



1101 South Fawcett Avenue, Suite 200
 Tacoma, Washington 98402
 253.383.4940

May 11, 2018

DuPont Industrial Partners, LLC
 C/O Barghausen Consulting Engineers, Inc.
 18215 72nd Avenue South
 Kent, Washington 98032

Attention: Dan Balmelli, PE

Subject: Report Addendum
 Geotechnical Engineering Services
 DuPont Industrial Warehouse
 DuPont, Washington
 File No. 16785-003-01

INTRODUCTION AND PROJECT UNDERSTANDING

This report addendum presents supplemental geotechnical recommendations and considerations for the DuPont Industrial Warehouse (previously titled as Lot "Y" Industrial Park). As part of this addendum, we are addressing comments in the City of DuPont Type III Site Plan Review and SEPA Environmental Review (PLNG 2018-008, -009) letter dated February 23, 2018. We have prepared a geotechnical study dated October 10, 2011 for this project (October report). We understand that plans are underway to design and construct two (approximately 130,000 square feet each) industrial buildings (Building A and Building B) in the west portion of the site. Finished floor will be near Elevation 214 to 215 feet (NGVD29). Additional improvements will include site grading, installation of utilities, asphalt paving and construction of retaining structures. We include a revised and updated Site Plan with the proposed buildings and construction, attached as Figure 1.

We have reviewed preliminary civil engineering plan sheets C1 through C13 (civil plans). We understand that a retaining wall will be constructed south of Building B. The retaining wall will be located in a current ravine/depression area that will retain fill as part of site grading. The retaining wall is also just north of the border of a 50-foot setback boundary or buffer from the steep slopes located north of the property. The wall foundations of the retaining wall may encroach into the buffer. From the grading plan, it appears that the retaining wall will retain approximately 7 feet of fill at its deepest point and taper off in the east and west direction.

CONCLUSIONS AND RECOMMENDATIONS

Encroachment Into Buffer Setback Area

Based on our review of proposed plans and subsurface explorations completed as part of our October study, we provide the following:

- It is our opinion that the proposed final site development condition, as reviewed, will not create a hazard to the subject property, surrounding properties, erosion, or sedimentation to off-site properties or bodies of water. The property will be paved and stormwater will be managed and directed into stormwater infiltration galleries. The proposed construction appears to eliminate the potential for erosion and channeling of water onto the slope area.
- Proper erosion and sedimentation will be required during construction. A temporary erosion and sedimentation control (TESC) plan has been developed for the subject site (sheets C2, C3, and C4 of the civil plans). This plan includes TESC measures that surround the proposed retaining structure. Temporary slope inclinations, protection of temporary slopes and erosion control recommendations are provided in our report and should be followed during construction.
- Additional construction recommendations presented in DMC 25.105.04(2)(c) should be implemented during physical grading and site development. These include minimizing erosion and landslide potential and minimizing disruption of the existing topography and natural vegetation. Care should be taken to cut slopes at inclinations recommended in our report and disturb only areas required to complete the work. Contractors completing earthwork should be made aware of the requirements presented in the DMC 25.105.02(2)(c).
- Final erosion control measures, once construction is complete, should include provisions as described in our October report.
- Because the retaining wall will be constructed between a sloping ravine, foundation elements for the retaining wall should be embeded deep enough such that a 2H to 1V (horizontal:vertical) slope from the lowest outermost foundation element is maintained from the toe of surrounding slopes. This may require additional excavation for the foundation and subsequent burying of portions of the retaining wall. Subgrade and bearing surface preparation recommendations presented in our October report should be followed.

UPDATED SEISMIC DESIGN CONSIDERATIONS

During preparation of our report, the 2009 International Building Code (IBC) was cited for seismic design criteria. Based on the 2015 IBC, we still conclude that the site may be characterized as Class C. Seismic design parameters in accordance with the 2015 IBC are provided in Table 1 below.

TABLE 1. 2015 IBC SEISMIC DESIGN VALUES

Site Coefficient	Site Factor	MCE ¹ Spectral Response	Design Spectral Response
$S_s = 1.304 \text{ g}$	$F_a = 1.000$	$S_{MS} = 1.304 \text{ g}$	$S_{DS} = 0.869 \text{ g}$
$S_1 = 0.520 \text{ g}$	$F_v = 1.300$	$S_{M1} = 0.676 \text{ g}$	$S_{D1} = 0.451 \text{ g}$

Note:

¹ MCE = Maximum Considered Earthquake



Based on our understanding of site conditions, we recommend using a peak ground acceleration (PGA) equal to 0.5g as determined in accordance with Section 11.8.3 of American Society of Civil Engineers (ASCE) Standard 7-10. This is the same value as sited in the 2009 IBC.

USE OF PREVIOUS REPORT

Except as modified herein, we conclude that the recommendations and design considerations presented in our October 10, 2011 are still appropriate for this site and may be used for this project.

LIMITATIONS

We have prepared this report addendum for DuPont Industrial Partners LLC and Barghausen Engineers Inc. for the DuPont Industrial Warehouse project. The client may distribute copies of this report addendum to owner and owner's authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices for geotechnical engineering services in this area at the time this report addendum was prepared. The conclusions, recommendations, and opinions presented in this report addendum are based on our professional knowledge, judgment and experience. No warranty, express or implied, applies to the services or this report addendum.

The limitations presented in our October 11, 2011 report apply to this addendum. Please refer to Appendix B titled "Report Limitations and Guidelines for Use" of our October 11, 2011 Geotechnical Engineering Services Report for additional information pertaining to use of this report addendum.

Respectfully Submitted,
GeoEngineers, Inc.

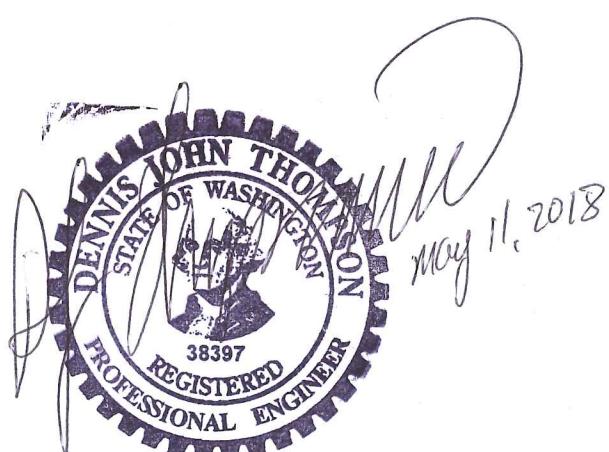


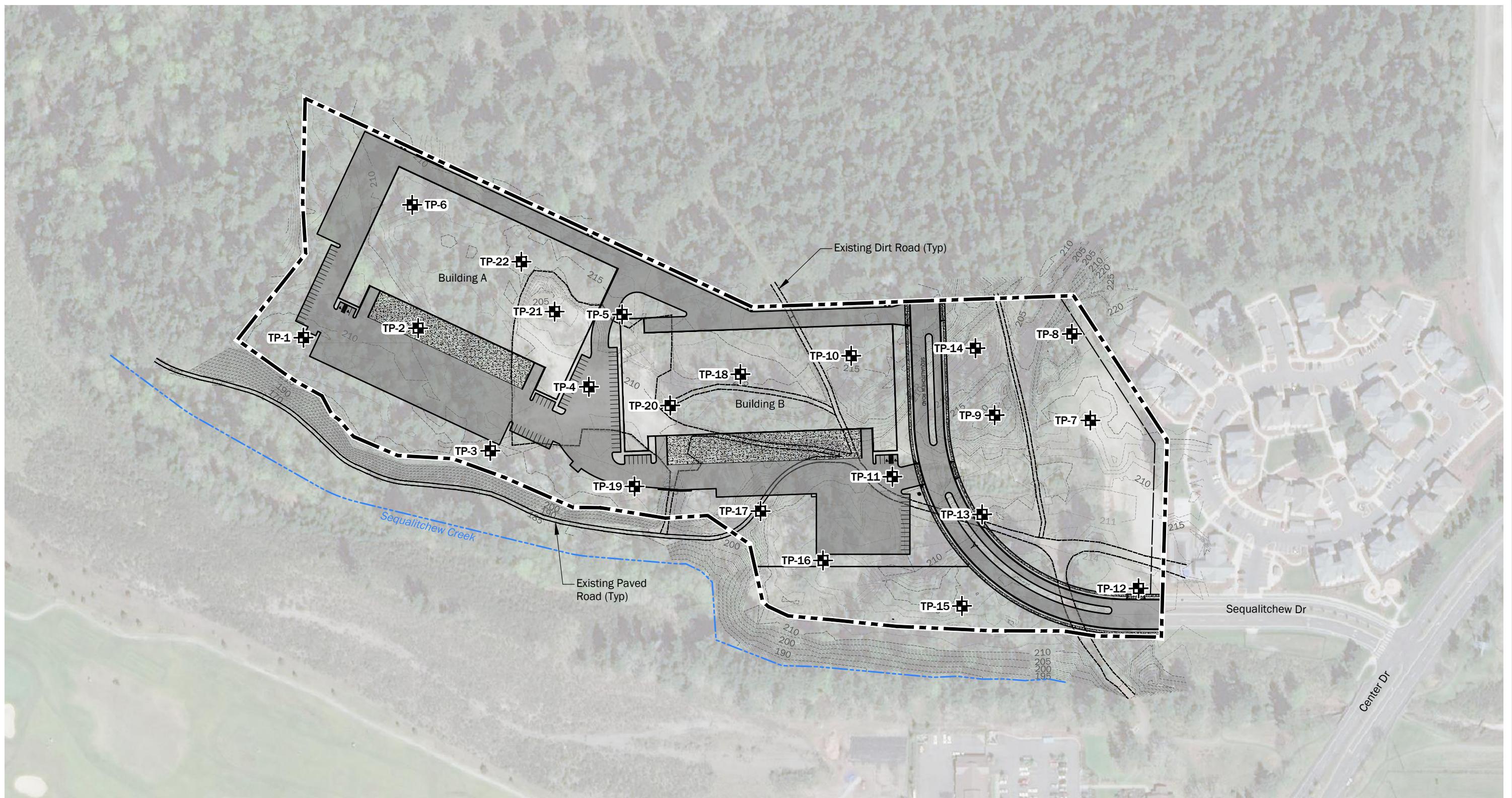
Dennis (DJ) Thompson, PE
Associate

DJT:tt

Attachment:
Figure 1 – Vicinity Map

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.





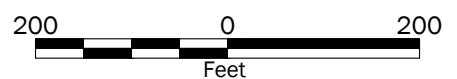
Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Aerial from Microsoft Bing. Survey background from Barghausen Consulting Engineers, Inc dated 8/8/2011. Proposed Plan from Barghausen Consulting Engineers, Inc dated 9/17/17.

Projection: Washington State Plane, South Zone, NAD83, US Foot



Site Plan

Lot Y Industrial Park
DuPont, Washington

GEOENGINEERS

Figure 1