 66.37'-8" N

ADA RAMP PER WSDOT F-40.15-02  
30' RAD.  
20' RAD.  
AREA BEHIND SIDEWALK TO BE GRADED AT 2% UP TO WALK FROM SIDEWALK  
NEW STREET TREES PER C.O.K. STD. DWG. R.46  
SIDEWALK PC STA 0+90.95, 16.5' LT  
SIDEWALK PC STA 0+90.95, 16.5' LT  
SIDEWALK PC STA 0+90.95, 16.5' LT  
SIDEWALK PC STA 0+90.95, 16.5' LT

TYPE 1 C.R.B. AND GUTTER PER C.O.K. STD. DWG. NO. R.17  
6" X 22.5" CONC. Ø 7.16"  
N8817'52" W  
588.75 (ROS)  
598.62 (W)

ASPHALT PAVEMENT SECTION PER C.O.K. STD. DWG. NO. 301  
SIDEWALK SECTION PER C.O.K. STD. DWG. NO. R.23  
DRIVEWAY PER C.O.K. STD. DWG. NO. R.13A  
21' DRIVEWAY PER C.O.K. STD. DWG. NO. R.13A

FOUND EXISTING REBAR AND CAP STA 2+20, 21.15' RT START CURB, GUTTER AND SIDEWALK REPLACEMENT  
6" STRIP DRAIN W/ 4" PVC TIE INSTALL 4" X 12" TIE IN MAIN LINE TO CONNECT TO.

12" X 33" PVC 3034 Ø 1.03"  
EXISTING FENCE CATCH BASIN, TYPE 40 PER C.O.K. STD. NO. D.05 A RIM-65.14 IE IN-62.09 (DRAINS) 12" IE OUT-62.09 4" PVC FOOTING DRAIN (TYP) 4" PVC ROOF DRAIN (TYP)

12" X 33" PVC 3034 Ø 1.03"  
EXISTING FENCE CATCH BASIN, TYPE 40 PER C.O.K. STD. NO. D.05 A RIM-65.14 IE IN-62.09 (DRAINS) 12" IE OUT-62.09 4" PVC FOOTING DRAIN (TYP) 4" PVC ROOF DRAIN (TYP)

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102ND AVE N.E. (LAKEVIEW DRIVE)  
CONCRETE WALK  
12 HOLLY  
MALIBOX LOCATION PER C.O.K. STD. NO. R-45  
5' PSE ESMT REC NO. 940212279

AREA BEHIND SIDEWALK TO BE GRADED AT 2% UP TO WALK FROM SIDEWALK  
SET 1/2" REBAR AND CAP #38992 STA 0+37.50, 16.00' LT START CURB, GUTTER AND SIDEWALK REPLACEMENT

AREA BEHIND SIDEWALK TO BE GRADED AT 2% UP TO WALK FROM SIDEWALK  
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102ND AVE N.E. (LAKEVIEW DRIVE)  
CONCRETE WALK  
12 HOLLY  
MALIBOX LOCATION PER C.O.K. STD. NO. R-45  
5' PSE ESMT REC NO. 940212279

AREA BEHIND SIDEWALK TO BE GRADED AT 2% UP TO WALK FROM SIDEWALK  
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AREA BEHIND SIDEWALK TO BE GRADED AT 2% UP TO WALK FROM SIDEWALK  
SET 1/2" REBAR AND CAP #38992 STA 0+37.50, 16.00' LT START CURB, GUTTER AND SIDEWALK REPLACEMENT

**RATIONAL METHOD**

25-YEAR STORM EVENT

	A (sf)	A (ac)	C	CA	Q (cfs)	Q (cfs)
CB#1	7688	0.18	0.90	0.16	0.434	<b>0.43</b>
CB#2	0	0.00	0.90	0.00	0.000	<b>0.00</b>
CB#3	4374	0.10	0.90	0.09	0.247	<b>0.25</b>
CB#4	0	0.00	0.90	0.00	0.000	<b>0.00</b>

$I_r = (Pr)(i_r)$

$i_r = (a_r)(T_c)(-b_r)$

$a_r = 2.66$

$b_r = 0.65$

$Pr = 3.4$

$T_c = 6.30 \text{ min}$

$I_r = 2.734$

**CONVEYANCE SYSTEM ANALYSIS TABLE**

Pipe	Design Flow (cfs)	Pipe Size (in)	n	Qratio
CB#1 to CB#2	0.43	12	0.010	0.00
CB#2 to CB#3	0.43	12	0.010	0.00
CB#3 to CB#4	0.68	12	0.010	0.58

BACKWATER COMPUTER PROGRAM FOR PIPES

Pipe data from file:PIPE.bwp

Surcharge condition at intermediate junctions

Tailwater Elevation:62.2 feet

Discharge Range:0.2 to 1. Step of 0.1 [cfs]

Overflow Elevation:65.14 feet

Broad Crested Weir: Length:2. feet, Height:0.05 feet

Upstream Velocity:3. feet/sec

PIPE NO. 1: 65 LF - 12"PIPE @ 2.06% OUTLET: 59.26 INLET: 60.60 INTYP: 5  
 JUNC NO. 1: OVERFLOW-EL: 68.49 BEND: 0 DEG DIA/WIDTH: 4.0 Q-RATIO: 0.58

Q(CFS)	HW(FT)	HW ELEV.	* N-FAC	DC	DN	TW	DO	DE	HWO	HWI
0.20	1.61	62.21	* 0.014	0.19	0.14	2.94	2.94	1.61	1.61	0.24
0.30	1.61	62.21	* 0.014	0.23	0.18	2.94	2.94	1.61	1.61	0.30
0.40	1.61	62.21	* 0.014	0.27	0.20	2.94	2.94	1.61	1.61	0.35
0.50	1.62	62.22	* 0.014	0.30	0.22	2.94	2.94	1.61	1.62	0.39
0.60	1.63	62.23	* 0.014	0.33	0.25	2.94	2.94	1.62	1.63	0.43
0.70	1.64	62.24	* 0.014	0.35	0.26	2.94	2.94	1.63	1.64	0.47
0.80	1.66	62.26	* 0.014	0.38	0.28	2.94	2.94	1.64	1.66	0.51
0.90	1.67	62.27	* 0.014	0.40	0.30	2.94	2.94	1.65	1.67	0.54
1.00	1.69	62.29	* 0.014	0.43	0.32	2.94	2.94	1.66	1.69	0.58

PIPE NO. 2: 76 LF - 12"PIPE @ 1.00% OUTLET: 60.60 INLET: 61.36 INTYP: 5  
 JUNC NO. 2: OVERFLOW-EL: 72.16 BEND: 90 DEG DIA/WIDTH: 4.0 Q-RATIO: 0.00

Q(CFS)	HW(FT)	HW ELEV.	* N-FAC	DC	DN	TW	DO	DE	HWO	HWI
0.13	0.86	62.22	* 0.014	0.15	0.14	1.61	1.61	0.86	0.86	0.19
0.19	0.86	62.22	* 0.014	0.18	0.17	1.61	1.61	0.86	0.86	0.24
0.25	0.86	62.22	* 0.014	0.21	0.19	1.61	1.61	0.86	0.86	0.28
0.32	0.88	62.24	* 0.014	0.24	0.21	1.62	1.62	0.87	0.88	0.31
0.38	0.90	62.26	* 0.014	0.26	0.23	1.63	1.63	0.89	0.90	0.34
0.44	0.91	62.27	* 0.014	0.28	0.25	1.64	1.64	0.90	0.91	0.37
0.51	0.93	62.29	* 0.014	0.30	0.27	1.66	1.66	0.92	0.93	0.40
0.57	0.96	62.32	* 0.014	0.32	0.29	1.67	1.67	0.94	0.96	0.43
0.63	0.98	62.34	* 0.014	0.34	0.30	1.69	1.69	0.96	0.98	0.46

PIPE NO. 3: 73 LF - 12"PIPE @ 1.00% OUTLET: 61.36 INLET: 62.09 INTYP: 5

Q(CFS)	HW(FT)	HW ELEV.	* N-FAC	DC	DN	TW	DO	DE	HWO	HWI
0.13	0.20	62.29	* 0.014	0.15	0.14	0.86	0.86	0.20	0.09	0.14
0.19	0.22	62.31	* 0.014	0.18	0.17	0.86	0.86	0.22	0.13	0.17
0.25	0.24	62.33	* 0.014	0.21	0.19	0.86	0.86	0.24	0.17	0.19
0.32	0.26	62.35	* 0.014	0.24	0.21	0.88	0.88	0.26	0.21	0.21
0.38	0.28	62.37	* 0.014	0.26	0.23	0.90	0.90	0.28	0.24	0.23
0.44	0.30	62.39	* 0.014	0.28	0.25	0.91	0.91	0.30	0.28	0.25
0.51	0.32	62.41	* 0.014	0.30	0.27	0.93	0.93	0.32	0.31	0.27
0.57	0.34	62.43	* 0.014	0.32	0.29	0.96	0.96	0.34	0.34	0.29
0.63	0.36	62.45	* 0.014	0.34	0.30	0.98	0.98	0.36	0.36	0.31

**T.I.R. Section VI: Special Studies**

Geotechnical Engineering by Geotech Consultants, Inc. dated June 30, 2014

Surface Water Design Standards Adjustment Request

June 30, 2014

JN 14247

Lakeview Drive, LLC  
1623 – 43<sup>rd</sup> Avenue East, No. 1  
Seattle, Washington 98112

Attention: Nebil Dikmen *via email: nebildikmen@hotmail.com*

Subject: **Geotechnical Assessment for Subsurface Infiltration**  
Proposed New Townhomes  
10143 Northeast 64<sup>th</sup> Street  
Kirkland, Washington

Dear Mr. Dikmen:

This letter presents our geotechnical assessment of the subsurface infiltration potential on the subject property. We understand that the existing house would be demolished, and a new townhome building will be constructed. We expect this development will be similar to the one being constructed on the adjacent western lot.

We visited the site on June 30, 2014 to observe the conditions exposed in two test holes excavated on the southern, lower, side of the property. This portion of the property is undeveloped and is essentially rear yard for the existing house. The grade in this area is lower than the rest of the property, as well as the townhome property to the west.

Both test holes exposed approximately 12 inches of topsoil below the existing surface vegetation. Beneath this was loose, native, silty sand that became dense at a depth of approximately 4 feet. Both test holes filled with water from seepage to a depth of approximately 16 inches below the ground surface. This subsurface water appears to be perched on top of the dense, silty soil, and originates from the infiltration of water on the higher ground to the east of the site.

#### **CONCLUSIONS**

Based on our site observations and our review of geologic mapping of the site area, the site is underlain at a relatively shallow depth by dense, silty sand and silt, which are relatively impervious. As a result, a shallow perched groundwater table is present. Unfortunately, these conditions are unsuitable for on-site infiltration of large volumes of storm runoff. Discharge to an off-site storm drain will be necessary.

Please contact us if you have any questions regarding this letter, or if we can be of further service.

Respectfully submitted,  
GEOTECH CONSULTANTS, INC.

Marc R. McGinnis, P.E.  
Principal

cc: Baylis Architects – Johan Luchsinger  
*via email luchsingerj@baylisarchitects.com*





# SURFACE WATER DESIGN STANDARDS ADJUSTMENT REQUEST

### Instructions to Applicant/Design Engineer:

Please complete this form and submit to the COK Public Works Department. Include all materials that may assist in a complete review and consideration of the adjustment request. Failure to provide all pertinent information may result in delayed processing or denial of request.

<b>COK Permit Number:</b>		<b>Request date:</b>	7/25/2014
<b>Project Name:</b>	Kirkland Town houses		
<b>Project Address:</b>	10143 NE 64th Street, Kirkland, WA 98033		
<b>Applicant Name:</b>	Ronald S. Frederiksen	<b>Design Engineer Name and Firm:</b>	Ronald Frederiksen Eastside Consultants, Inc.
<b>Applicant Phone:</b>	425 392-5351	<b>Design Engineer Phone:</b>	425 392-5351
<b>Applicant Signature:</b>	Ronald S. Frederiksen		

### Description of Adjustment Request:

we are requesting an adjustment from providing 10% LID requirements on our townhouses.

### Justification for Adjustment Request:

The water table is only 16-inches deep in this area per the attached soils report. Therefore no infiltration is feasible. Also due to site constraints, no dispersion is feasible. In lieu of the 10% we will be implementing Amended Soils on all exposed soils.

Applicable KC Surface Water Design Manual:  1998 or  2009

Applicable Section(s) of Standards: Department of Public Works Policy L-1.

COK Determination:  Approved  Denied

Conditions (if applicable):

COK Staff Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**T.I.R. Section VII: Basin & Community Planning Areas**

None

**T.I.R. Section VIII: Other Permits**

## **T.I.R. Section IX: Erosion/Sedimentation Control Design**

1. **Clearing limits:** Prior to any site clearing or grading, areas to remain undisturbed during project construction shall be delineated on the project's ESC plan and physically marked on the project site.

**The clearing limits are shown with silt fence**

2. **Cover measures:** Temporary and permanent cover measures shall be provided when necessary to protect disturbed areas. The intent of these measures is to prevent erosion by having as much area as possible covered during any period of precipitation.

**Straw mulch and plastic coverings will be implemented on all exposed surfaces. Temporary and permanent seeding will take place on all exposed soils left longer than 7 days**

3. **Perimeter Protection:** Perimeter protection to filter sediment from sheet flow shall be provided downstream of **all** disturbed areas prior to upslope grading.

**Silt fence is shown on all down gradient slopes.**

4. **Traffic Area Stabilization:** Unsurfaced entrances, roads, and parking areas used by construction traffic shall be stabilized to minimize erosion and tracking of sediment offsite.

**A construction entrance will be used until the driveway is paved.**

5. **Sediment Retention:** Surface water collected from all disturbed areas of the site shall be routed through a sediment pond or trap prior to release from the site, except those areas at the perimeter of the site small enough to be treated solely with perimeter protection. Sediment retention facilities shall be installed prior to grading any contributing area.

**The site is very limited for area. If sediment runoff becomes an issue, then a small sump will be installed to collect stormwater and pump it to a Baker Tank.**

6. **Surface Water Collection:** Surface water collection measures (e.g., ditches, berms, etc.) shall be installed to intercept all surface water from disturbed areas, convey it to a sediment pond or trap, and discharge it downstream of any disturbed areas. Areas at the perimeter of the site, which are small enough to be treated solely with perimeter protection, do not require surface water collection. Significant sources of upstream surface water that drain onto disturbed areas shall be intercepted and conveyed to a stabilized discharge point downstream of the disturbed areas. Surface water collection measures shall be installed concurrently with or immediately following rough grading and shall be designed, constructed, and stabilized as needed to minimize erosion.

**A ditch will be installed if necessary to collect sediment laden water and take it to a sump if necessary and then pumped to a Baker tank.**

7. **Dewatering Control:** The water resulting from construction site de-watering activities must be treated prior to discharge or disposed of as specified.

**If dewatering is needed it will be pumped to a Baker Tank to be transported to an appropriate dump site.**

8. **Dust Control:** Preventative measures to minimize wind transport of soil shall be implemented when a traffic hazard may be created or when sediment transported by wind is likely to be deposited in water resources.

**A water truck will be brought in if dust control is deemed necessary**

9. **Flow Control:** Surface water from disturbed areas must be routed through the project's onsite flow control facility or other provisions must be made to prevent increases in the existing site conditions 2-year and 10-year runoff peaks discharging from the project site during construction.

**If needed, a Baker Tank will be needed to pump heavy rain events into during the initial clearing and grading stage to prevent an increase in storm water from the site**

**T.I.R. Section X: Improvement Evaluation Package, Facilities Summaries, and  
Declaration of Covenant**

**An improvement Evaluation Packet is included**

# PUBLIC WORKS DEPARTMENT IMPROVEMENT EVALUATION SUMMARY

Type of project:  Subdivision       Commercial       Single Family  
 Multi-Family       Muni/Gov't       Miscellaneous

**Project Name:** KIRKLAND TOWNHOUSES

**Project Location:** 10143 NE 64TH ST

**Permit No.:** BSF14-04537

**Contact:** RON FREDERIKSEN

**Phone No.:** 425-392-5351

2012 Edition

## \*\* FOR CITY USE ONLY \*\*

<b>1. Total Value of Public Work Required:</b>	\$65,281
<b>2. Review &amp; Inspection Fee * :</b>	\$7,838
<b>3. Total Value of Private Work Required:</b>	\$26,480
<b>4. Performance Security (Recording) ** :</b>	\$140,165
<b>5. Maintenance Security Value:</b>	\$10,190

\*The Review and Inspection Fee is 10% of Total Value of Public Work Required (column 1), plus value of private storm (column 2, #5)

\*\* 17.5% of the total construction value will be added to the Performance Security for Mobilization, Traffic Control, Surveying, Engineering, and

## CONSTR. STORM DRAINAGE - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Silt Fence, Installed	LF	180	\$6.00	\$1,080.00
Grading for Drainage Swales	LF	0	\$6.00	\$0.00
Sod for Drainage Swales	SY		\$6.00	\$0.00
Hydroseeding	SY	280	\$3.00	\$840.00
Construction Entrance	EA	1	\$1,500.00	\$1,500.00
Inlet Protection	EA	6	\$80.00	\$480.00
				\$0.00

Construction Storm Drainage - Total	\$3,900.00
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## CLEARING AND GRADING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Half-Street Improvements	LF	340	\$12.00	\$4,080.00
Full Street Improvements	LF		\$24.00	\$0.00
				\$0.00
				\$0.00

Clearing and Grading - Total	\$4,080.00
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## WATER SYSTEM - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Water service - 3/4" to 1"	LS	2	\$1,600.00	\$3,200.00
Water service - 1 1/2" to 2"	LS		\$3,400.00	\$0.00
4" Pipe	LF		\$65.00	\$0.00
6" Pipe	LF		\$70.00	\$0.00
8" Pipe	LF		\$100.00	\$0.00
2" Gate Valve (G.V.)	EA		\$300.00	\$0.00
4" G.V.	EA		\$600.00	\$0.00
6" G.V.	EA		\$800.00	\$0.00
8" G.V.	EA		\$1,000.00	\$0.00
Connection to ex. Main	EA		\$4,500.00	\$0.00
Fire Hydrant Assembly	EA		\$3,600.00	\$0.00
2" Blow Off	EA		\$2,200.00	\$0.00
Air and Vacuum Assembly	EA		\$2,500.00	\$0.00
Valve Marker Post	EA		\$200.00	\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00

<b>Water System - Total</b>	<b>\$3,200.00</b>
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# SANITARY SEWER SYSTEM- PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
6" PVC pipe	LF		\$100.00	\$0.00
8" PVC pipe	LF	36	\$120.00	\$4,320.00
12" PVC pipe	LF		\$150.00	\$0.00
Extra Depth Excav. (over 12' deep)	FT*LF		\$8.00	\$0.00
Manhole, 48"	EA		\$3,600.00	\$0.00
Manhole, 54" (for drop MH's only)	EA		\$4,000.00	\$0.00
Internal Drop Structure	EA		\$970.00	\$0.00
Rechannel Existing MH	EA		\$2,660.00	\$0.00
Cast Iron Clean-Out Cover	EA		\$160.00	\$0.00
Clean Out Assembly	EA		\$400.00	\$0.00
				\$0.00
				\$0.00

<b>Sanitary Sewer System - Total</b>	<b>\$4,320.00</b>
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## STORM DRAINAGE SYSTEM - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
8" Pipe	LF		\$40.00	\$0.00
12" Pipe	LF	141	\$50.00	\$7,050.00
18" Pipe	LF		\$60.00	\$0.00
24" Pipe	LF		\$75.00	\$0.00
30" Pipe	LF		\$80.00	\$0.00
36" Pipe	LF		\$90.00	\$0.00
48" Pipe	LF		\$100.00	\$0.00
Detention Pipe	LF			
Detention Vault	LS		0.25	0
Extra Depth Excav. (over 12' deep)	FT*LF		\$6.00	\$0.00
Curb Inlet	EA		\$880.00	\$0.00
Type I Catch Basin	EA	1	\$1,200.00	\$1,200.00
Type II Catch Basin	EA		\$1,400.00	\$0.00
Type II CB - 48"	EA	2	\$3,900.00	\$7,800.00
Type II CB - 54"	EA		\$4,000.00	\$0.00
CMP Access Riser	EA		\$1,600.00	\$0.00
Connection to Existing CB	EA	1	\$1,100.00	\$1,100.00
Restrictor/Pollution Control - 8"	EA		\$900.00	\$0.00
Restrictor/Pollution Control - 12"	EA		\$900.00	\$0.00
Pollution Control Tee	EA		\$500.00	\$0.00
Debris Barrier	EA		\$250.00	\$0.00
Biofiltration Swale	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

<b>Storm Drainage System - Total</b>	<b>\$17,150.00</b>
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## Low Impact Development - Public Storm Drainage

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Pervious Concrete (5' wide)	LF		\$60.00	\$0.00
Porous Asphalt	SY		\$80.00	\$0.00
Rain Gardens	SY		\$120.00	\$0.00
Infiltration Trench (10 ft)	EA		\$300.00	\$0.00
Porous Pavers	SY		\$50.00	\$0.00
				\$0.00
				\$0.00

<b>LID Drainage (Public) - Total</b>	<b>\$0.00</b>
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## PAVING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
AC Pavement Patching	SY	43	\$40.00	\$1,720.00
4" Crushed Rock	SY	43	\$10.00	\$430.00
Bank Run Gravel: 3" minus, in place	CY		\$30.00	\$0.00
4" Asphalt Treated Base (ATB)	SY		\$35.00	\$0.00
2" Class B Asphalt Pavement	SY	531	\$20.00	\$10,620.00
Saw Cut AC Pavement	LF	693	\$2.00	\$1,386.00
Cold Planing (Grinding) & Hauling	SY		\$12.00	\$0.00
Adjust Existing Utility	EA		\$350.00	\$0.00
3" Class B Asphalt Pavement	SY		\$30.00	\$0.00
				\$0.00

<b>Paving - Total</b>	<b>\$14,156.00</b>
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## CURB AND GUTTER - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Concrete Extruded Curb	LF		\$8.00	\$0.00
Asphalt Extruded Curb	LF		\$8.00	\$0.00
Conc. Curb & Gutter, Type A	LF	198	\$35.00	\$6,930.00
				\$0.00
				\$0.00

<b>Curb and Gutter - Total</b>	<b>\$6,930.00</b>
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## SIDEWALKS - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
5' Concrete Sidewalk	LF	170	\$30.00	\$5,100.00
Concrete Sidewalk (other than 5')	SF		\$6.00	\$0.00
5' Concrete Driveway	LF	15	\$35.00	\$525.00
Asphalt Walkways, Class B	SY		\$18.00	\$0.00
Wheel Chair Ramps	EA	1	\$1,400.00	\$1,400.00
Steel Pipe Handrail	LF		\$80.00	\$0.00
Vinyl Fencing	LF		\$40.00	\$0.00
Speed Hump Restoration	EA		\$1,500.00	\$0.00
5' Pervious Sidewalk	LF		\$40.00	\$0.00
				\$0.00
				\$0.00

Sidewalks - Total	\$7,025.00
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## LANDSCAPING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Street Trees	EA	5	\$450.00	\$2,250.00
Sod	SY	205	\$10.00	\$2,050.00
Rockery Wall	SY		\$400.00	\$0.00
				\$0.00
				\$0.00

Landscaping - Total	\$4,300.00
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## MISCELLANEOUS - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Monuments	EA		\$380.00	\$0.00
Street Signs	EA	1	\$220.00	\$220.00
Pavement Marking	LF		\$1.00	\$0.00
Mailbox Structure	EA		\$700.00	\$0.00
Type III Fixed Barricade	EA		\$400.00	\$0.00
Bollards	EA		\$700.00	\$0.00
Thermoplastic Crosswalk Markings	LF		\$2.85 or \$500 min	
Street Light	EA		\$4,000.00	\$0.00
PED Light	EA		\$5,000.00	\$0.00
				\$0.00
				\$0.00

Miscellaneous - Total				\$220.00
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## PAVING - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
4" Crushed Rock	SY	156	\$10.00	\$1,560.00
4" Asphalt Treated Base (ATB)	SY		\$35.00	\$0.00
2" Class B Asphalt Pavement	SY	156	\$20.00	\$3,120.00
				\$0.00
				\$0.00

Paving - Total	\$4,680.00
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## MISCELLANEOUS - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Property Corners	EA	4	\$300.00	\$1,200.00
Street Signs	EA		\$220.00	\$0.00
Fire Lane Marking	LF		\$2.00	\$0.00
UG Utilities to Existing House	EA	3	\$2,500.00	\$7,500.00
Tight-Line ex. House Roof Drains	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

Miscellaneous - Total	\$8,700.00
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## STORM DRAINAGE SYSTEM - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
4" - 6" Pipe	LF	550	\$15.00	\$8,250.00
8" Pipe	LF		\$40.00	\$0.00
12" Pipe	LF	73	\$50.00	\$3,650.00
18" Pipe	LF		\$60.00	\$0.00
24" Pipe	LF		\$75.00	\$0.00
Detention Pipe	LF			
Detention Vault	LS			
Yard Basin	EA		\$265.00	\$0.00
Curb Inlet	EA		\$880.00	\$0.00
Type I Catch Basin	EA	1	\$1,200.00	\$1,200.00
Type II Catch Basin	EA		\$1,400.00	\$0.00
Type II CB - 48"	EA		\$3,900.00	\$0.00
Type II CB - 54"	EA		\$4,000.00	\$0.00
CMP Access Riser	EA		\$1,600.00	\$0.00
Connection to Existing CB	EA		\$1,100.00	\$0.00
Restrictor/Pollution Control - 8"	EA		\$900.00	\$0.00
Restrictor/Pollution Control - 12"	EA		\$900.00	\$0.00
Pollution Control Tee	EA		\$500.00	\$0.00
Debris Barrier	EA		\$250.00	\$0.00
Biofiltration Swale	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

<b>Storm Drainage System - Total</b>	<b>\$13,100.00</b>
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## Low Impact Development - Private Storm Drainage

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Pervious Concrete (5' wide)	LF		\$60.00	\$0.00
Porous Asphalt	SY		\$80.00	\$0.00
Rain Gardens	SY		\$120.00	\$0.00
Infiltration Trench (10 ft)	EA		\$300.00	\$0.00
Porous Pavers	SY		\$50.00	\$0.00
				\$0.00
				\$0.00

<b>LID Drainage (Private) - Total</b>	<b>\$0.00</b>
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## Other Agency Improvements

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Northshore Utility District	LS			\$0.00
Woodinville Water District	LS			\$0.00
Puget Sound Energy	LS	5000		\$0.00
				\$0.00
				\$0.00

<b>Other Agency - Total</b>				\$0.00
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# IMPROVEMENT EVALUATION

This form must be completed by the developer (or representative) and shall include work required by the official Notice of Approval or conditions on the permit.

Quantity take-offs shall be from documents approved by the City of Kirkland.

PUBLIC WORK will be owned and maintained by the City after the appropriate maintenance period and will be subject to review and inspection fees per KMC Section 5.74.040. For subdivision work, this will include the on-site detention system.

PRIVATE WORK will be owned and maintained by the property owner(s), and is subject to the above fees. For subdivisions, include the remainder of the on-site drainage system (excluding the detention system) and any easement road paving. For all other types of projects, include the on-site storm drainage system only.

	Column 1 Value of Public Work	Column 2 Value of Private Work	Column 3 Total Value
1. Constr. Storm Drainage	3900		3900
2. Clearing and Grading	4080		4080
3. Water System	3200		3200
4. Sanitary Sewer System	4320		4320
5. Storm Drainage System	17150	13100	30250
6. LID - Storm Drainage	0	0	0
7. Paving	14156	4680	18836
8. Curb and Gutter	6930		6930
9. Sidewalks	7025		7025
10. Landscaping	4300		4300
11. Miscellaneous	220	8700	8920
12. Other Agency Improvements			0
13			0
<b>TOTALS</b>	<b>\$65,281.00</b>	<b>\$26,480.00</b>	<b>\$91,761.00</b>

I hereby certify the above to be an accurate representation of the required construction for the above referenced project.

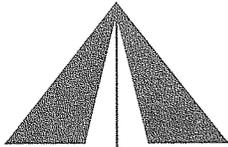
Agent/Owner <i>Ronald L. Lindholm</i>	Date <i>12/2/2017</i>
City	Date

**T.I.R. Section XI: Maintenance & Operations Manual**

<b>NO. 5 – CATCH BASINS AND MANHOLES</b>			
<b>Maintenance Component</b>	<b>Defect or Problem</b>	<b>Condition When Maintenance is Needed</b>	<b>Results Expected When Maintenance is Performed</b>
Structure	Sediment	Sediment exceeds 60% of the depth from the bottom of the catch basin to the invert of the lowest pipe into or out of the catch basin or is within 6 inches of the invert of the lowest pipe into or out of the catch basin.	Sump of catch basin contains no sediment.
	Trash and debris	Trash or debris of more than ½ cubic foot which is located immediately in front of the catch basin opening or is blocking capacity of the catch basin by more than 10%.	No Trash or debris blocking or potentially blocking entrance to catch basin.
		Trash or debris in the catch basin that exceeds ⅓ the depth from the bottom of basin to invert the lowest pipe into or out of the basin.	No trash or debris in the catch basin.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No dead animals or vegetation present within catch basin.
		Deposits of garbage exceeding 1 cubic foot in volume.	No condition present which would attract or support the breeding of insects or rodents.
	Damage to frame and/or top slab	Corner of frame extends more than ¼ inch past curb face into the street (If applicable).	Frame is even with curb.
		Top slab has holes larger than 2 square inches or cracks wider than ¼ inch.	Top slab is free of holes and cracks.
		Frame not sitting flush on top slab, i.e., separation of more than ¼ inch of the frame from the top slab.	Frame is sitting flush on top slab.
	Cracks in walls or bottom	Cracks wider than ½ inch and longer than 3 feet, any evidence of soil particles entering catch basin through cracks, or maintenance person judges that catch basin is unsound.	Catch basin is sealed and structurally sound.
		Cracks wider than ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	No cracks more than ¼ inch wide at the joint of inlet/outlet pipe.
	Settlement/ misalignment	Catch basin has settled more than 1 inch or has rotated more than 2 inches out of alignment.	Basin replaced or repaired to design standards.
	Damaged pipe joints	Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering the catch basin at the joint of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of inlet/outlet pipes.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Inlet/Outlet Pipe	Sediment accumulation	Sediment filling 20% or more of the pipe.
Trash and debris		Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes.
Damaged		Cracks wider than ½-inch at the joint of the inlet/outlet pipes or any evidence of soil entering at the joints of the inlet/outlet pipes.	No cracks more than ¼-inch wide at the joint of the inlet/outlet pipe.

<b>NO. 5 – CATCH BASINS AND MANHOLES</b>			
<b>Maintenance Component</b>	<b>Defect or Problem</b>	<b>Condition When Maintenance is Needed</b>	<b>Results Expected When Maintenance is Performed</b>
Metal Grates (Catch Basins)	Unsafe grate opening	Grate with opening wider than $\frac{7}{8}$ inch.	Grate opening meets design standards.
	Trash and debris	Trash and debris that is blocking more than 20% of grate surface.	Grate free of trash and debris. footnote to guidelines for disposal
	Damaged or missing	Grate missing or broken member(s) of the grate. <b>Any open structure requires urgent maintenance.</b>	Grate is in place and meets design standards.
Manhole Cover/Lid	Cover/lid not in place	Cover/lid is missing or only partially in place. <b>Any open structure requires urgent maintenance.</b>	Cover/lid protects opening to structure.
	Locking mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts cannot be seated. Self-locking cover/lid does not work.	Mechanism opens with proper tools.
	Cover/lid difficult to Remove	One maintenance person cannot remove cover/lid after applying 80 lbs. of lift.	Cover/lid can be removed and reinstalled by one maintenance person.

<b>NO. 6 – CONVEYANCE PIPES AND DITCHES</b>			
<b>Maintenance Component</b>	<b>Defect or Problem</b>	<b>Conditions When Maintenance is Needed</b>	<b>Results Expected When Maintenance is Performed</b>
Pipes	Sediment & debris accumulation	Accumulated sediment or debris that exceeds 20% of the diameter of the pipe.	Water flows freely through pipes.
	Vegetation/roots	Vegetation/roots that reduce free movement of water through pipes.	Water flows freely through pipes.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Damage to protective coating or corrosion	Protective coating is damaged; rust or corrosion is weakening the structural integrity of any part of pipe.	Pipe repaired or replaced.
	Damaged	Any dent that decreases the cross section area of pipe by more than 20% or is determined to have weakened structural integrity of the pipe.	Pipe repaired or replaced.
Ditches	Trash and debris	Trash and debris exceeds 1 cubic foot per 1,000 square feet of ditch and slopes.	Trash and debris cleared from ditches.
	Sediment accumulation	Accumulated sediment that exceeds 20% of the design depth.	Ditch cleaned/flushed of all sediment and debris so that it matches design.
	Noxious weeds	Any noxious or nuisance vegetation which may constitute a hazard to County personnel or the public.	Noxious and nuisance vegetation removed according to applicable regulations. No danger of noxious vegetation where County personnel or the public might normally be.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Vegetation	Vegetation that reduces free movement of water through ditches.	Water flows freely through ditches.
	Erosion damage to slopes	Any erosion observed on a ditch slope.	Slopes are not eroding.
	Rock lining out of place or missing (If Applicable)	One layer or less of rock exists above native soil area 5 square feet or more, any exposed native soil.	Replace rocks to design standards.



November 25, 2014

Dan Carmody, Engineering Reviewer  
City of Kirkland  
123 5<sup>th</sup> Avenue  
Kirkland, WA 98033

RE: BSF14-04537

Dear Mr. Carmody:

Attached are the revised plans per the review comments dated November 20, 2014. The following is an itemized response to your comments:

**Public Works Department Comments:**

**Plans**

1. Grades and cross slopes were added to sheet 3
2. The pedestrian walkways were shown to connect to the sidewalk at both areas on sheets 1-3
3. The revised driveway detail is called out on sheet 1 and the detail was added on sheet 8.
4. The strip drain connection was added to sheet 1 and 4.
5. The forcemain to gravity connection was changed to detail S.28A. This is shown on sheets 2 and 4, and details of the check valve and box were added to sheet 7.
6. A copy of the original Stormwater Adjustment has been attached to this submittal as well.

Please review the drawings. I can be reached at 425-392-5351 if you have any questions.

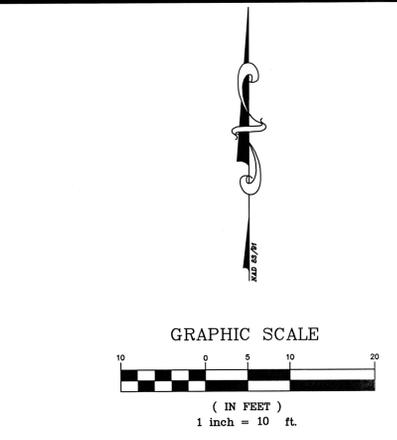
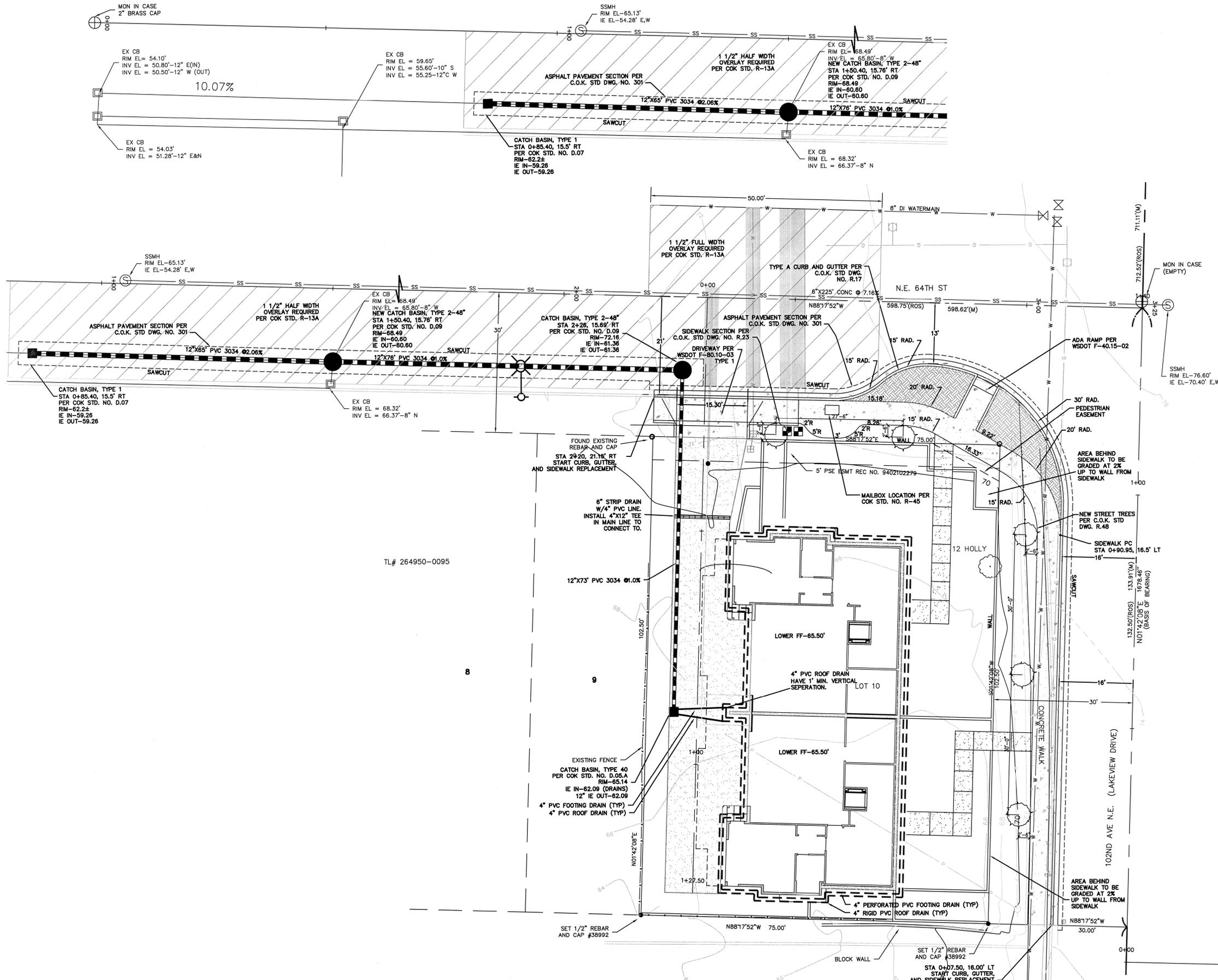
Sincerely

EASTSIDE CONSULTANTS, INC.  
Ronald S. Frederiksen, PE, LSIT

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



**SURVEY NOTES**

INSTRUMENT: TOPCON GPT 3000W TOTAL STATION  
METHOD USED: FIELD TRAVERSE WITH ACTUAL FIELD MEASUREMENTS AND ANGLES  
WAC 332-130-090

DATE OF SURVEY: MAY 2014  
BENCHMARK: MON IN CASE LAKEVIEW DR & 60TH ST  
EL = -61.41'  
BASIS OF BEARING: 102ND AVE N.E. (N01°42'08"E)  
REFERENCE SURVEYS: RECORDING 20070102900024

VERTICAL DATUM: NAVD 88

HORIZONTAL DATUM:  
BASIS OF BEARING: 102ND AVE N.E. (N01°42'08"E)  
REFERENCE SURVEYS: RECORDING 20070102900024

LEGAL DESCRIPTION

**EROSION AND SEDIMENT CONTROL NOTES:**

- FROM OCTOBER 1 THROUGH APRIL 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 2 DAYS; FROM MAY 1 THROUGH SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 7 DAYS.
- EXCAVATED FOOTING SOIL STOCKPILES SHALL BE COVERED UNTIL EITHER USED OR REMOVED.
- BACKFILL FOOTINGS AND BASEMENT WALLS AS SOON AS POSSIBLE AND ROUGH GRADE LOTS.
- REMOVE EXCESS SOILS FROM SITE AS SOON AS POSSIBLE.
- ALL EXPOSED SOILS SHALL BE MULCHED, COVERED IN PLASTIC, SODDED, OR HYDRASEEDED AS SOON AS POSSIBLE.
- ALL SEDIMENT AND DIRT SHALL BE REMOVED FROM ROADS BY SHOVELLING OR SWEEPING AND CAREFULLY REMOVED TO A SUITABLE DISPOSAL AREA.
- ALL EROSION AND SEDIMENT CONTROL BMPs SHALL BE INSPECTED ON A REGULAR BASIS, ESPECIALLY AFTER A HEAVY STORM. ANY PROBLEMS FOUND SHALL BE FIXED IMMEDIATELY AND SEDIMENT REMOVED AND DISPOSED OF AT AN APPROPRIATE SITE IF FOUND TO BE AT HALF CAPACITY.

**SHEET INDEX**

C1	ROAD AND DRAINAGE PLAN
C2	WATER AND SEWER PLAN
C3	GRADING AND TESC PLAN
C4	PROFILES AND ROAD SECTIONS
C5	DRAINAGE AND ROAD DETAILS
C6	ROAD AND TESC DETAILS
C7	WATER AND SEWER DETAILS
C8	MISCELLANEOUS DETAILS
C9	STANDARD NOTES

**IMPERVIOUS CALCULATIONS**

IMPERVIOUS AREA

DRIVEWAY	= 630.50 SF
DECKS	= 192 SF
HARDSCAPE	= 500 SF
HOUSE	= 3019 SF
TOTAL	= 4341.50 SF

BEFORE CONSTRUCTION BEGINS  
DEVELOPER MUST CALL  
TO SCHEDULE A PRE-CONSTRUCTION  
MEETING.  
CITY OF KIRKLAND - ENGINEERING DEPT.



<b>REVISIONS</b>	<b>BY DATE</b>
1 REVISED PER CITY COMMENTS	RSP 7/20/14
2 REVISED PER CITY COMMENTS	RSP 11/27/14
3 REVISED PER CITY COMMENTS	RSP 12/22/14

© THE PLANS SET FORTH ON THIS SHEET ARE AND SHALL REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

**ROAD AND DRAINAGE PLAN**

**DANIELLE-5803 BALLARD, LLC**  
1623 43RD AVENUE EAST #1  
SEATTLE, WA 98112

**ENGINEERS - SURVEYORS**  
**EASTSIDE CONSULTANTS, INC.**  
1320 N.W. MALL ST., SUITE B  
ISSAQUAH, WASHINGTON 98027  
PH: (425) 392-5381 FAX: (425) 392-4876

SW1/4 SW1/4 SEC. 8, T. 25N., R. 5E., W.M.  
CITY OF KIRKLAND KING COUNTY WASHINGTON

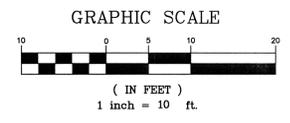
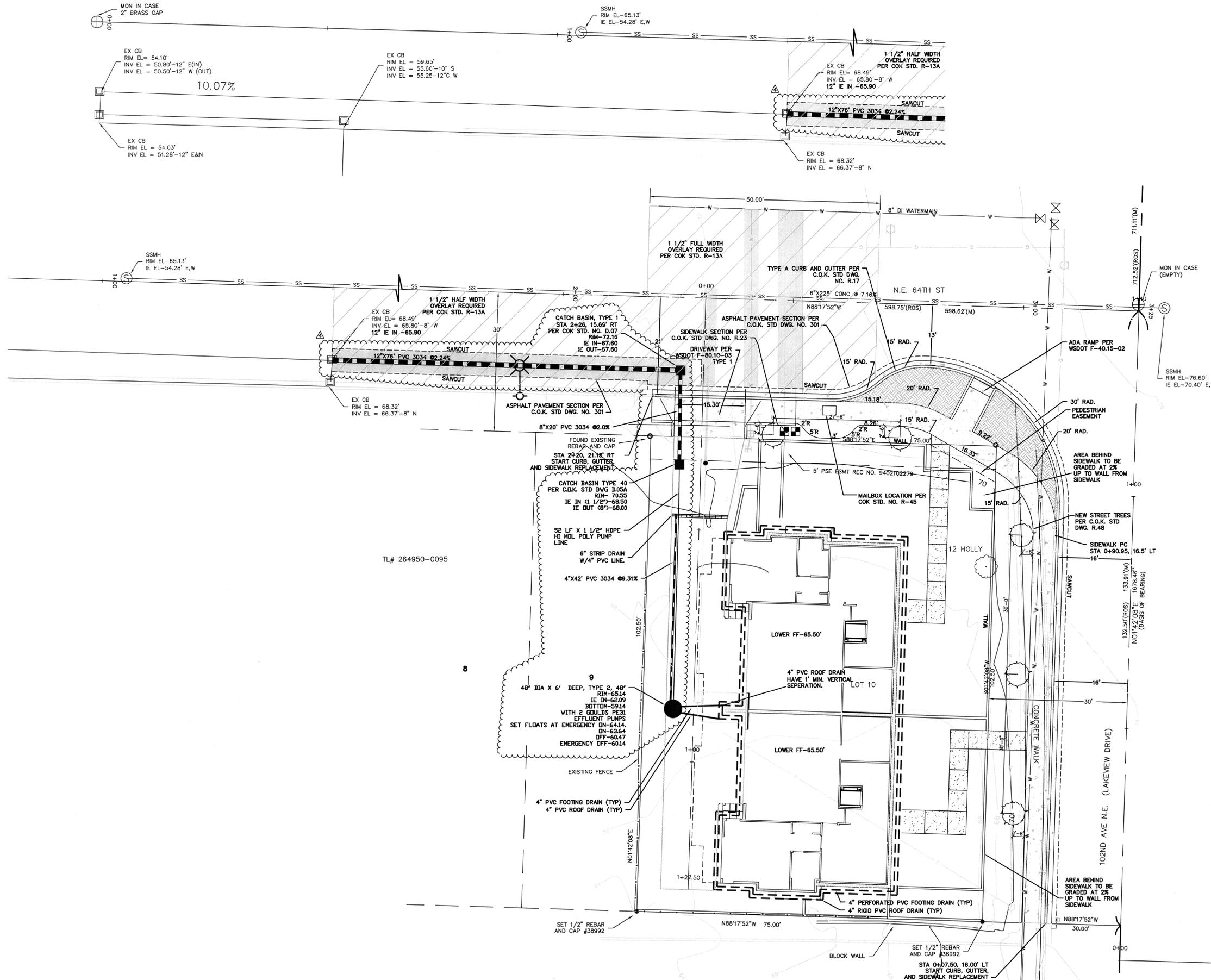
JOB NO. 140089
DATE 7/2014
SCALE 1"=20'
DESIGNED R.S.F.
DRAWN R.S.F.
CHECKED R.KITZ
APPROVED R.S.F.

SHEET C1 OF C9

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



**SURVEY NOTES**

INSTRUMENT: TOPCON GPT 3000W TOTAL STATION  
 METHOD USED: FIELD TRAVERSE WITH ACTUAL FIELD MEASUREMENTS AND ANGLES  
 WAC 332-130-090

DATE OF SURVEY: MAY 2014  
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 EL = 61.41'  
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 REFERENCE SURVEYS: RECORDING 20070102900024

VERTICAL DATUM: NAVD 88

HORIZONTAL DATUM:  
 BASIS OF BEARING: 102ND AVE N.E. (N01°42'08"E)  
 REFERENCE SURVEYS: RECORDING 20070102900024

LEGAL DESCRIPTION  
 LOT 10 AND THE EAST HALF OF LOT 9, BLOCK 2, FRENCH'S HOMESTEAD VILLA, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 20 OF PLATS, PAGE 24, IN KING COUNTY, WASHINGTON.

**EROSION AND SEDIMENT CONTROL NOTES:**

- FROM OCTOBER 1 THROUGH APRIL 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 2 DAYS. FROM MAY 1 THROUGH SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 7 DAYS.
- EXCAVATED FOOTING SOIL STOCKPILES SHALL BE COVERED UNTIL EITHER USED OR REMOVED
- BACKFILL FOOTINGS AND BASEMENT WALLS AS SOON AS POSSIBLE AND ROUGH GRADE LOTS.
- REMOVE EXCESS SOILS FROM SITE AS SOON AS POSSIBLE.
- ALL EXPOSED SOILS SHALL BE MULCHED, COVERED IN PLASTIC, SODDED, OR HYDROSEED AS SOON AS POSSIBLE.
- ALL SEDIMENT AND DIRT SHALL BE REMOVED FROM ROADS BY SHOVELLING OR SWEEPING AND CAREFULLY REMOVED TO A SUITABLE DISPOSAL AREA.
- ALL EROSION AND SEDIMENT CONTROL BMPs SHALL BE INSPECTED ON A REGULAR BASIS, ESPECIALLY AFTER A HEAVY STORM. ANY PROBLEMS FOUND SHALL BE FIXED IMMEDIATELY AND SEDIMENT REMOVED AND DISPOSED OF AT AN APPROPRIATE SITE IF FOUND TO BE AT HALF CAPACITY.

**SHEET INDEX**

C1	ROAD AND DRAINAGE PLAN
C2	WATER AND SEWER PLAN
C3	GRADING AND TESC PLAN
C4	PROFILES AND ROAD SECTIONS
C5	DRAINAGE AND ROAD DETAILS
C6	ROAD AND TESC DETAILS
C7	WATER AND SEWER DETAILS
C8	MISCELLANEOUS DETAILS
C9	STANDARD NOTES

**IMPERVIOUS CALCULATIONS**

IMPERVIOUS AREA

DRIVEWAY = 630.50 SF  
 DECKS = 192 SF  
 HARDSCAPE = 500 SF  
 HOUSE = 3019 SF  
 TOTAL = 4341.50 SF

BEFORE CONSTRUCTION BEGINS  
 DEVELOPER MUST CALL  
 TO SCHEDULE A PRE-CONSTRUCTION  
 MEETING.  
 CITY OF KIRKLAND - ENGINEERING DEPT.



REVISIONS	BY	DATE
1	RSF	9/20/14
2	RSF	11/25/14
3	RSF	12/2/14
4	RSF	5/26/15

THE PLANS SET FORTH ON THIS SHEET ARE AND SHALL REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

## ROAD AND DRAINAGE PLAN

DANIELLE-5803 BALLARD, LLC  
 1623 43RD AVENUE EAST #1  
 SEATTLE, WA 98112

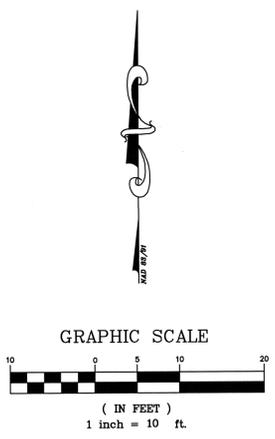
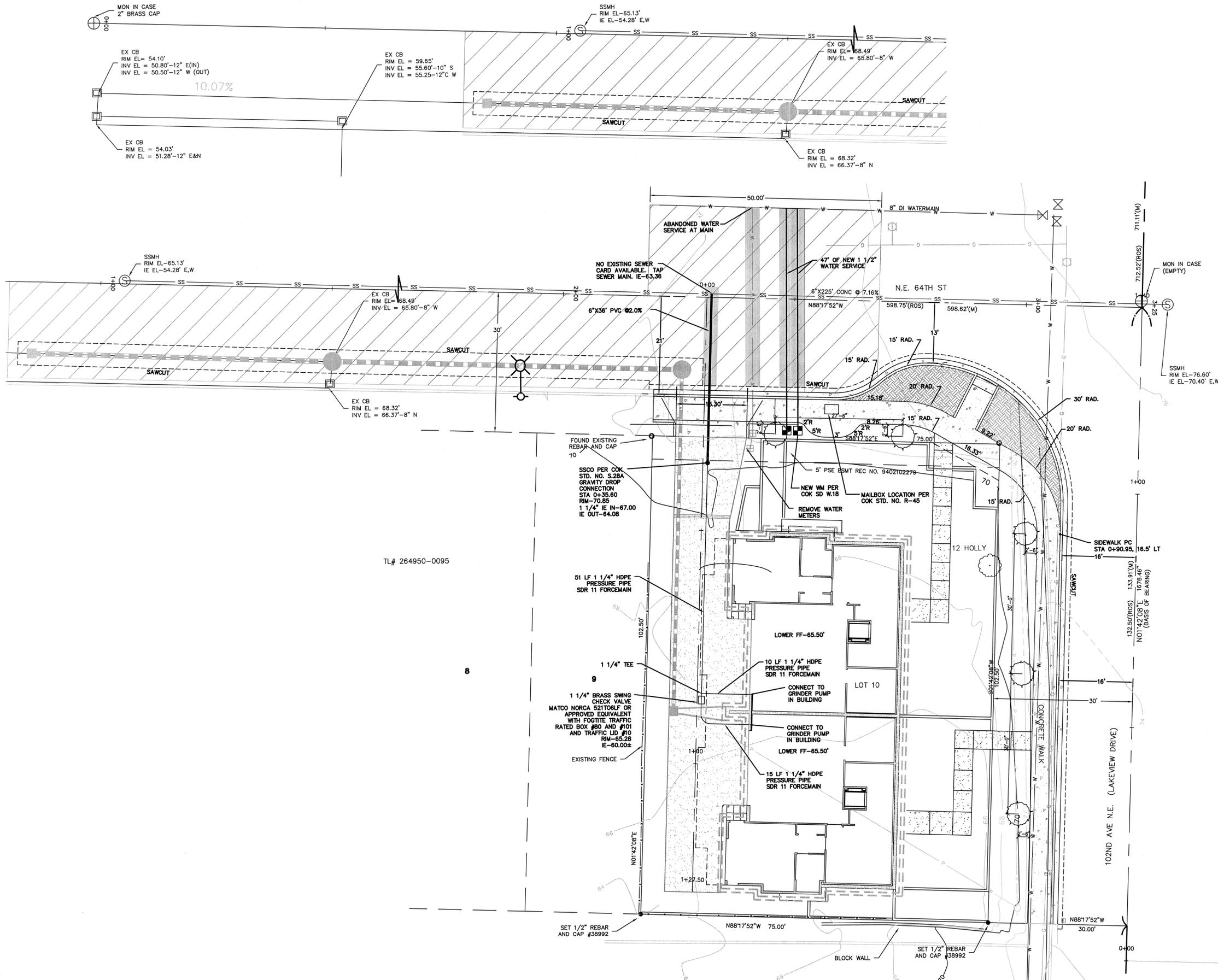
ENGINEERS - SURVEYORS  
**EASTSIDE CONSULTANTS, INC.**  
 1520 N.W. WALTON ST. SUITE B  
 ISSAQUAH, WASHINGTON 98027  
 PH: 425.392.5351 FAX: 425.392.4676

JOB NO. 14069  
 DATE 7/2014  
 SCALE 1"=20'  
 DESIGNED R.S.F.  
 DRAWN R.S.F.  
 CHECKED R.KITZ  
 APPROVED R.S.F.

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



- EROSION AND SEDIMENT CONTROL NOTES:**
- 1) FROM OCTOBER 1 THROUGH APRIL 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 2 DAYS. FROM MAY 1 THROUGH SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 7 DAYS.
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BEFORE CONSTRUCTION BEGINS  
DEVELOPER MUST CALL  
TO SCHEDULE A PRE-CONSTRUCTION  
MEETING.  
CITY OF KIRKLAND - ENGINEERING DEPT.



REVISIONS	BY	DATE
1. REVISED PER CITY COMMENTS	RSF	11/25/14
2. REVISED PER CITY COMMENTS	RSF	11/25/14
3. REVISED PER CITY COMMENTS	RSF	12/2/14

© THE PLANS SET FORTH ON THIS SHEET ARE AND SHALL REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

**WATER AND SEWER PLAN**

**DANIELLE-5803 BALLARD, LLC**  
1623 43RD AVENUE EAST #1  
SEATTLE, WA 98112

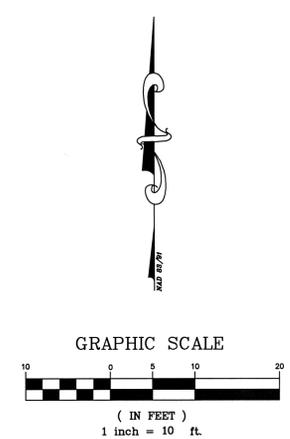
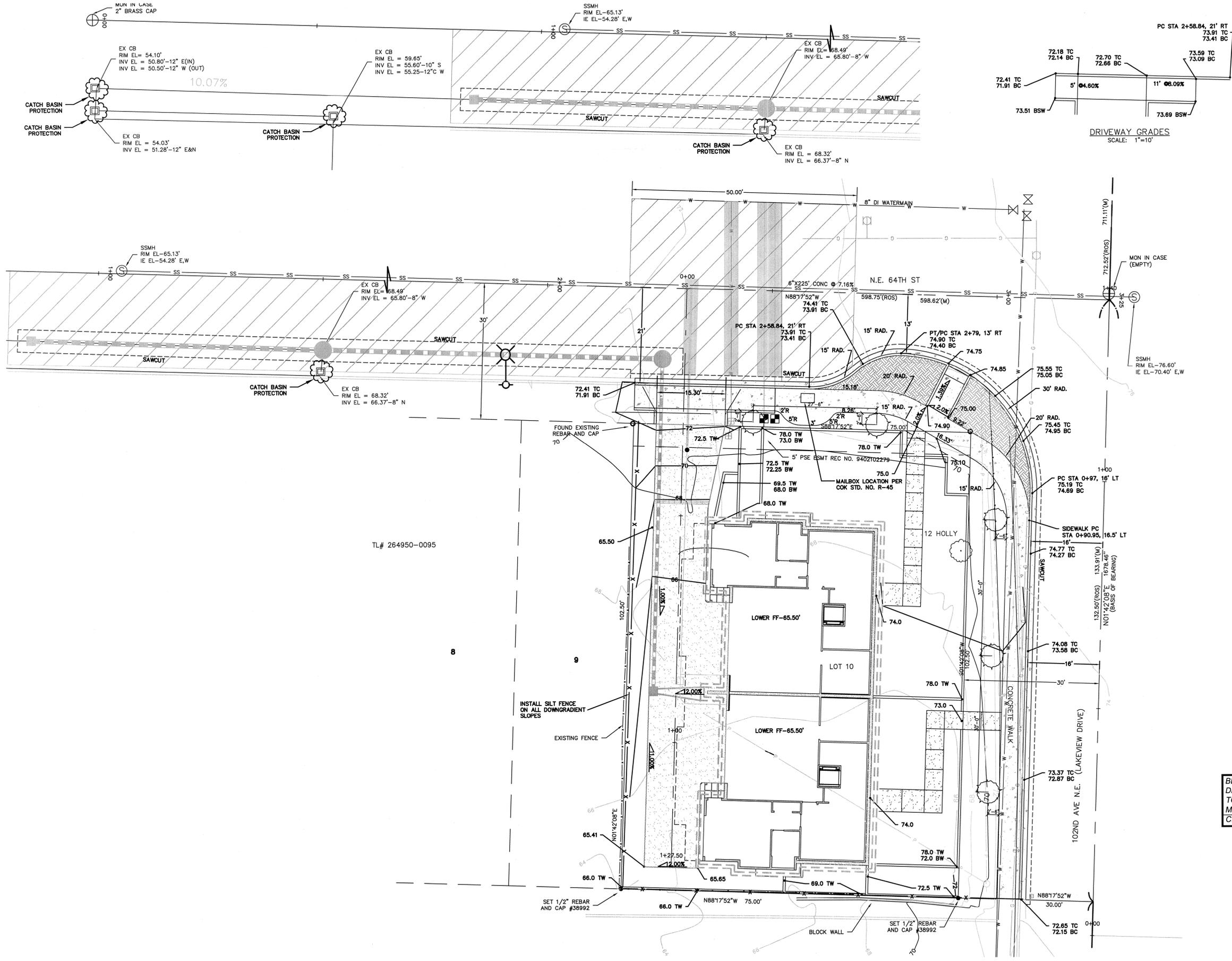
**ENGINEERS - SURVEYORS**  
**EASTSIDE CONSULTANTS, INC.**  
1320 N.W. MALL ST., SUITE B  
ISSAQUAH, WASHINGTON 98027  
PH: (206) 592-5351 FAX: (206) 592-4676

JOB NO. 14099
DATE 7/2014
SCALE 1"=20'
DESIGNED R.S.F.
DRAWN R.S.F.
CHECKED R.KITZ
APPROVED R.S.F.
SHEET C2 OF C9

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



- EROSION AND SEDIMENT CONTROL NOTES:**
- 1) FROM OCTOBER 1 THROUGH APRIL 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 2 DAYS. FROM MAY 1 THROUGH SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED FOR MORE THAN 7 DAYS.
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BEFORE CONSTRUCTION BEGINS  
DEVELOPER MUST CALL  
TO SCHEDULE A PRE-CONSTRUCTION  
MEETING.  
CITY OF KIRKLAND - ENGINEERING DEPT.



REVISIONS	DATE
1. REVISED PER CITY COMMENTS	9/30/14
2. REVISED PER CITY COMMENTS	11/27/14
3. REVISED PER CITY COMMENTS	12/27/14

THE PLANS SET FORTH ON THIS SHEET ARE AND SHALL REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

**DANIELLE-5803 BALLARD, LLC**  
1623 43RD AVENUE EAST #1  
SEATTLE, WA 98112

**ENGINEERS - SURVEYORS**  
**EASTSIDE CONSULTANTS, INC.**  
1820 N.W. MALL ST., SUITE B  
ISSAQUAH, WASHINGTON 98027  
PH:4252582-5551 FAX:4252582-4676

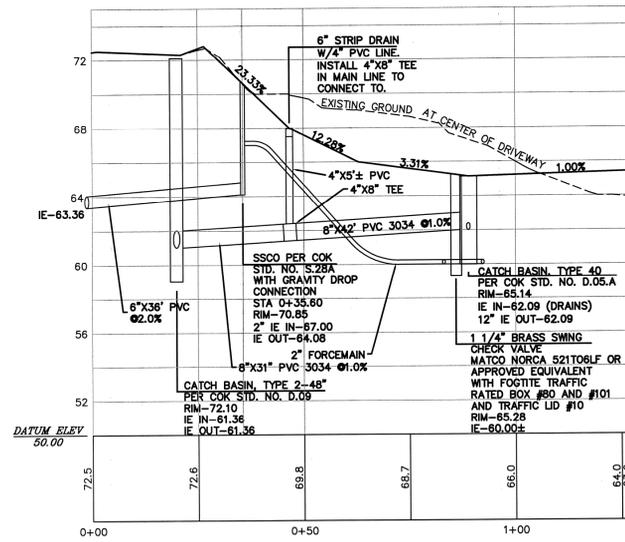
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DATE 7/2014  
SCALE 1"=20'  
DESIGNED R.S.F.  
DRAWN R.S.F.  
CHECKED R.K.I.T.  
APPROVED R.S.F.

SHEET C3 OF C9

# KIRKLAND TOWNHOUSES

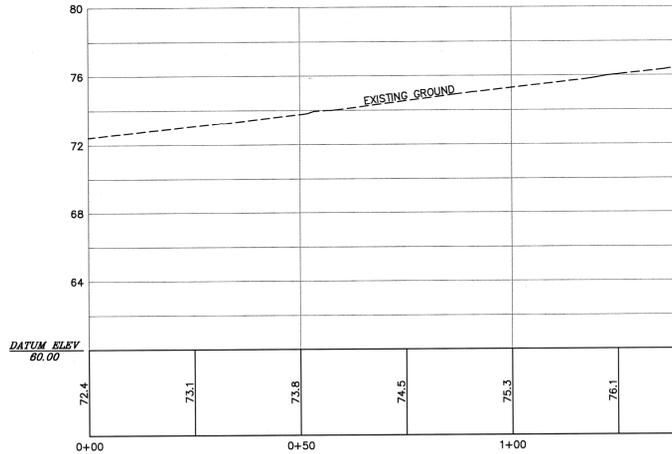
## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



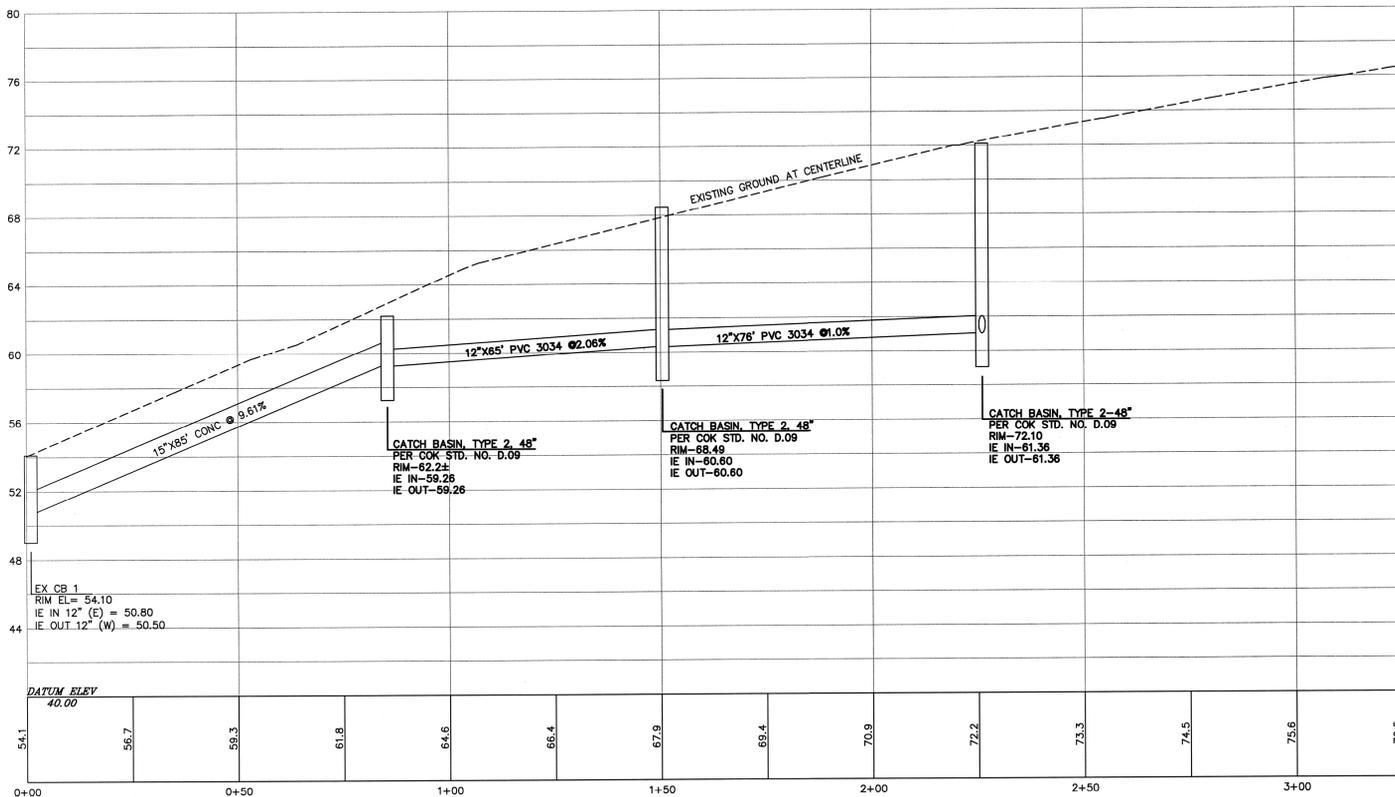
**DRIVEWAY**

SCALE: VER-1"=5'  
HOR-1"=20'



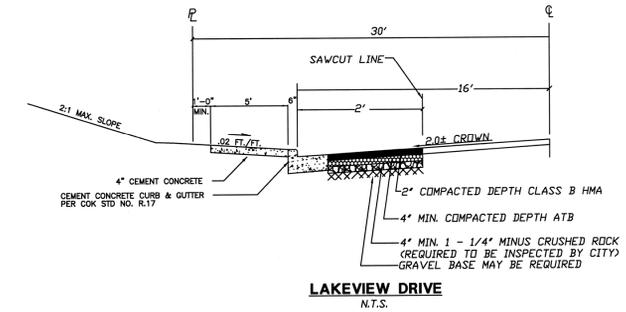
**LAKEVIEW DRIVE**

SCALE: VER-1"=5'  
HOR-1"=20'

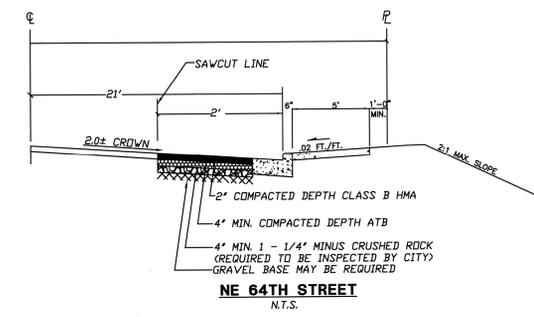


**NE 64TH STREET**

SCALE: VER-1"=5'  
HOR-1"=20'



**LAKEVIEW DRIVE**  
N.T.S.



**NE 64TH STREET**  
N.T.S.



REVISIONS	BY	DATE
1	RSF	7/20/14
2	RSF	11/27/14
3	RSF	12/2/14

© THE PLANS SET FORTH ON THIS SHEET ARE AND SHALL REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

**PROFILES AND ROAD SECTIONS**

**DANIELLE-5803 BALLARD, LLC**  
 1623 43RD AVENUE EAST #1  
 SEATTLE, WA 98112  
 SW1/4 SW1/4 SEC. 8, T. 25N., R. 5E., W.M.  
 CITY OF KIRKLAND KING COUNTY WASHINGTON

**EASTSIDE CONSULTANTS, INC.**  
 ENGINEERS - SURVEYORS  
 1320 N.W. MALL ST., SUITE B  
 ISSAQUAH, WASHINGTON 98027  
 PH: (425) 952-6361 FAX: (425) 952-6676

JOB NO. 14069  
 DATE 7/2014  
 SCALE 1"=20'  
 DESIGNED R.S.F.  
 DRAWN R.S.F.  
 CHECKED R.KITZ  
 APPROVED R.S.F.  
 SHEET C4 OF C9

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON

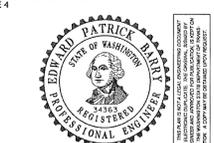
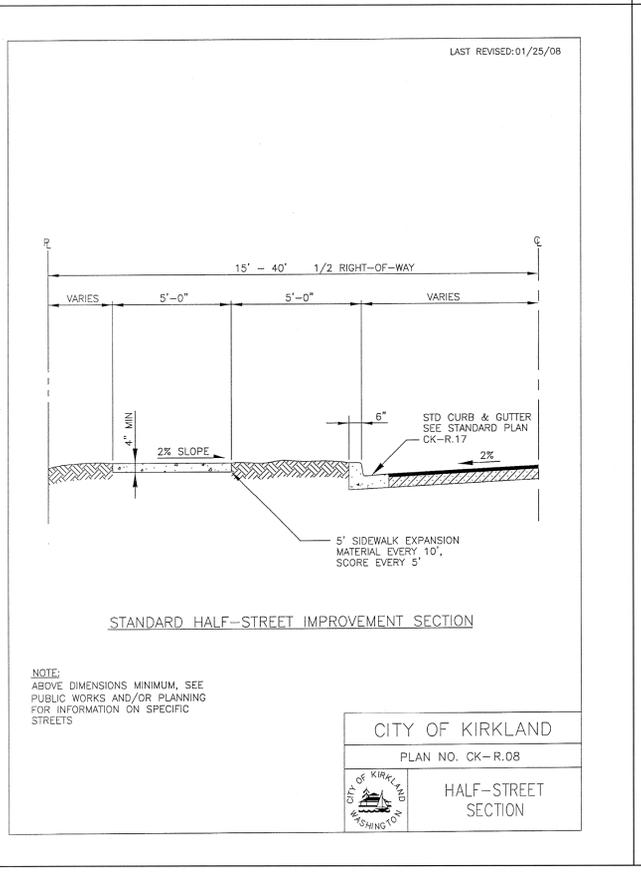
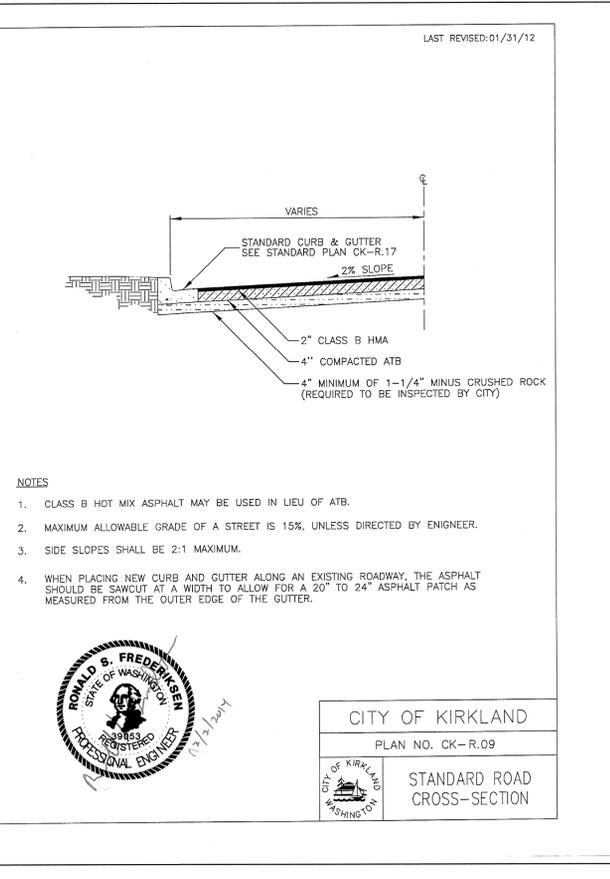
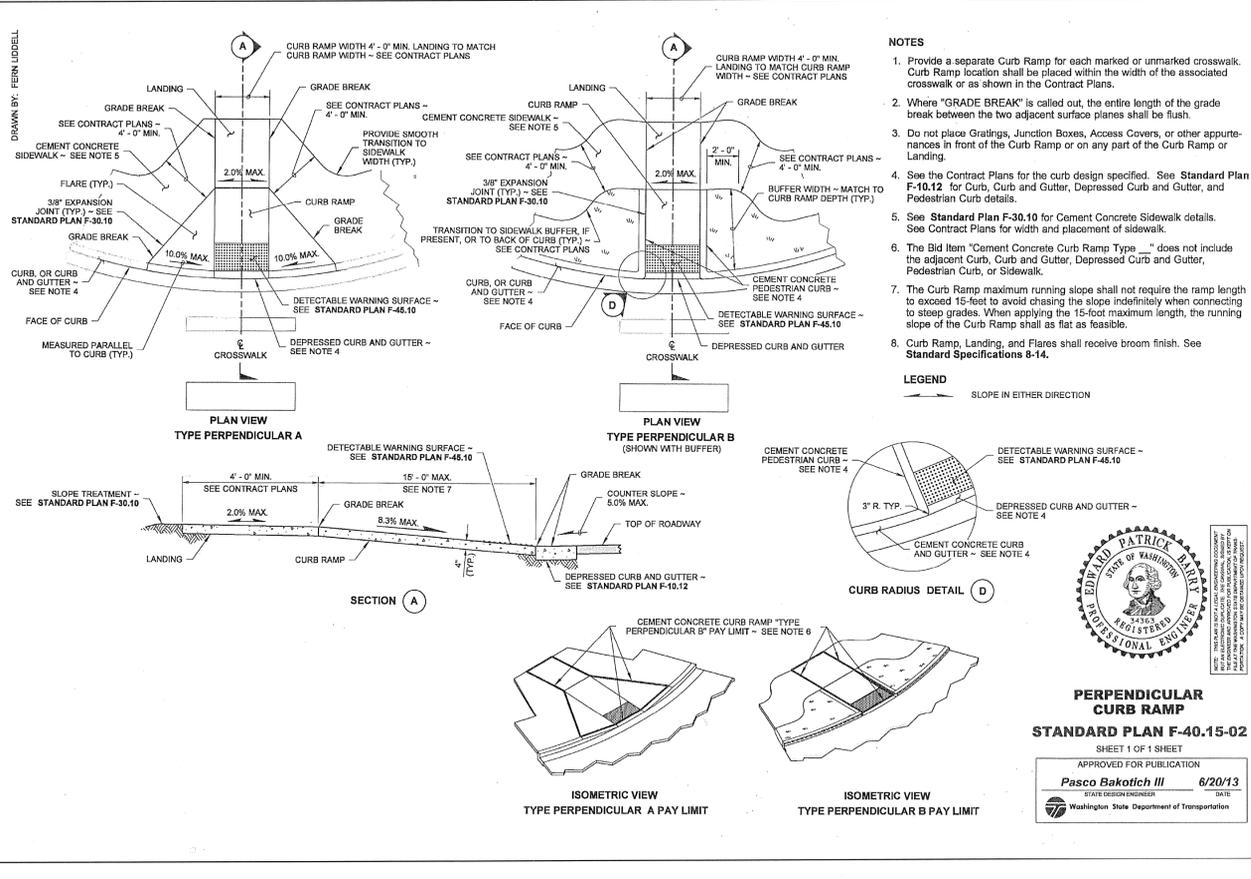
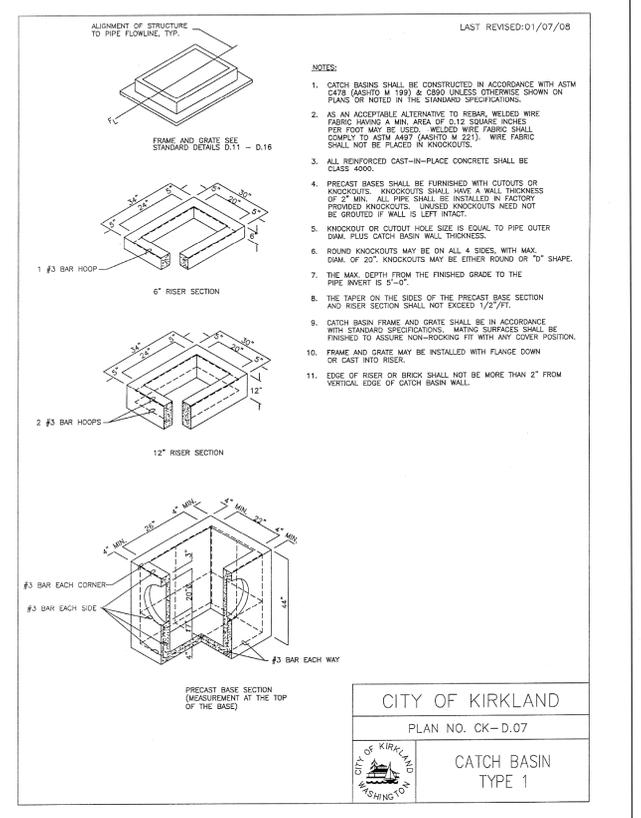
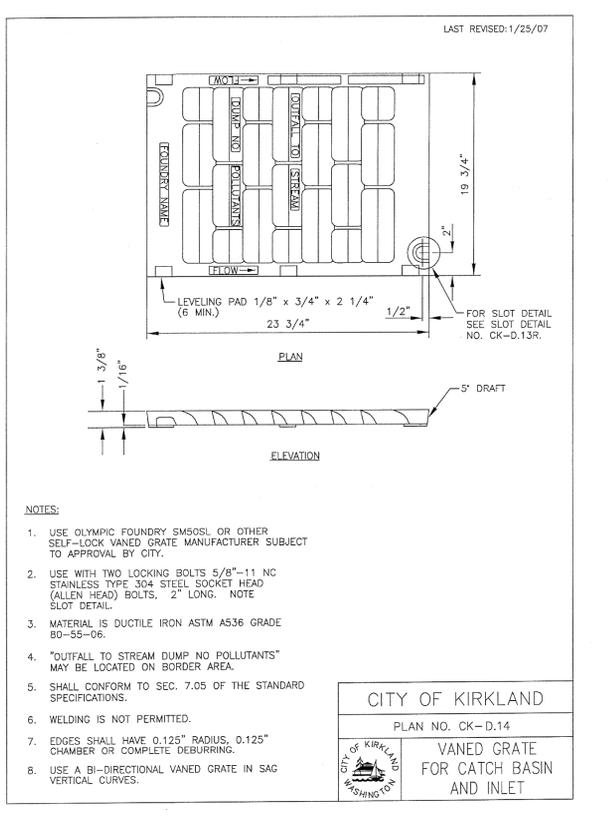
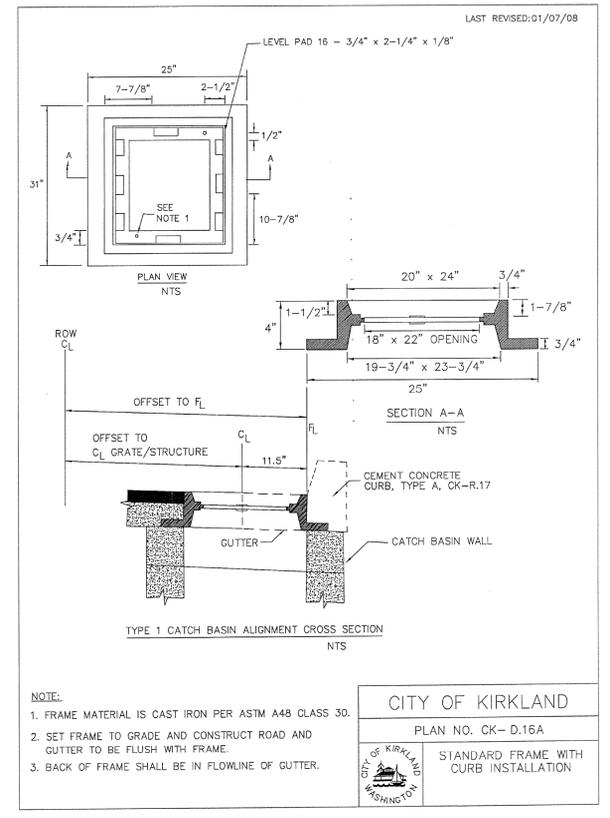
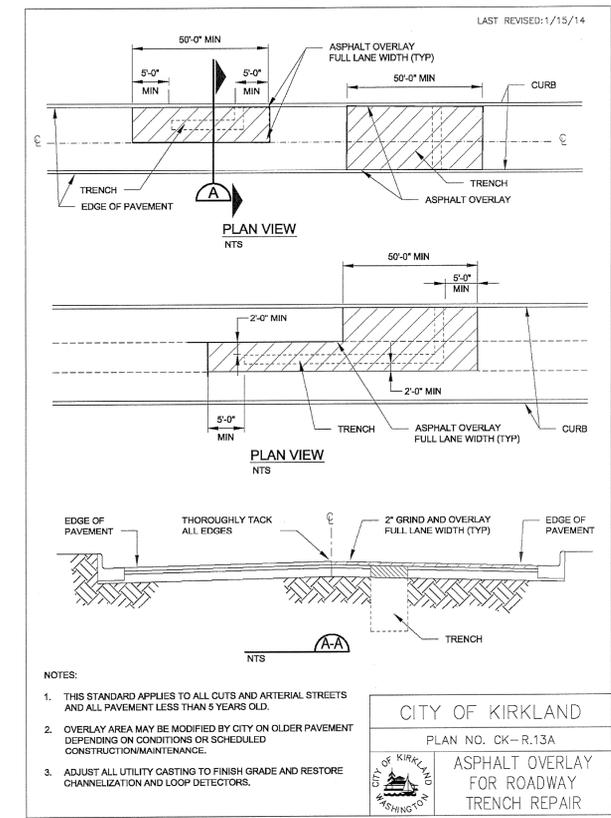
REVISIONS	BY	DATE
1. REVISED PER CITY COMMENTS	RSF	9/30/14
2. REVISED PER CITY COMMENTS	RSF	11/23/14
3. REVISED PER CITY COMMENTS	RSF	11/27/14

## DRAINAGE AND ROAD DETAILS

SITE ADDRESS: 10143 NE 64TH STREET  
**DANIELLE-5803 BALLARD, LLC**  
 1623 43RD AVENUE EAST #1  
 SEATTLE, WA 98112  
 SW1/4 SW1/4 SEC. 8, T.25N., R.5E., W.M.  
 CITY OF KIRKLAND KING COUNTY WASHINGTON

**ENGINEERS - SURVEYORS**  
**EASTSIDE CONSULTANTS, INC.**  
 516 EAST FIRST  
 416 RAINIER BLVD. N  
 ISSAQUAH, WASHINGTON 98027  
 PH: 425.852.5551 FAX: 425.852.4076

SHEET 1 OF 1 SHEET  
 APPROVED FOR PUBLICATION  
**Pasco Bakotic III** 6/20/13  
 STATE DESIGN ENGINEER  
 Washington State Department of Transportation

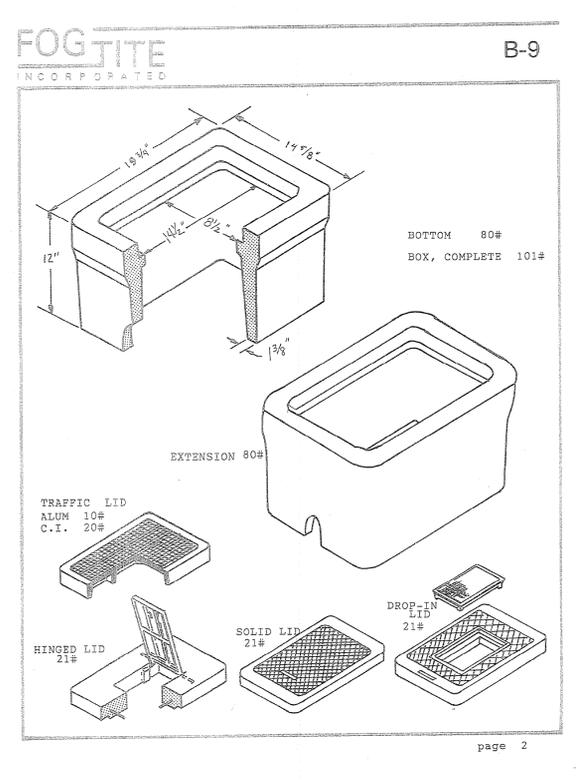
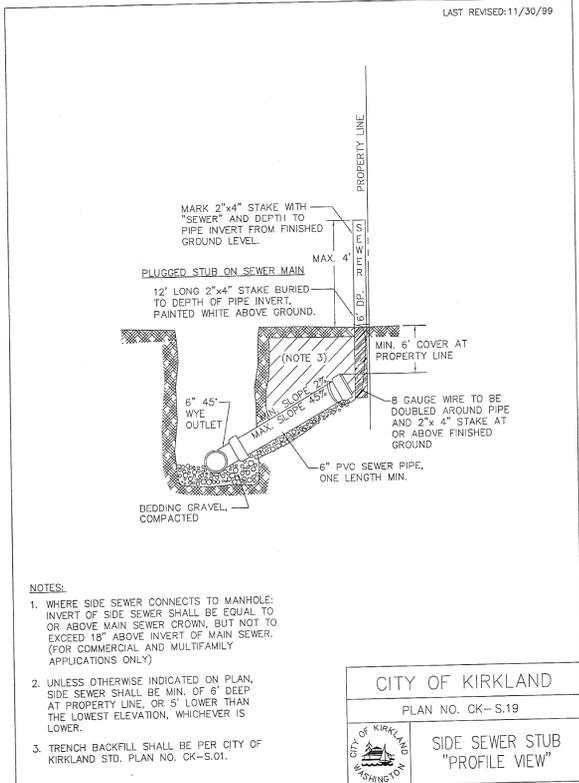
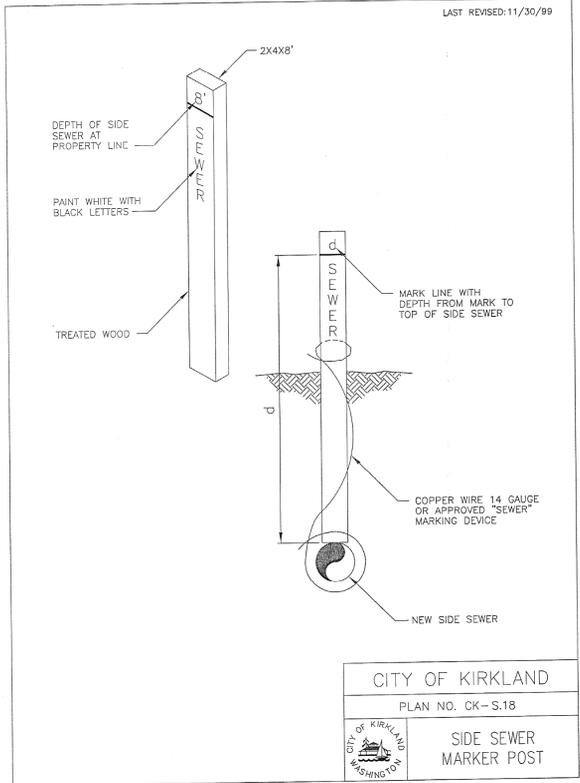




# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON



HD Fowler Company Submittal - BVC5NL 77670

### 521LF Swing Check Valve • Spec Sheet

**FEATURES & BENEFITS**

- Lead Free Brass\*
- ISO 9002
- 200 WOG-125 SWP
- Swing Type
- Integral Seat
- Threaded Ends Comply with ANSI B2.1 3/8" - 2"
- Solder Ends Comply with ANSI B15.18 1/2" - 2"
- Valves are Tested in Accordance with MSS-SP-82
- Sizes 3/8" - 4"

**DIMENSIONS**

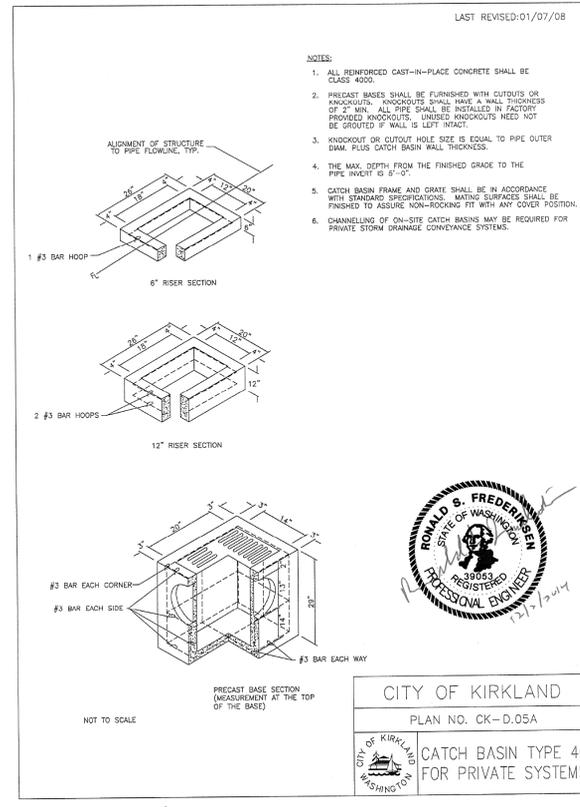
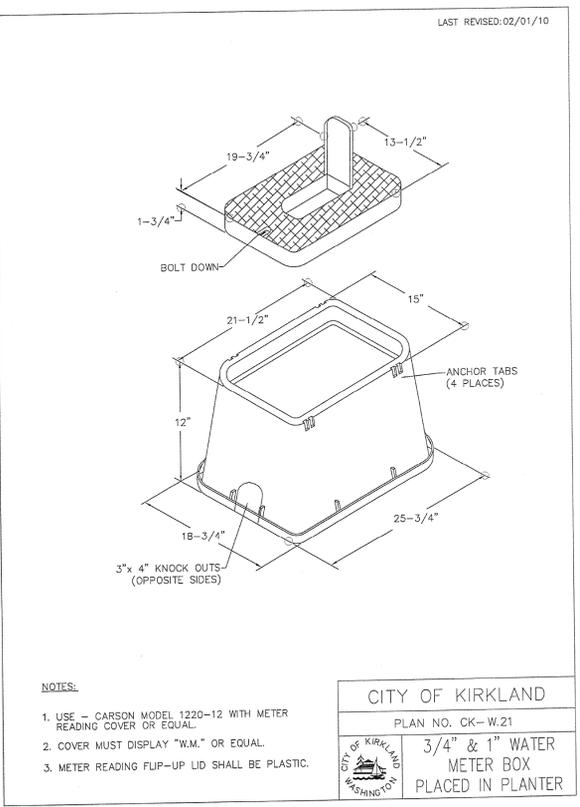
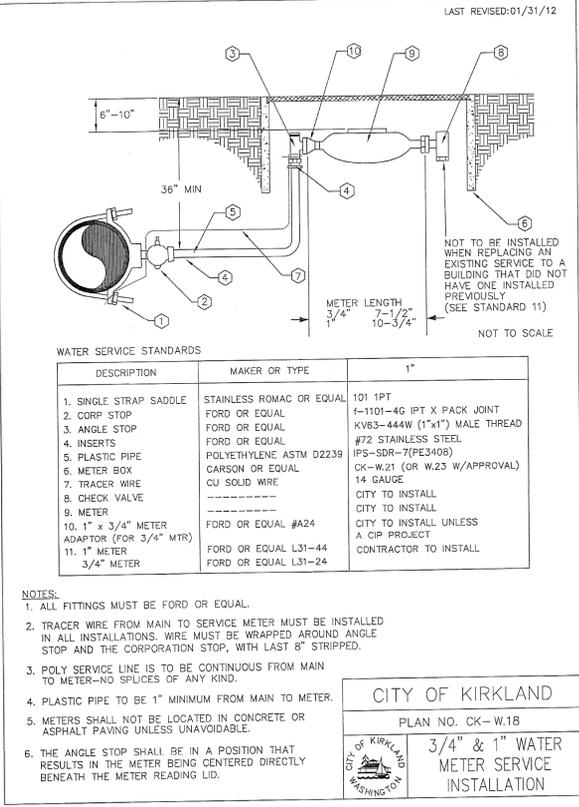
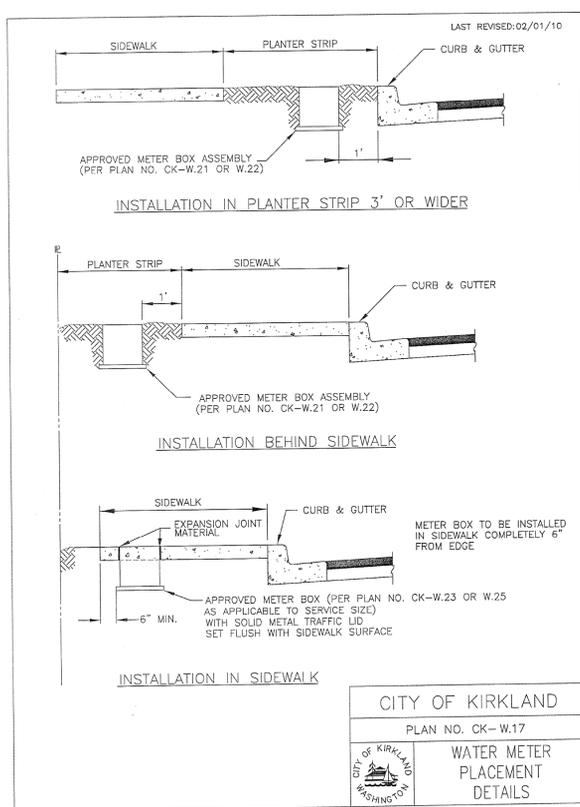
| Part #   |
|----------|----------|----------|----------|----------|----------|----------|----------|
| SIZE     |
S21T03LF	S21C03LF	S21T04LF	S21C04LF	S21T05LF	S21C05LF	S21T06LF	S21C06LF
3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
1.42	2.09	2.09	2.40	2.40	2.40	2.40	2.40
1.77	2.82	1.73	3.51	2.07	3.19	2.07	4.18
2.17	3.55	2.13	4.27	2.74	4.22	2.58	5.49
3.09	5.14	3.09	6.90	3.80	5.77	3.80	7.68
4.25	6.84	4.25	9.48				

**MATERIAL SPECIFICATIONS**

Part #	Part #	Material
1	Name Plate	Aluminum
2	Cap	Brass C89500
3	Packing	Fibre "T"
4	Disc	Brass C89500
5	Body	Brass C89500
6	Ball	Brass C89500
7	Pin	Brass S19 C80000

**Global sourcing. National compliance. Local service.**

CALIFORNIA 5993 Fresca Dr. La Palma CA 90623 • Toll Free: 866-532-8306 • Fax: 866-532-8307  
 TEXAS 1150 Silber Rd., Houston TX 77055 • Toll Free: 800-935-5456 • Fax: 713-680-2999  
 NEW YORK PO Box 21, Rt. 20, Brewster NY 10809 • Toll Free: 800-511-2082 • Fax: 845-278-9056  
 WEB: www.matco-norca.com EMAIL: mail@matco-norca.com



REVISIONS  
 1 REVISED PER CITY COMMENTS  
 2 REVISED PER CITY COMMENTS  
 3 REVISED PER CITY COMMENTS  
 BY DATE  
 RSP 9/30/14  
 RSP 11/27/14  
 RSP 12/22/14  
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SITE ADDRESS: 10143 NE 64TH STREET  
 DANIELLE-5803 BALLARD, LLC  
 1623 43RD AVENUE EAST #1  
 SEATTLE, WA 98112  
 SW1/4 SW1/4 SEC. 8, T. 25N., R. 5E., W.M.  
 CITY OF KIRKLAND KING COUNTY WASHINGTON

ENGINEERS - SURVEYORS  
**EASTSIDE CONSULTANTS, INC.**  
 516 EAST FIRST  
 415 RAINIER BLVD. N  
 ISSAQUAH, WASHINGTON 98027  
 PH: 425-382-4251 FAX: 425-382-4676

JOB NO. 14009  
 DATE 7/14  
 SCALE 1"=10'  
 DESIGNED R.S.F.  
 DRAWN R.S.F.  
 CHECKED R.KITZ  
 APPROVED R.S.F.  
 SHEET C7 OF C9

# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON

REVISIONS	BY	DATE
1	RSE	07/29/14
2	RSE	07/29/14
3	RSP	12/22/14

REMAIN THE PROPERTY OF EASTSIDE CONSULTANTS, INC.

### MISCELLANEOUS DETAILS

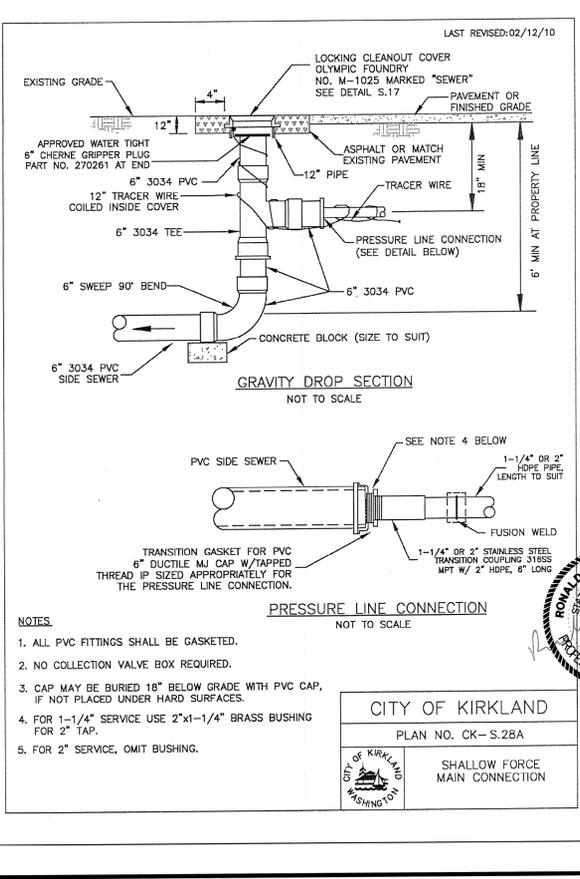
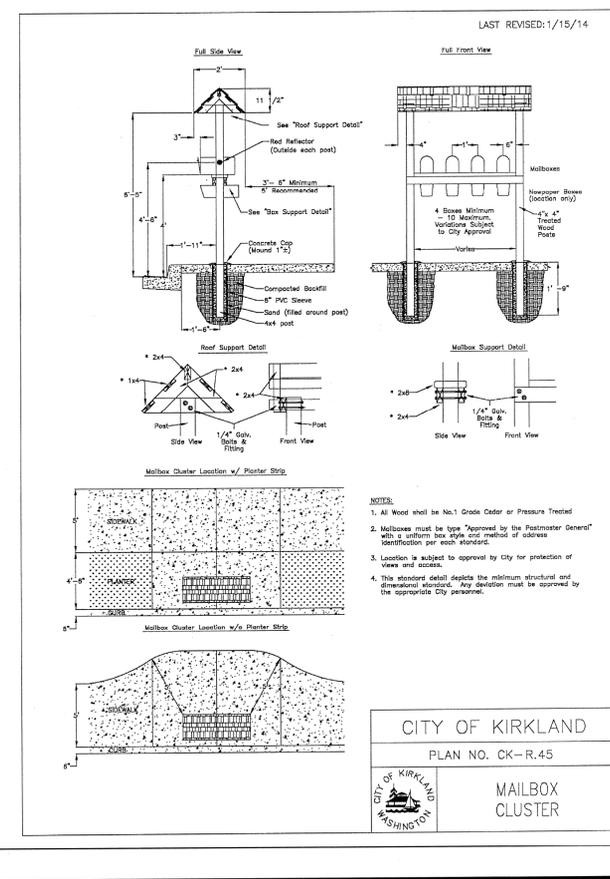
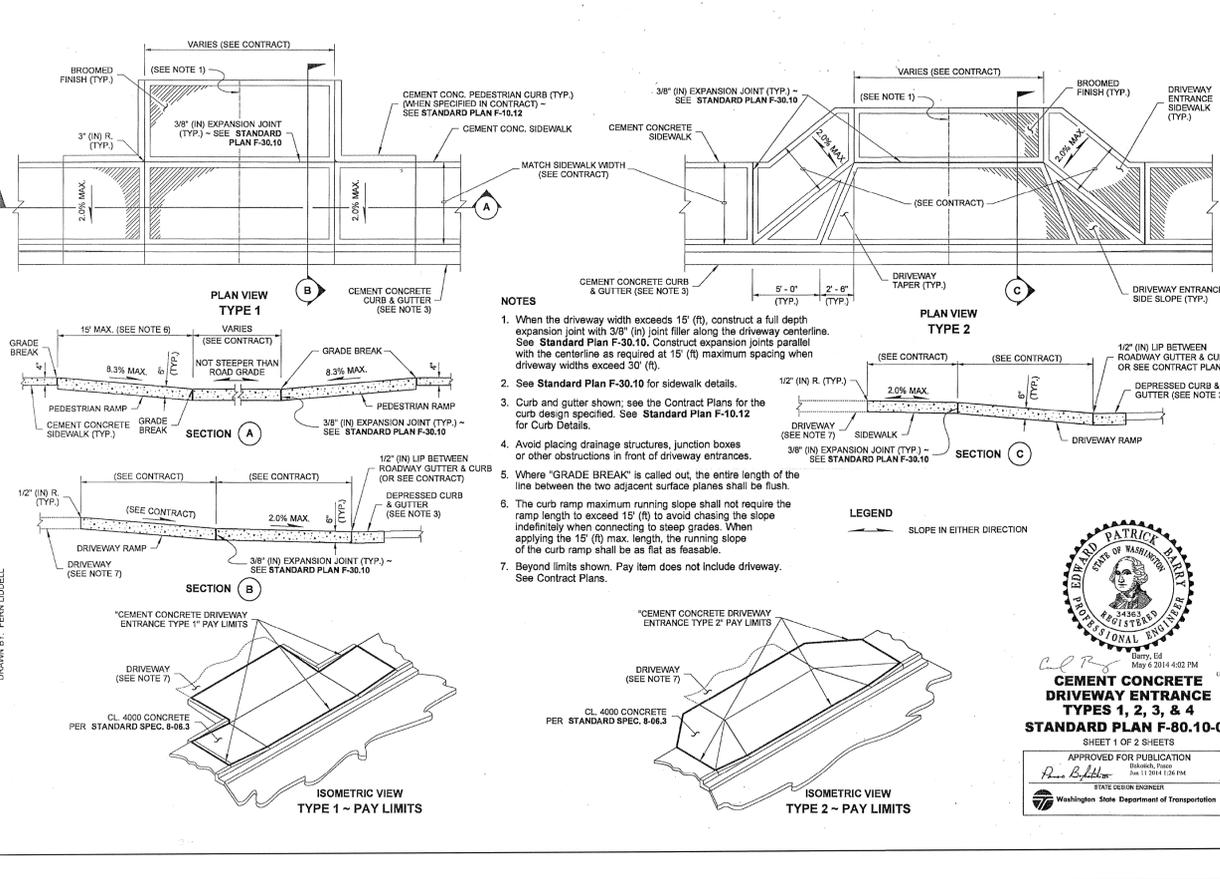
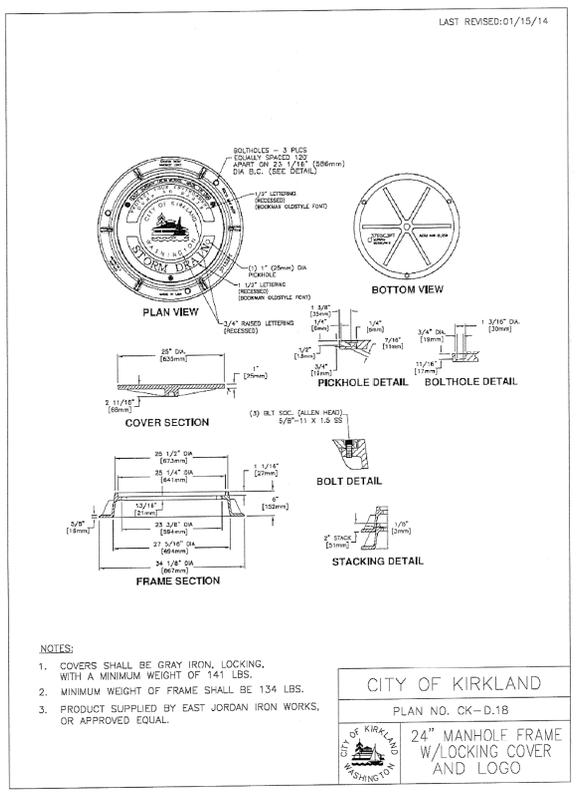
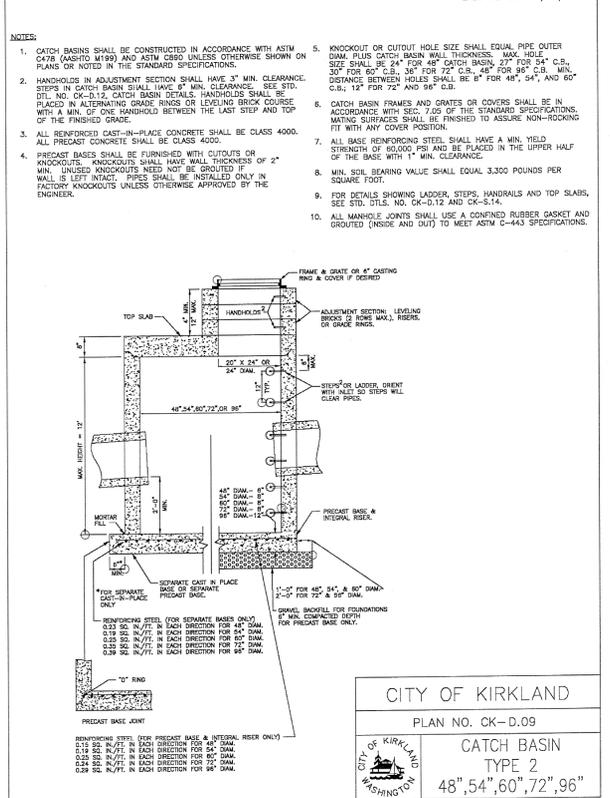
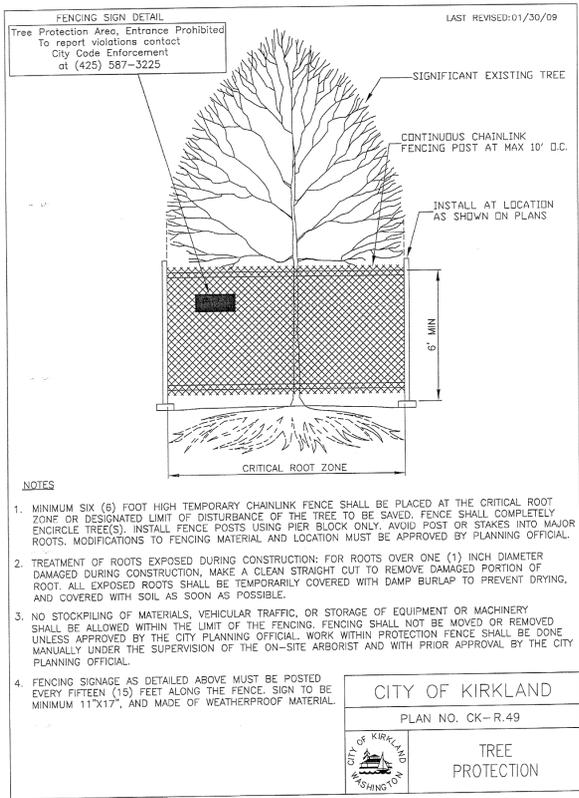
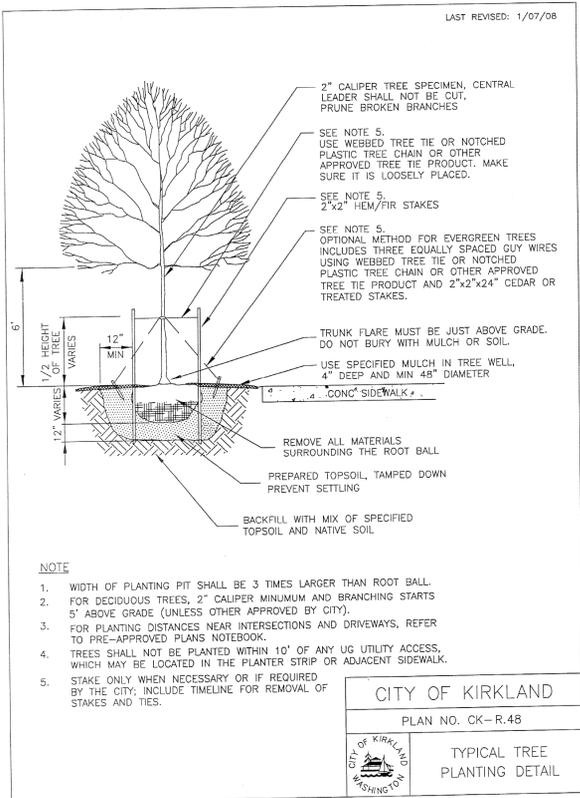
SITE ADDRESS: 10143 NE 64TH STREET  
**DANIELLE-5803 BALLARD, LLC**  
 1623 43RD AVENUE EAST #1  
 SEATTLE, WA 98112  
 SW1/4 SW1/4 SEC. 8, T. 25N., R. 5E., W.M.  
 CITY OF KIRKLAND KING COUNTY WASHINGTON

**EASTSIDE CONSULTANTS, INC.**  
 ENGINEERS - SURVEYORS  
 415 RAINIER BLVD. N.  
 ISSAQUAH, WASHINGTON 98027  
 PH: 800/624-7433 FAX: 800-4676

**ROYAL S. FREDERIKSEN**  
 STATE OF WASHINGTON  
 REGISTERED PROFESSIONAL ENGINEER  
 12/2/2014

JOB NO. 14089  
 DATE 7/14  
 SCALE 1"=10'  
 DESIGNED R.S.F.  
 DRAWN R.S.F.  
 CHECKED R.KITZ  
 APPROVED R.S.F.

SHEET C8 OF C9



# KIRKLAND TOWNHOUSES

## SW 1/4 OF THE SW 1/4 OF SEC.8, T.25N., R.5E., W.M.

### CITY OF KIRKLAND, WASHINGTON

#### EROSION/SEDIMENTATION CONTROL - PLAN NOTES

- The approved Construction Sequence shall be as follows:
  - Conduct pre-construction meeting.
  - Flag or fence clearing limits.
  - Post sign with name and phone number of TESC supervisor.
  - Install catch basin protection if required.
  - Grade and install construction entrances).
  - Install perimeter protection (silt fence, brush barrier, etc.).
  - Construct sediment ponds and traps.
  - Grade and stabilize construction roads.
  - Construct surface water controls (interceptor dikes, pipe slope drains, etc.) simultaneously with clearing and grading for project development.
  - Maintain erosion control measure in accordance with City of Kirkland Standards and manufacturer's recommendations.
  - Relocate erosion control measures or install new measures so that as site conditions change, the erosion and sediment control is always in accordance with the City TESC minimum requirements.
    - Cover all areas within the specified time frame with straw, wood fiber mulch, compost, plastic sheeting, crushed rock or equivalent.
    - Stabilize all areas that reach final grade within 7 days.
    - Seed or sod any areas to remain undisturbed for more than 30 days.
    - Upon completion of the project, all disturbed areas must be stabilized and best management practices removed if appropriate.
- Approval of this erosion/sedimentation control (ESC) plan does not constitute an approval of permanent road or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).
- The implementation of this ESC plan and the construction, maintenance, replacement, and upgrading of these ESC facilities is the responsibility of the Permittee/Contractor until all construction is approved.
- The boundaries of the clearing limits shown on this plan shall be set by survey and clearly flagged in the field by a clearing control fence prior to construction. During the construction period, no disturbance or removal of any ground cover beyond the flagged clearing limits shall be permitted. The flagging shall be maintained by the Permittee/Contractor for the duration of construction.
- The ESC facilities shown on this plan must be constructed prior to or in conjunction with all clearing and grading activities in such a manner as to ensure that sediment-laden water does not enter the drainage system or violate applicable water standards. Wherever possible, maintain natural vegetation for silt control.
- The ESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these ESC facilities shall be upgraded (e.g., additional sumps, relocation of ditches and silt fences, etc.) as needed for unexpected storm events. Additionally, more ESC facilities may be required to ensure complete siltation control. Therefore, during the course of construction it shall be the obligation and responsibility of the Contractor to address any new conditions that may be created by his activities and to provide additional facilities over and above the minimum requirements as may be needed.
- The ESC facilities shall be inspected by the Permittee/Contractor daily during non-rainfall periods, every hour (daylight) during a rainfall event, and at the end of every rainfall, and maintained as necessary to ensure their continued functioning. In addition, temporary siltation ponds and all temporary siltation controls shall be maintained in a satisfactory condition until such time that clearing and/or construction is completed, permanent drainage facilities are operational, and the potential for erosion has passed. Written records shall be kept documenting the reviews of the ESC facilities.
- The ESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within 48 hours following a storm event.
- All denuded soils must be stabilized with an approved TESC method (e.g. seeding, mulching, plastic covering, crushed rock) within the following timelines:
  - May 1 to September 30 – soils must be stabilized within 7 days of grading.
  - October 1 to April 30 – soils must be stabilized within 9 days of grading.
  - Stabilize soils at the end of the workday prior to a weekend, holiday, or predicted rain event.
- At no time shall more than 1' of sediment be allowed to accumulate within a catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system.
- Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wash pads, may be required to ensure that all paved areas are kept clean for the duration of the project.
- Any permanent retention/detention facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the permanent facility is to function ultimately as an infiltration or dispersion system, the facility shall not be used as a temporary settling basin. No underground detention tank, detention vault, or system which backs under or into a pond shall be used as a temporary settling basin.
- Where seeding for temporary erosion control is required, fast germinating grasses shall be applied at an appropriate rate (example: annual or perennial rye applied at approximately 80 pounds per acre).
- Where straw mulch is required for temporary erosion control, it shall be applied at a minimum thickness of 2".
- All erosion/sedimentation control ponds with a dead storage depth exceeding 6" must have a perimeter fence with a minimum height of 3'.
- All work and materials shall be in accordance with City of Kirkland standards and specifications.
- The ESC facilities shall be constructed in accordance with the details on the approved plans. Locations may be moved to suit field conditions, subject to approval by the Engineer and the City of Kirkland Inspector.
- A copy of the approved erosion control plans must be on the job site whenever construction is in progress.
- All lots adjoining or having any native growth protection easements (NGPE) shall have a 6' high temporary construction fence (chain link with pier blocks) separating the lot (or buildable portions of the lot) from the area restricted by the NGPE and shall be installed prior to any grading or clearing and remain in place until the Planning Department authorizes removal.
- Clearing limits shall be delineated with a clearing control fence. The clearing control fence shall consist of a 6-ft. high chain link fence adjacent the drip line of trees to be saved, wetland or stream buffers, and sensitive slopes. Clearing control fences along wetland or stream buffers or upslope of sensitive slopes shall be accompanied by an erosion control fence. If approved by the City, a four-foot high orange mesh clearing control fence may be used to delineate clearing limits in all other areas.
- Off-site streets must be kept clean at all times. If dirt is deposited on the public street system, the street shall be immediately cleaned with power sweeper or other equipment. All vehicles shall leave the site by way of the construction entrance and shall be cleaned of all dirt that would be deposited on the public streets.
- Any catch basins collecting runoff from the site, whether they are on or off the site, shall have adequate protection from sediment. Catch basins directly downstream of the construction entrance or any other catch basin as determined by the City Inspector shall be protected with a "storm drain protection insert" or equivalent.

- The washed gravel backfill adjacent to the filter fabric fence shall be replaced and the filter fabric cleaned if it is nonfunctional by excessive silt accumulation as determined by the City of Kirkland. Also, all interceptor swales shall be cleaned if silt accumulation exceeds one-quarter depth.
- Rock for erosion protection of roadway ditches, where required, must be of sound quarry rock, placed to a depth of 1' and must meet the following specifications: 4"-8" rock/40%-70% passing; 2"-4" rock/30%-40% passing; and 1"-2" rock/10%-20% passing.
- If any part(s) of the clearing limit boundary or temporary erosion/sedimentation control plan is/are damaged, it shall be repaired immediately.
- All properties adjacent to the project site shall be protected from sediment deposition and runoff.
- Do not flush concrete by-products or trucks near or into the storm drainage system. If exposed aggregate is flushed into the storm system, it could mean re-cleaning the entire downstream storm system, or possibly re-laying the storm line.
- Prior to the October 1 of each year (the beginning of the wet season), all disturbed areas shall be reviewed to identify which ones can be seeded in preparation for the winter rains. The identified disturbed area shall be seeded within one week after October 1. A site plan plan to be seeded and the areas to remain uncovered shall be submitted to the Public Works Construction Inspector. The Inspector can require seeding of additional areas in order to protect surface waters, adjacent properties, or drainage facilities.
- If a sediment pond is not proposed, a biker tank or other temporary ground and/or surface water storage tank may be required during construction, depending on weather conditions.
- Any area to be used for infiltration or pervious pavement (including a 5-foot buffer) must be surrounded by silt fence prior to construction and until final stabilization of the site to prevent soil compaction and siltation by construction activities.

#### SANITARY SEWER - PLAN NOTES

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.
- All construction and materials shall conform to City of Kirkland Department of Public Works and current WSDOT/APWA standards and specifications for road, bridge, and municipal construction.
- Approximate locations of existing utilities have been obtained from available records and are shown for convenience. The Contractor shall be responsible for verification of the locations shown and for discovery of possible additional utilities not shown so as to avoid damage or disturbance. The underground utility location service shall be contacted for field location prior to any construction. The owner or his representative shall be contacted if a utility conflict exists. For utility location in King County, call 1-800-424-5555. The Contractor is responsible to ensure that utility locations are maintained throughout the life of the project.
- It shall be the Contractor's responsibility to coordinate his activities with local utility companies to ensure that all utilities are installed according to these plans and the requirements of the individual utility companies.
- All manholes shall conform to WSDOT/APWA standards, eccentric cones with manufacturer-approved gaskets and 1/2" polypropylene-encapsulated safety steps and ladders. All manholes shall have cast iron rings and ductile iron covers. Lids shall have 2" raised letters marked "SEWER." All cleanouts shall have cast iron rings and covers marked "CO" that are in paved areas.
- All side sewers shall be tested for acceptance at the same time the main sewer is tested. Side sewer locations shall be verified in the field prior to construction and backfilling. All side sewers shall be capped with a watertight plug, have a cleanout and test tee installed, and shall be marked for location with a 2" x 4" stake painted white, marked sewer, with 3' exposed, and the depth of the cap written on the stake. See Standard Detail S.18. The stake shall be secured to the end of the plug with wire a minimum of 16 gauge. Initial side sewer installation shall run to the property line. The remaining side sewer shall not be installed until testing and acceptance of the sewer trunk line by the City of Kirkland is completed. Number and location of side sewers shown are approximate only and may be changed as required during construction. Contractor shall notify Engineer when exact locations are determined and provide the Engineer and the City of Kirkland Department of Public Works with an as-built. If approved by the Public Works Department, all double-sided sewer wyves must be at the property line.
- All main-line trenches shall be compacted prior to testing sewer lines for acceptance.
- Pressure testing of gravity sewer mains shall conform to the following standards: (1) air testing will require a minimum of 4 psi for 15 minutes with no pressure drop; (2) water testing will require a minimum of 10' of head in a standpipe at the test location for 15 minutes with no drop in the water level in the standpipe. Either test is acceptable.
- Pressure testing of force mains and laterals will require an air test of 25 psi minimum for 15 minutes with no pressure drop.
- New connections to existing manholes or sewer lines shall be sealed off until upstream construction is finished, tested, cleaned, and accepted. All construction debris and water shall be removed prior to opening the seal.
- All PVC sewer pipe and fittings shall meet the requirements of ASTM Specifications D-3034 for 4" to 15" diameter and ASTM F679 for 18" to 27" diameter. Pipe shall be SDR-35 and shall conform to standard specifications. Bedding and backfill shall meet WSDOT and APWA specifications.
- Minimum slope for side sewers shall be two percent (2%).
- An approved copy of the sewer plan must be on site whenever construction is in progress.
- Prior to construction of sewer lines, the necessary lot corners must be set, and the Contractor shall be responsible for the verification of the location of pipes, manholes, and invert elevations.
- Pipe anchors, if used, shall be installed: not over 36' center to center on grades from 20 percent to 25 percent; not over 24' center to center on grades from 35 percent to 50 percent; and not over 16' center to center on grades 50 percent and greater.
- All manholes shall have a minimum of 0.10' to a maximum of 1.00' drop between invert in and invert out.
- PVC sewer pipe shall be tested for deflection according to WSDOT/APWA specifications.
- All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway prism and driveways, and 85 percent density in unpaved areas. All pipe zone compaction shall be 95 percent.
- It shall be the responsibility of the Contractor to adjust all manhole lids and cleanout lids to match final asphalt elevations in roadways or ground elevations in landscaped areas.
- When tying into existing manholes that are below minimum standards, the existing manhole must be upgraded to meet current standards.
- All new sewer main extensions shall be videoed prior to final acceptance.

#### ROADWAY - PLAN NOTES

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.
- All roadway work and material shall be in accordance with the current APWA and City of Kirkland standards and specifications.
- All public roadways shall be constructed of 2" Class "B" AC paving on 4" asphalt-treated base (ATB), unless otherwise approved by the Public Works Department.
- A copy of the approved roadway plans must be on the job site whenever construction is in progress.
- Density test reports will be required for all public roadways and all private roadways within plats. All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway prism and driveways, and 85 percent density in unpaved areas. All pipe zone compaction shall be 95 percent.
- All commercial and residential driveways must conform to the City of Kirkland Department of Public Works Driveway Policy.
- All concrete for sidewalks and curb and gutter must be 4,000 psi minimum. (5-3/4 sack mix.)
- In the case of new road construction or reconstruction requiring mailboxes to be moved or rearranged, the Developer/Contractor shall coordinate with the U.S. Postal Service for the new location of the mailbox structure.
- Any roadway signage or striping removed or temporarily moved by the Contractor shall be restored so as to meet the current City of Kirkland standards.
- It is the responsibility of the Contractor to provide adequate temporary traffic control to ensure traffic safety during construction activities. Therefore, the Contractor shall submit a traffic control plan to the Public Works Department at least 48 hours prior to starting any work in the right-of-way. All traffic control devices shall conform to the "Manual on Uniform Traffic Control Devices" (MUTCD) or as modified by the Traffic Engineer.
- Where a sidewalk is to be constructed above a slope or adjacent to a rocky or retaining wall where the lowest finished elevation of the slope, rocky, or retaining wall is to be thirty inches (30") or more below the finished elevation of the sidewalk, a safety railing shall be required when: (a) The plane of the wall face is less than 4' in horizontal distance from the outside edge of the sidewalk; (b) The slopes adjacent to the sidewalk average greater than two to one.
- The maximum grade for private roadways shall be twenty percent (20%), or fifteen percent (15%) if used for fire access. For public roadways, the maximum grade shall be fifteen percent (15%).
- Dead-end streets shall be appropriately signed and barricaded. See most current edition of the MUTCD.
- Sidewalk and curb and gutter cannot be poured monolithically. There must be a cold joint or full-depth expansion joint between them.
- Measures shall be taken by the developer to provide ground cover in areas within the right-of-way which have been stripped of natural vegetation or have a potential for erosion.
- The developer shall coordinate with Puget Power for the design and installation of street lights on all newly-created public roadways and existing roadways.
- When an existing roadway is to receive a half-street overlay, the existing roadway must be cold planed at the edge of the gutter and centerline. When the existing roadway is to receive a full-street overlay, it must be cold planed at the edge of both gutters. See City of Kirkland Standard Detail No. R.13.
- All new signs required in the public right-of-way must be purchased from, and installed by, the City of Kirkland Public Works Department.
- When installing new sidewalk, the area behind the sidewalk must be graded so that the yard drainage does not drain over the sidewalk.
- Any existing public improvements damaged during construction shall be replaced prior to final inspection.
- The Contractor is responsible for keeping all public streets free from mud and debris at all times. The Contractor shall be prepared to use power sweepers or other pieces of equipment necessary to keep the roadways clean.
- Backfill in all street cuts on arterials will be control density fill (CDF). Contractor must provide steel plating necessary to allow the CDF to cure.
- When constructing new curb and gutter which does not align with the existing edge of pavement, the roadway must be tapered from the ends of the new curb and gutter to match the existing pavement. The entry taper into the new improvements shall be 5:1, and leaving the new improvements shall be 10:1.
- When an existing roadway is to be widened, the existing pavement must be saw cut at least one foot from the edge to provide a proper match between new and existing asphalt. However, when the existing pavement contains alligator areas, those areas must be removed prior to widening. All saw cuts shall be parallel or perpendicular to the right-of-way centerline.
- All rockeries must be constructed in accordance with the most current guidelines of the Association.

#### STORM DRAINAGE - PLAN NOTES

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.
- Before any construction may occur, the contractor shall have plans which have been signed and approved by the City of Kirkland Public Works Department, obtained all City, county, state, federal and other required permits, and have posted all required bonds.
- All storm drainage improvements shall be designed and constructed in accordance with the latest edition of the City of Kirkland Public Works Pre-Approved Plans and Policies and the Standard Specifications for Road, Bridge and Municipal Construction, prepared by WSDOT and the American Public Works Association (APWA).
- Any deviation from the approved plans will require written approval, all changes shall be submitted to the City.
- A copy of the approved storm water plans must be on the job site whenever construction is in progress.
- All disturbed areas shall be seeded and mulched or similarly stabilized to the satisfaction of the City of Kirkland Department of Public Works for the prevention of on-site erosion after the completion of construction.
- Minimum cover over storm drainage pipes in ROW or vehicular path shall be 18 inches, unless other design is approved.
- Steel pipe shall have Asphalt Treatment #1 or better inside and outside.
- All catch basins shall be Type I unless otherwise noted. Catch basins with a depth of over five feet (5') to the pipe invert shall be a Type II catch basin. Type II catch basins exceeding five feet (5') in depth shall have a standard ladder installed.
- All storm drainage main extensions within the public right-of-way or in easements must be staked for line and grade prior to starting construction.
- Rock for erosion protection of roadway ditches, where required, must be of sound quarry rock, placed to a depth of one foot (1') and must meet the following specifications: 4"-8" rock/40%-70% passing; 2"-4" rock/30%-40% passing; 2"-minus rock/10%-20% passing.
- All pipe, manholes, catch basins, and appurtenances shall be laid on a properly prepared foundation in accordance with the current State of Washington Standard specifications for road and bridge construction (WSDOT). This shall include necessary leveling of the trench bottom or the top of the foundation material as well as placement and compaction of required bedding material to uniform grade so that the entire length of the pipe will be supported on a uniformly dense, unyielding base. If the native material in the bottom of the trench meets the requirements for "gravel backfill for pipe bedding," the first lift of pipe bedding may be omitted provided the material in the bottom of the trench is loosened, regraded, and compacted to form a dense unyielding base. All pipe bedding shall be APWA Class B, Type I, or better. Pipe shall not be installed on sod, frozen earth, large boulders, or rock. Pipe bedding for flexible pipes shall be pea gravel to the springline of the pipe.
- Construction of dewatering (groundwater) systems shall be in accordance with the APWA Standard Specifications.
- Issuance of a Building or Land Surface Modification permit by the City of Kirkland does not relieve the owner of the continuing legal obligation and/or liability connected with storm surface water disposition. Further, the City of Kirkland does not accept any obligation for the proper functioning and maintenance of the system during or following construction except as outlined in the City of Kirkland Public Works Standards.
- All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway prism and driveways, and 85 percent density in unpaved areas. All pipe zone compaction shall be 95 percent.
- The Contractor shall be responsible for providing adequate safeguards, safety devices, protective equipment, confined space protection, flaggers, and any other needed actions to protect the life, health, and safety of the public, and to protect property in connection with the performance of work covered by the contract. Any work within the traveled right-of-way that may interrupt normal traffic flow shall require a Traffic Control Plan approved by the City of Kirkland. All sections of the WSDOT Standard Specifications, Traffic Control, and the Manual of Uniform Traffic Control Devices (MUTCD) shall apply.
- No final cut or fill slope shall exceed slopes of two (2) horizontal to one (1) vertical without stabilization by rockery or by a structural retaining wall.
- All manhole ladders shall be firmly attached and extend to within 1' of the bottom of the structure.
- Approximate locations of existing utilities have been obtained from available records and are shown for convenience. The Contractor shall be responsible for verification of existing utility locations whether or not these utilities are shown on the plans. The Contractor shall exercise all care to avoid damage to any utility. If conflicts with existing utilities arise during construction, the contractor shall notify the City Construction Inspector and any changes required shall be approved by the Development Engineer prior to commencement of related construction on the project.
- The underground utility location service shall be contacted for field location of existing utilities prior to any construction. The owner or his representative shall be contacted if a utility conflict exists. For utility location in King County, call 1-800-424-5555. The Contractor is responsible to ensure that utility locations are maintained throughout the life of the project.
- The Contractor shall verify the locations, widths, thicknesses, and elevations of all existing pavements and structures that are to interface with new work. Provide all trimming, cutting, saw cutting, grading, leveling, sloping, coating, and other work, including materials as necessary, to cause the interface with existing works to be proper, acceptable to the Engineer and the City of Kirkland, complete in place and ready to use.
- All inlet, manhole, and catch basin frames and grates shall not be adjusted to grade until immediately prior to final paving. All catch basin grates shall be set 0.10' below pavement level.
- Open cut road crossings for utility trenches on existing traveled roadway shall be backfilled only with 5/8" minus crushed rock and mechanically compacted (unless otherwise approved by the City). For streets classified as arterials or collectors, backfill for crossings shall be CDF. Cuts into the existing asphalt shall be neat line cut with saw or jackhammer in a continuous line. A temporary cold mix patch must be placed immediately after backfill and compaction. A permanent hot mix patch shall be placed within 30 days and shall be a minimum of 1" thicker than the original asphalt with a minimum thickness of 2". See Standard D.02.
- All damages incurred to public and/or private property by the contractor during the course of construction shall be promptly repaired to the satisfaction of the City Construction Inspector before project approval and/or the release of the project's performance bond.
- Grout all seams and openings in all inlets, catch basins, and manholes. Jetset grout is NOT allowed.
- When widening an existing roadway where an existing Type I catch basin will remain in the travel lane, the existing frame and cover shall be replaced with a round, locking frame and cover.
- For other than single-family dwellings, all exposed or readily exposed indoor storm drainage piping/plumbing shall be labeled with the words "STORM DRAIN" with minimum 2 inch high letters.

#### WATER - PLAN NOTES

- A pre-construction conference shall be held prior to the start of construction. The Contractor shall be responsible for securing all necessary permits prior to construction.
- All water main work and material shall be in accordance with current AWWA, WSDOT, and APWA standard specifications, as amended by the City of Kirkland. All material utilized shall be new, no parts shall be reused. Any part removed from the system for any reason may not be reused and shall be replaced with a new part. (e.g. a Romac with a bad gasket must be replaced with an entirely new Romac assembly).
- The water main shall be Class 52 ductile iron pipe conforming to ANSI/AWWA C151/A21.51-86 or the most recent revision. The pipe shall be 1/16" cement lined and sealed in accordance with ANSI/AWWA C104/A21.4-90. The cast iron or ductile iron pipe fittings shall be Class 250 as per ANSI/AWWA C110/A21.10-82. Pipe bedding shall be compacted to 95 percent of its maximum density at optimum moisture content. The main shall be installed with a minimum cover of 36" and a maximum cover of 60". Any deviations from this must be approved by the City of Kirkland prior to construction.
- Concrete blocking for water mains shall be designed and installed in accordance with AWWA and City of Kirkland specifications and shall be installed at all vertical and horizontal bends and fittings. Prior to blocking, the fittings shall be wrapped with visqueen.
- All connections to existing mains and all testing and disinfection shall be performed under the supervision of the City of Kirkland Department of Public Works Inspector.
- Approximate locations of existing utilities have been obtained from available records and are shown for convenience. The Contractor shall be responsible for verification of the locations shown and for discovery of possible additional utilities not shown so as to avoid damage or disturbance. The underground utility location service shall be contacted for field location prior to any construction. The owner or his representative shall be contacted if a utility conflict exists. For utility location in King County, call 1-800-424-5555. The Contractor is responsible to ensure that utility locations are maintained throughout the life of the project.
- All contractors working with AC pipe must be state-certified. The Contractor shall provide protective clothing and equipment (coveralls, gloves, boots, head covering, goggles, respirators, etc.) to crews working with asbestos cement pipe in order to assure the worker's exposure to asbestos material is at or below the limits prescribed in WAC 296-62-07705.
- An approved copy of the water plan must be on site whenever construction is in progress.
- A 5' minimum horizontal separation shall be maintained between all water facilities and underground power and telephone facilities, unless otherwise approved by the City of Kirkland.
- For water main and sewer main separation requirements, see Item VIII.C of the Sanitary Sewer - Design Criteria Section and Detail W.01.
- Pressure and purity testing shall be done in the presence of, and under the supervision of, a City of Kirkland Department of Public Works Inspector. The Contractor shall provide all plugs and temporary blowout assemblies for pressure testing and disinfection prior to final tie-in. No connection shall be made between the new main and the existing mains until the new piping has been disinfected, flushed, and passed both pressure and purity testing. Temporary plugs and blocking shall be installed at the points of connection to the existing system. For construction of new water main, the services, hydrants etc., will be tested with the main. Pressure testing will require a minimum of 200 psi for 15 minutes with no pressure drop. Upon satisfactory completion of the pressure test, the line shall be disinfected, flushed, and then a sample shall be taken for purity testing by the Public Works Inspector.
- It shall be the Contractor's responsibility to notify the City of Kirkland Inspector 24 hours in advance of backfilling all water main construction. The Contractor shall be responsible for keeping as-built drawings of all construction not installed according to the approved plans. (This does not give approval for as-built construction.)
- The Contractor shall contact the City of Kirkland Department of Public Works five (5) days prior to any work requiring the shutdown of existing water mains. The Contractor is required to give two (2) working days notice to all customers affected by a water main shutdown (notices and maps for the shutdown will be provided by the Water Division). Shutdowns shall be scheduled for Mondays, Tuesdays, Wednesdays, and Thursdays between 8 am and 2 pm. Shutdowns affecting institutions shall be scheduled at night. Only Water Division personnel or a designate of the Water Division Manager may operate valves, and/or hydrants, blow-offs, etc., for fills, shut downs, flushing, or recharging of water lines. Two (2) working days notice to the Water Division is required to schedule fills.
- There shall be no water main construction on a Saturday, Sunday, or holidays observed by the City of Kirkland.
- Should the water main work necessitate the closing of certain gate valves within the existing system, the City of Kirkland Maintenance Department shall be responsible for the operation of such valves.
- The fire flow system shall be installed, tested, and approved prior to above-ground combustible construction.
- All trench backfill shall be compacted to 95 percent density in roadways, roadway shoulders, roadway prism and driveways, and 85 percent density in unpaved areas. All pipe zone compaction shall be 95 percent.
- Mega-lugs (or similar product) shall be required on all fittings and valves for tie-ins, or build-outs for tie-ins prior to a final connection to the existing water main. Appropriate concrete blocking is also required in addition to Mega-Lugs.
- For the duration of any water main installation project, all existing and newly installed valve cans are to remain accessible to Water Division personnel.
- When it becomes necessary to re-plumb the customer's side of an existing water meter as the result of the relocation of the existing service or to comply with other City of Kirkland Public Works specifications, the customer's side shall be reconnected with the appropriate plumbing materials (and related fittings) such as brass, copper, polyethylene with a 200 p.s.i. rating, or PVC. All parts, pipe, and/or fittings shall be new from the back side of the meter to the connection point of the customer's service.
- No tie-in will be allowed into the existing tailpiece on the customer's side of the meter. If the existing meter does not have a check valve installed on the back side of the meter (customer's side) a check valve cannot be installed when doing the tie-in.
- If a fitting, either during installation or after, is found to be defective in any way as determined by the City, the contractor shall replace the entire fitting and not just the defective component.
- Beginning January 1, 2014, all pipes, pipe fittings, plumbing fittings, and plumbing fixtures used for potable water, must have a maximum lead content not to exceed 0.25%, per "Lead Free" standards as defined in Section 9 of NSF/ANSI Standard 61.

SITE ADDRESS: 10143 NE 64TH STREET

DANIELLE-5803 BALLARD, LLC  
1623 43RD AVENUE EAST #1  
SEATTLE, WA 98112

ENGINEERS - SURVEYORS  
EASTSIDE CONSULTANTS, INC.  
616 EAST FIRST  
415 RAINIER BLVD. N  
ISSAQUAH, WASHINGTON 98027  
PH:509/242-7433 FAX:509/242-4676

JOB NO. 14069  
DATE 7/14  
SCALE 1"=10'  
DESIGNED H.S.F.  
DRAWN R.S.F.  
CHECKED R.KITZ  
APPROVED R.S.F.

SHEET 09 OF 09

STANDARD NOTES

REVISIONS	BY	DATE
1 REVISED PER CITY COMMENTS	RSF	9/30/14
2 REVISED PER CITY COMMENTS	RSF	11/25/14
3 REVISED PER CITY COMMENTS	RSF	12/2/14

THIS PLAN SET FORBIDS THE CITY, COUNTY, STATE, OR FEDERAL GOVERNMENT FROM USING OR REPRODUCING THIS PLAN SET WITHOUT THE WRITTEN PERMISSION OF EASTSIDE CONSULTANTS, INC.





# SURFACE WATER DESIGN STANDARDS ADJUSTMENT REQUEST

**Instructions to Applicant/Design Engineer:**

Please complete this form and submit to the COK Public Works Department. Include all materials that may assist in a complete review and consideration of the adjustment request. Failure to provide all pertinent information may result in delayed processing or denial of request.

<b>COK Permit Number:</b>		<b>Request date:</b>	7/25/2014
<b>Project Name:</b>	Kirkland Town houses		
<b>Project Address:</b>	10143 NE 64TH STREET, Kirkland, WA 98033		
<b>Applicant Name:</b>	Ronald S. Frederiksen	<b>Design Engineer Name and Firm:</b>	Ronald Frederiksen Eastside Consultants, Inc.
<b>Applicant Phone:</b>	425 392-5351	<b>Design Engineer Phone:</b>	425 392-5351
<b>Applicant Signature:</b>	<i>Ronald S. Frederiksen</i>	<b>Design Engineer Signature:</b>	<i>Ronald S. Frederiksen</i>

**Description of Adjustment Request:**

we are requesting an adjustment from providing 10% LID requirements on our townhouses.

**Justification for Adjustment Request:**

The water table is only 16-inches deep in this area per the attached soils report. Therefore no infiltration is feasible. Also due to site constraints, no dispersion is feasible. In lieu of, the 10% we will be implementing Amended Soils on all exposed soils.

Applicable KC Surface Water Design Manual:  1998 or  2009

Applicable Section(s) of Standards: Department of Public Works Policy L-1.

COK Determination:  Approved  Denied

Conditions (if applicable):

COK Staff Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# PUBLIC WORKS DEPARTMENT IMPROVEMENT EVALUATION SUMMARY

Type of project:  Subdivision       Commercial       Single Family  
 Multi-Family       Muni/Gov't       Miscellaneous

Project Name: KIRKLAND TOWNHOUSES

Project Location: 10143 NE 64TH ST

Permit No.: BSF14-04537

Contact: RON FREDERIKSEN

Phone No.: 425-392-5351

2012 Edition

## \*\* FOR CITY USE ONLY \*\*

1. Total Value of Public Work Required:	\$65,281
2. Review & Inspection Fee * :	\$7,838
3. Total Value of Private Work Required:	\$26,480
4. Performance Security (Recording) ** :	\$140,165
5. Maintenance Security Value:	\$10,190

\*The Review and Inspection Fee is 10% of Total Value of Public Work Required (column 1), plus value of private storm (column 2, #5)

\*\* 17.5% of the total construction value will be added to the Performance Security for Mobilization, Traffic Control, Surveying, Engineering, and

## CONSTR. STORM DRAINAGE - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Silt Fence, Installed	LF	180	\$6.00	\$1,080.00
Grading for Drainage Swales	LF	0	\$6.00	\$0.00
Sod for Drainage Swales	SY		\$6.00	\$0.00
Hydroseeding	SY	280	\$3.00	\$840.00
Construction Entrance	EA	1	\$1,500.00	\$1,500.00
Inlet Protection	EA	6	\$80.00	\$480.00
				\$0.00

Construction Storm Drainage - Total	\$3,900.00
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## CLEARING AND GRADING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Half-Street Improvements	LF	340	\$12.00	\$4,080.00
Full Street Improvements	LF		\$24.00	\$0.00
				\$0.00
				\$0.00

Clearing and Grading - Total	\$4,080.00
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## WATER SYSTEM - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Water service - 3/4" to 1"	LS	2	\$1,600.00	\$3,200.00
Water service - 1 1/2" to 2"	LS		\$3,400.00	\$0.00
4" Pipe	LF		\$65.00	\$0.00
6" Pipe	LF		\$70.00	\$0.00
8" Pipe	LF		\$100.00	\$0.00
2" Gate Valve (G.V.)	EA		\$300.00	\$0.00
4" G.V.	EA		\$600.00	\$0.00
6" G.V.	EA		\$800.00	\$0.00
8" G.V.	EA		\$1,000.00	\$0.00
Connection to ex. Main	EA		\$4,500.00	\$0.00
Fire Hydrant Assembly	EA		\$3,600.00	\$0.00
2" Blow Off	EA		\$2,200.00	\$0.00
Air and Vacuum Assembly	EA		\$2,500.00	\$0.00
Valve Marker Post	EA		\$200.00	\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00

<b>Water System - Total</b>	<b>\$3,200.00</b>
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## SANITARY SEWER SYSTEM- PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
6" PVC pipe	LF		\$100.00	\$0.00
8" PVC pipe	LF	36	\$120.00	\$4,320.00
12" PVC pipe	LF		\$150.00	\$0.00
Extra Depth Excav. (over 12' deep)	FT*LF		\$8.00	\$0.00
Manhole, 48"	EA		\$3,600.00	\$0.00
Manhole, 54" (for drop MH's only)	EA		\$4,000.00	\$0.00
Internal Drop Structure	EA		\$970.00	\$0.00
Rechannel Existing MH	EA		\$2,660.00	\$0.00
Cast Iron Clean-Out Cover	EA		\$160.00	\$0.00
Clean Out Assembly	EA		\$400.00	\$0.00
				\$0.00
				\$0.00

<b>Sanitary Sewer System - Total</b>	<b>\$4,320.00</b>
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## STORM DRAINAGE SYSTEM - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
8" Pipe	LF		\$40.00	\$0.00
12" Pipe	LF	141	\$50.00	\$7,050.00
18" Pipe	LF		\$60.00	\$0.00
24" Pipe	LF		\$75.00	\$0.00
30" Pipe	LF		\$80.00	\$0.00
36" Pipe	LF		\$90.00	\$0.00
48" Pipe	LF		\$100.00	\$0.00
Detention Pipe	LF			
Detention Vault	LS		0.25	0
Extra Depth Excav. (over 12' deep)	FT*LF		\$6.00	\$0.00
Curb Inlet	EA		\$880.00	\$0.00
Type I Catch Basin	EA	1	\$1,200.00	\$1,200.00
Type II Catch Basin	EA		\$1,400.00	\$0.00
Type II CB - 48"	EA	2	\$3,900.00	\$7,800.00
Type II CB - 54"	EA		\$4,000.00	\$0.00
CMP Access Riser	EA		\$1,600.00	\$0.00
Connection to Existing CB	EA	1	\$1,100.00	\$1,100.00
Restrictor/Pollution Control - 8"	EA		\$900.00	\$0.00
Restrictor/Pollution Control - 12"	EA		\$900.00	\$0.00
Pollution Control Tee	EA		\$500.00	\$0.00
Debris Barrier	EA		\$250.00	\$0.00
Biofiltration Swale	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

Storm Drainage System - Total

\$17,150.00

## Low Impact Development - Public Storm Drainage

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Pervious Concrete (5' wide)	LF		\$60.00	\$0.00
Porous Asphalt	SY		\$80.00	\$0.00
Rain Gardens	SY		\$120.00	\$0.00
Infiltration Trench (10 ft)	EA		\$300.00	\$0.00
Porous Pavers	SY		\$50.00	\$0.00
				\$0.00
				\$0.00

LID Drainage (Public) - Total

\$0.00

## PAVING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
AC Pavement Patching	SY	43	\$40.00	\$1,720.00
4" Crushed Rock	SY	43	\$10.00	\$430.00
Bank Run Gravel: 3" minus, in place	CY		\$30.00	\$0.00
4" Asphalt Treated Base (ATB)	SY		\$35.00	\$0.00
2" Class B Asphalt Pavement	SY	531	\$20.00	\$10,620.00
Saw Cut AC Pavement	LF	693	\$2.00	\$1,386.00
Cold Planing (Grinding) & Hauling	SY		\$12.00	\$0.00
Adjust Existing Utility	EA		\$350.00	\$0.00
3" Class B Asphalt Pavement	SY		\$30.00	\$0.00
				\$0.00

<b>Paving - Total</b>	<b>\$14,156.00</b>
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## CURB AND GUTTER - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Concrete Extruded Curb	LF		\$8.00	\$0.00
Asphalt Extruded Curb	LF		\$8.00	\$0.00
Conc. Curb & Gutter, Type A	LF	198	\$35.00	\$6,930.00
				\$0.00
				\$0.00

<b>Curb and Gutter - Total</b>	<b>\$6,930.00</b>
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## SIDEWALKS - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
5' Concrete Sidewalk	LF	170	\$30.00	\$5,100.00
Concrete Sidewalk (other than 5')	SF		\$6.00	\$0.00
5' Concrete Driveway	LF	15	\$35.00	\$525.00
Asphalt Walkways, Class B	SY		\$18.00	\$0.00
Wheel Chair Ramps	EA	1	\$1,400.00	\$1,400.00
Steel Pipe Handrail	LF		\$80.00	\$0.00
Vinyl Fencing	LF		\$40.00	\$0.00
Speed Hump Restoration	EA		\$1,500.00	\$0.00
5' Pervious Sidewalk	LF		\$40.00	\$0.00
				\$0.00
				\$0.00

Sidewalks - Total	\$7,025.00
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## LANDSCAPING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Street Trees	EA	5	\$450.00	\$2,250.00
Sod	SY	205	\$10.00	\$2,050.00
Rockery Wall	SY		\$400.00	\$0.00
				\$0.00
				\$0.00

Landscaping - Total	\$4,300.00
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## MISCELLANEOUS - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Monuments	EA		\$380.00	\$0.00
Street Signs	EA	1	\$220.00	\$220.00
Pavement Marking	LF		\$1.00	\$0.00
Mailbox Structure	EA		\$700.00	\$0.00
Type III Fixed Barricade	EA		\$400.00	\$0.00
Bollards	EA		\$700.00	\$0.00
Thermoplastic Crosswalk Markings	LF		\$2.85 or \$500 min	
Street Light	EA		\$4,000.00	\$0.00
PED Light	EA		\$5,000.00	\$0.00
				\$0.00
				\$0.00

Miscellaneous - Total				\$220.00
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## PAVING - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
4" Crushed Rock	SY	156	\$10.00	\$1,560.00
4" Asphalt Treated Base (ATB)	SY		\$35.00	\$0.00
2" Class B Asphalt Pavement	SY	156	\$20.00	\$3,120.00
				\$0.00
				\$0.00

<b>Paving - Total</b>	<b>\$4,680.00</b>
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## MISCELLANEOUS - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Property Corners	EA	4	\$300.00	\$1,200.00
Street Signs	EA		\$220.00	\$0.00
Fire Lane Marking	LF		\$2.00	\$0.00
UG Utilities to Existing House	EA	3	\$2,500.00	\$7,500.00
Tight-Line ex. House Roof Drains	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

<b>Miscellaneous - Total</b>	<b>\$8,700.00</b>
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## STORM DRAINAGE SYSTEM - PRIVATE WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
4" - 6" Pipe	LF	550	\$15.00	\$8,250.00
8" Pipe	LF		\$40.00	\$0.00
12" Pipe	LF	73	\$50.00	\$3,650.00
18" Pipe	LF		\$60.00	\$0.00
24" Pipe	LF		\$75.00	\$0.00
Detention Pipe	LF			
Detention Vault	LS			
Yard Basin	EA		\$265.00	\$0.00
Curb Inlet	EA		\$880.00	\$0.00
Type I Catch Basin	EA	1	\$1,200.00	\$1,200.00
Type II Catch Basin	EA		\$1,400.00	\$0.00
Type II CB - 48"	EA		\$3,900.00	\$0.00
Type II CB - 54"	EA		\$4,000.00	\$0.00
CMP Access Riser	EA		\$1,600.00	\$0.00
Connection to Existing CB	EA		\$1,100.00	\$0.00
Restrictor/Pollution Control - 8"	EA		\$900.00	\$0.00
Restrictor/Pollution Control - 12"	EA		\$900.00	\$0.00
Pollution Control Tee	EA		\$500.00	\$0.00
Debris Barrier	EA		\$250.00	\$0.00
Biofiltration Swale	LF		\$15.00	\$0.00
				\$0.00
				\$0.00

<b>Storm Drainage System - Total</b>	<b>\$13,100.00</b>
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## Low Impact Development - Private Storm Drainage

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Pervious Concrete (5' wide)	LF		\$60.00	\$0.00
Porous Asphalt	SY		\$80.00	\$0.00
Rain Gardens	SY		\$120.00	\$0.00
Infiltration Trench (10 ft)	EA		\$300.00	\$0.00
Porous Pavers	SY		\$50.00	\$0.00
				\$0.00
				\$0.00

<b>LID Drainage (Private) - Total</b>	<b>\$0.00</b>
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## Other Agency Improvements

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Northshore Utility District	LS			\$0.00
Woodinville Water District	LS			\$0.00
Puget Sound Energy	LS	5000		\$0.00
				\$0.00
				\$0.00

Other Agency - Total				\$0.00
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# IMPROVEMENT EVALUATION

This form must be completed by the developer (or representative) and shall include work required by the official Notice of Approval or conditions on the permit.

Quantity take-offs shall be from documents approved by the City of Kirkland.

PUBLIC WORK will be owned and maintained by the City after the appropriate maintenance period and will be subject to review and inspection fees per KMC Section 5.74.040. For subdivision work, this will include the on-site detention system.

PRIVATE WORK will be owned and maintained by the property owner(s), and is subject to the above fees. For subdivisions, include the remainder of the on-site drainage system (excluding the detention system) and any easement road paving. For all other types of projects, include the on-site storm drainage system only.

	Column 1 Value of Public Work	Column 2 Value of Private Work	Column 3 Total Value
1. Constr. Storm Drainage	3900		3900
2. Clearing and Grading	4080		4080
3. Water System	3200		3200
4. Sanitary Sewer System	4320		4320
5. Storm Drainage System	17150	13100	30250
6. LID - Storm Drainage	0	0	0
7. Paving	14156	4680	18836
8. Curb and Gutter	6930		6930
9. Sidewalks	7025		7025
10. Landscaping	4300		4300
11. Miscellaneous	220	8700	8920
12. Other Agency Improvements			0
13			0
<b>TOTALS</b>	<b>\$65,281.00</b>	<b>\$26,480.00</b>	<b>\$91,761.00</b>

I hereby certify the above to be an accurate representation of the required construction for the above referenced project.

Agent/Owner <i>Ronald L. Smith</i>	Date 12/2/2017
City	Date