INSIGHT ENGINEERING CO.

# STORMWATER SITE PLAN
# For
# ATONEMENT FREE LUTHERAN

**Prepared for**
City of Arlington
1812 Main Street, PO Box 257
Lake Stevens, WA 98258-0257
425-377-3222

**Owner:**
Atonement Free Lutheran
6905 172nd NE
Arlington, WA 98223

**Contact:**
Steve Butterfield,
TGBA Architects
21911 76th Ave W. Suite 210,
Edmonds, WA 98026
425.778.1530

**Project Site Location:**
6905 172nd NE
Arlington, WA 98223

IECO Project: 10-0522

**Certified Erosion and Sedimentation Control Lead:**
To be named by contractor

**Stormwater Site Plan Prepared By:**
Santhosh J. Moolayil, BSCE

**Stormwater Site Plan Preparation Date:**
April 28, 2011

**Approximate Construction Date:**
February 1, 2011


P.O Box 1478 • Everett, WA 98206 • P: 425.303.9363
F: 425.303.9362 • info@insightengineering.net

## TABLE OF CONTENTS

# 1. PROJECT OVERVIEW

The proposed project ***Atonement Free Lutheran*** is located at 6905 172nd St NE in the City of Arlington, Washington. More generally, the site is located in Section 23, Township 31 North, and Range 5 East of the Willamette Meridian in Snohomish County, Washington. Please refer to the Vicinity Map attached in the next page for more details.

The project site is currently developed with a church building, a modular building, a garage and gravel parking areas. The majority of the site slope towards the west. Per SCC survey of Snohomish County, the project site contains Norma Loam that have a hydrologic classification of Type "C". Please refer to the soils map and descriptions attached later in this report for more details.

The project development area contains approximately 3.61 acres. There are two wetlands located within the site. Wetland "A" to the north and Wetland "C" to the southeast. These wetlands will remain undisturbed. The proposal is to expand the church building and the parking at the access area along with a concrete sidewalk. The access to the site will be from Sisco Heights Road (SR 531).

The project is exempt for Detention and Water Quality. See Section 5 for more details.

## VICINITY MAP

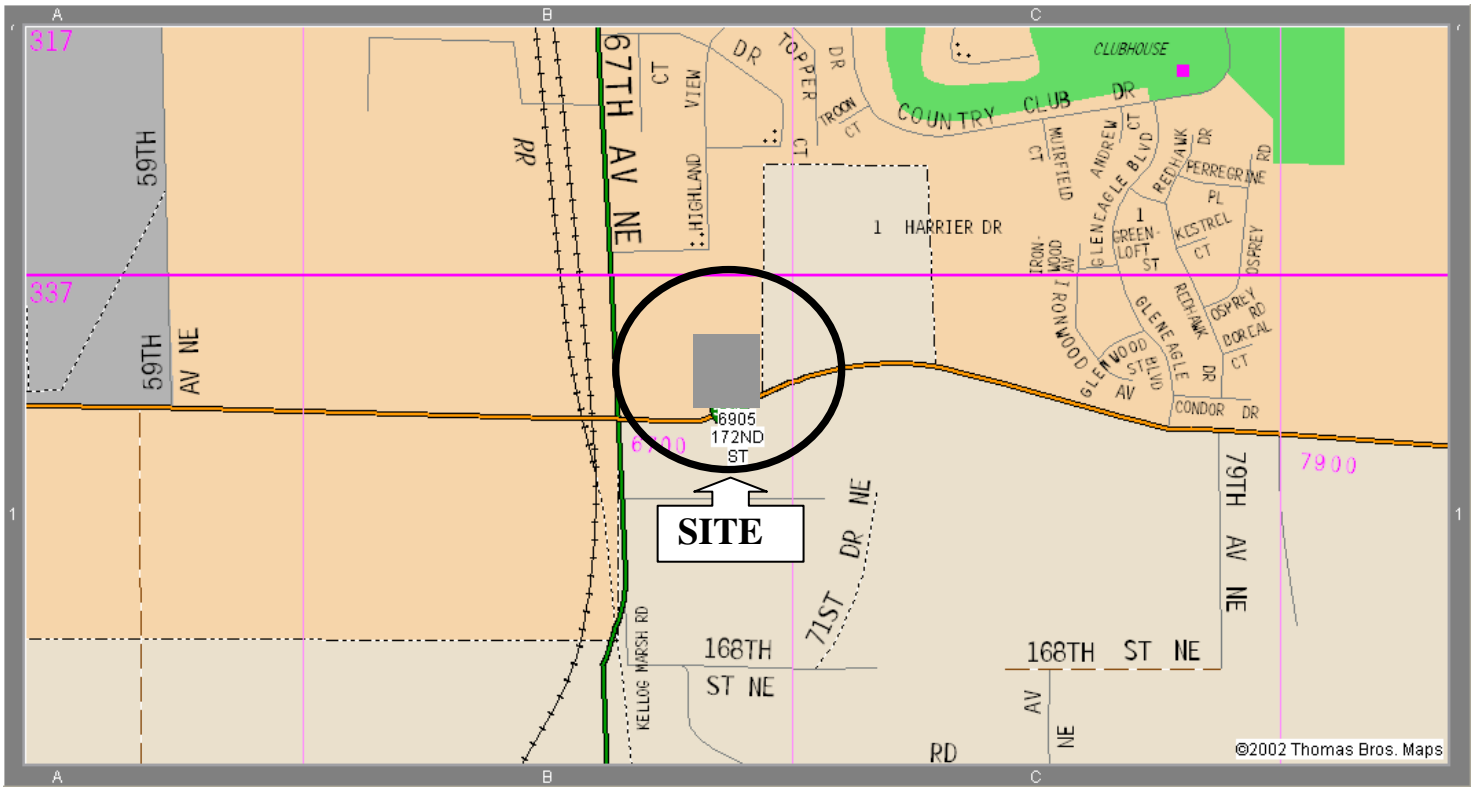


PHOTO TAKEN FROM THE 2002 THOMAS BROTHERS® GUIDE CD-ROM


IECO
INSIGHT ENGINEERING CO.

P.O Box 1478 • Everett, WA 98206 •
P: 425.303.9363 F: 425.303.9362
info@insightengineering.net


**FIGURE 1. VICINITY MAP**
Atonement Free Lutheran
Arlington, WA 98223

| | | |
|---|---|---|
| **SCALE:** 1" = 1,222' | **DATE:** 6/8/11 | **JOB #:** 10-0522 |
| **BY:** BRK | **FILE NAME:** 10-0522/Doc/TIR-4-28-11 | |

## 2. EXISTING CONDITIONS SUMMARY

The proposed project ***Atonement Free Lutheran*** is located at 6905 172nd St NE in the City of Arlington, Washington. More generally, the site is located in Section 23, Township 31 North, and Range 5 East of the Willamette Meridian in Snohomish County, Washington.

The project site is currently developed with a church building, a modular building, a garage and gravel parking areas. The majority of the site slope towards the west. Per SCC survey of Snohomish County, the project site contains Norma Loam that have a hydrologic classification of Type "C".

## *SOIL MAP*

**SOILS LEGEND**

**30 - Lynnwood loamy sand, 0 to 3 percent slopes.**


IECO
INSIGHT ENGINEERING CO.
P.O Box 1478 ♦ Everett, WA 98206 ♦
P: 425.303.9363 F: 425.303.9362
info@insightengineering.net

**SOIL MAP**
Atonement Free Lutheran
Arlington, WA 98223

| | | |
|---|---|---|
| **SCALE:** NONE | **DATE:** 6/8/11 | **JOB #:** 10-0522 |
| **BY:** SJM | **FILE NAME:** 10-0522/Doc/TIR-4-28-11 | |

# 3. OFFSITE ANALYSIS

A site reconnaissance was performed by Brian R. Kalab, PE, on 10th February 2011, to verify the downstream flow paths and observe any drainage problems downstream of the site. The weather varied between sunny and overcast with a temperature of around 52 degrees.

The project site is currently developed with a church building, a modular building, a garage and gravel parking areas. No visible on-site drainage problems were observed at the time of field investigations.

**Upstream Analysis**

Based on the site reconnaissance and the topographic survey of the area, the upstream flow entering the property is discharged into the wetlands on-site. This will not affect any development areas.

**Downstream Analysis**

The entire site drains to the west to the existing storm system on the west. It then drains to the North via a combined 10", 12" ADS pipes and catch basins along the west property line. It heads to the northwest and eventually ends up in the Wetland "A". This is where the downstream observations were stopped. No existing problems were observed, and no potential problems could be deduced at the time of the site visit.

## 4. 2005 DOE Minimum Requirements Summary

**MR:** **Minimum Requirement**

**SWPPP:** **Stormwater Pollution Prevention Plan**

MR #1 Preparation of Stormwater Site Plan: This report follows Stormwater Site Plan requirements.

MR #2 Construction of Stormwater Pollution Prevention (SWPPP): A SWPPP has been included with this report.

MR #3 Source Control of Pollution: Onsite BMP's will be used to minimize the source of sediment.

MR #4 Preservation of Natural Drainage Systems and outfalls: The proposal will not affect the existing drainage pattern.

MR #5 Onsite Stormwater Management: Drainage will be directed to the existing storm system to the south.

MR #6 Runoff Treatment: The project is exempt for water quality.

MR #7 Flow Control: The project is exempt for detention.

MR #8 Wetlands protection: There are two existing wetlands onsite that will remain undisturbed and protected.

MR #9 Basins/Watershed Planning: There are currently no Basin or Watershed Plan requirements in the city of Arlington.

MR #10 Operation and Maintenance: The operation and maintenance manual is located in section 9 of this report.

# 5. STORMWATER CONTROL PLAN

The project development area contains approximately 3.61 acres. There are two wetlands located within the site. Wetland "A" to the north and Wetland "C" to the southeast. These wetlands will remain undisturbed. The proposal is to expand the church building and the parking at the access area along with a concrete sidewalk. The access to the site will be from Sisco Heights Road (SR 531).

Page 2-32 of the 2005 DOE describes the flow control requirements by the threshold area. As per the above section, the project site will be exempted for detention if the peak discharge increase for the 100-yr/24hr developed site is less than 0.1 cfs, if the new effective impervious area is less than 10,000 SF and if the project coverts ¾ acres or more of native vegetation to lawn. This site increases the peak flow by 0.03 cfs only and the proposed new impervious area will be 6,708 SF (<10,000 SF). No native vegetation will be converted to lawn. Also, it appears to be no adverse impacts on the existing drainage features as per the downstream analysis described in section 3. Therefore, the project is exempted for detention.

The proposed development adds 3,586 SF of new pollution generating impervious surface which is less than the threshold of 5,000 SF. Therefore the project is exempt for water quality.

**DRAINAGE CALCULATIONS**

## EXISTING SITE

Total area of analysis = 3.16 Acres (The area does not include wetlands on-site)

**Total Impervious area = 1.21 Acres**

**Total Pervious Area = 1.95 Acres**

***100 yr peak Q = 1.8921 cfs (see next pages for peak flow calculation)***

## DEVELOPED SITE (DV):

Total area of analysis = 3.16 Acres (The area does not include wetlands on-site)

**Total Impervious area = 1.31 Acres**

**Total Pervious Area = 1.85 Acres**

***100 yr peak Q = 1.9215 cfs (see next page for peak flow calculation)***

Peak Discharge increase = 1.9215 – 1.8921 = 0.03 < 0.1 cfs

**The peak discharge increase for the 100-yr/24hr developed site is less than 0.1 cfs. Therefore, the site is exempted for detention.**

## CONVEYANCE ANALYSIS:

The downstream drainage consists of 12-inch pipe system and there is no known downstream problems exist. A 12-inch pipe can carry 3 cfs with a minimum slope of 0.5%. The 100-yr developed peak flow for the project site is 1.9215 cfs and the proposed pipe size is 12-inches. Therefore the proposed and downstream system appears to be adequate to convey the developed flow rate.

# 6. STORMWATER POLLUTION PREVENTION PLAN

Refer to the following pages for the SWPPP.

## 7. SPECIAL REPORT AND STUDIES

None required.

## 8. OTHER PERMITS

Right-of-Way is required from the City of Arlington

## 9. OPERATION AND MAINTENANCE MANUAL

**N/A**