WHATCOM COUNTY LIBRARY SYSTEM
BIRCH BAY VOGT LIBRARY EXPRESS RENOVATION

ADDENDUM No. ONE (1)
April 28, 2026

BID DATE/TIME: Prior to 5:00 PM Wednesday, May 13, 2026 *(Remains Unchanged)*

NOTICE TO BIDDERS:
Bidders must acknowledge receipt of this addendum on Exhibit A of the Invitation to Bid. The Contract Documents for the above referenced project are hereby changed as follows:

CHANGES TO THE GENERAL CONDITIONS SPECIFICATIONS (DIVISIONS 0 & 1):

GS 1.1	The ***Non-Mandatory***, Pre-bid Walk was held on Thursday April 23, 2026, at 2:00 PM. Copies of the Pre-Bid Meeting Attendance Sign-In Sheet and Walkthrough Agenda have been attached with this addendum.
GS 1.2	**REPLACE** Exhibits "A" through "F" in the Invitation to Bid (ITB) with the copy attached in this addendum. Note that both forms in Exhibit "F", including the Subcontractor Listing Form, are to be completed and included with the Bid Proposal.
GS 1.3	**ADD** the following text to Section III of the Invitation to Bid (ITB): "*An additional, non-mandatory pre-bid walkthrough will be held at the project site for interested contractors and subcontractors on* ***Friday, May 1st, 2026 at 2pm***."
GS 1.4	**ADD** the following text to Section V, paragraph 6 of the Invitation to Bid (ITB): *"Bids will be publicly opened on Monday, May 18, 2026 at 11:00am. Bidders may attend virtually using the Teams link below:* *https://teams.microsoft.com/meet/21313350124977?p=HsHYyez5qnZ5wjscxW".*
GS 1.5	**ADD** the following text to Section V of the Invitation to Bid (ITB): "**18. Plan Holder List**: WCLS will maintain a plan holder list on the procurement website at **https://www.wcls.org/invitation-to-bid-birch-bay-vogt-library-express-renovation/**. The plan holder list will be published no later than Thursday, April 30, 2026. The plan holder list will be updated periodically up until the Bid Submission Deadline on May 13, 2026. Please e-mail Ryan Cullup (ryan.cullup@wcls.org) and Joe Muller (jmuller@oaips.com) to be added to the plan holder list.
GS 1.6	**ADD** the geotechnical report attached in this addendum to the Project Manual.
GS 1.7	**REVISE** specification 01 21 00 3.02-A.1 as follows: This allowance includes labor and materials related to the preservation of cultural artifacts anticipated to be encountered during ground disturbing work. All ground disturbing activities will be ~~overserved~~ observed by an archaeological monitor. This allowance intends to cover field direction provided by the archeological monitor in accordance with the approved DAHP excavation permit
GS 1.8	**REVISE** the header title in specification 01 30 00 to read "Administrative Requirements".

CHANGES TO THE TECHNICAL SPECIFICATIONS

AS 1.1	**REVISE** specification 02 41 00, 1.01-B as follows: 8. Section ~~02 82 13~~ 02 82 00 – Asbestos Abatement. 9. Section ~~02 83 13 – Lead Related Activities~~ 02 83 00 – Lead Paint Controls.

CHANGES TO THE DRAWINGS

AD 1.1	**REPLACE** sheet **A0.10 – EXISTING SITE AND DEMOLITION PLAN** with the copy attached in this addendum. General summary of drawing changes to this sheet include: • Encroaching parking pad at the NE corner to be demolished. Refer to **ASK-01** for details. • Existing plantings and shrub along the South elevation now shown to be removed for clarity. Refer to the Landscape Plan on sheet L1. • Text notes updated to reference the Landscape, Civil, and Electrical drawings for specific scope of work items. • Updated drawing legend and added general note for archaeological monitoring.
AD1.2	**REPLACE** sheet **A0.11 – ARCHITECTURAL SITE PLAN** with the copy attached in this addendum. General summary of drawing changes to this sheet include: • Paved surface quantities, easements, setbacks, and other text notes related to permit submittal have been removed for clarity. • Text notes for EV charging have been removed from the parking stalls for clarity. • Planting areas next to the new parking stalls have been added for reference. Refer to the landscape drawings for the complete scope of landscaping work. • Updated drawing legend and added general note for archaeological monitoring
AD1.3	**REVISE** demolition keynote #14 on sheet AD1.00 to read "Demolish (E) Abestos-Cement Board Exterior Siding, Refer to Section 02 82 00 – Asbestos Abatement".
AD1.4	**ADD** the following text to the General Demolition Notes on sheets AD1.00-AD2.02: D. Refer to specification sections 02 82 00 and 02 83 00 for the removal and abatement of hazardous materials including asbestos and lead.
ED 1.1	**REPLACE** sheet **E1-2 ELECTRICAL SITE PLAN** with the copy attached in this addendum.
ED 1.2	**REPLACE** sheet **E2-0 BASEMENT POWER PLAN** with the copy attached in this addendum.
ED 1.3	**REPLACE** sheet **E2-1 1st FLOOR POWER PLAN** with the copy attached in this addendum.
ED 1.4	**REPLACE** sheet **E2-2 2nd FLOOR POWER PLAN** with the copy attached in this addendum.
ED 1.5	**REPLACE** sheet **E3-2 2ND FLOOR LIGHTING PLAN AND LIGHTING FIXTURE SCHEDULE** with the copy attached in this addendum.
ED 1.6	**REPLACE** sheet **E4-1 1st FLOOR ANCILLARIES PLAN** with the copy attached in this addendum.
ED 1.7	**REPLACE** sheet **E2-2 2nd FLOOR ANCILLARIES PLAN** with the copy attached in this addendum.
ED 1.8	**REPLACE** sheet **E5-1 1st FLOOR TELECOM PLAN** with the copy attached in this addendum.
ED 1.9	**REPLACE** sheet **E5-2 2nd FLOOR TELECOM PLAN** with the copy attached in this addendum.
ED 1.10	**REPLACE** sheet **E5-3 TELECOM DETAILS** with the copy attached in this addendum.

SUBSTITUTION REQUESTS

The manufacturers noted below as "Approved" and elsewhere in this addendum are approved, subject to full compliance with the Contract Documents. Bidders are cautioned that the listing of a manufacturer in the addendum does not necessarily grant approval of a manufacturer's standard production product, but rather the manufacturer is approved to bid their product. Bidders are reminded that by bidding these substitutions, the product submittals and shop drawings are required and subject to review for conformance and compliance with the contract documents.

SECTION	DESCRIPTION	MANUFACTURER/PRODUCT	RESPONSE
09 30 00 – 2.03	Wall Tile Mortar	Ardex X65 Lite Tile and Stone Mortar	**Approved**
09 30 00 – 2.04	Epoxy Tile Grout	Ardex WA Epoxy Grout and Adhesive	**Approved**
09 30 00 – 2.05	Silicone Sealant	Ardex SX Silicone Sealant	**Approved**
09 30 00 – 2.12	Self-Leveling Underlayment	Ardex V1300 Self Leveling Underlayment	**Approved**

Refer to Section 01 25 00 for additional substitution request information. Only products listed above as "approved" or products listed in Part 2 of the technical specifications are approved for this project

BIDDER QUESTIONS

The following questions have either been submitted or discussed onsite during the walkthrough by potential bidders. The following responses provided are binding and shall become part of the Contract Documents.

Question 1: "Will you be maintaining a Plan Holder list for this project?"

Response 1: **Yes, a Plan Holder list will be maintained on the WCLS procurement website at https://www.wcls.org/invitation-to-bid-birch-bay-vogt-library-express-renovation/. The list will be periodically updated leading up to the bid date. Please e-mail Ryan Cullup (ryan.cullup@wcls.org) and Joe Muller (jmuller@oaips.com) to be added to the plan holder list.**

Question 2: "Can we get some idea on how the archaeological monitoring for the crushing operation will go? Can the archaeologist conduct monitoring as the concrete gets pulled up following crushing of the concrete slab? Or can they monitor and sift excavated materials before they are placed in the crawlspace?"

Response 2: **Barring the inadvertent discovery of human remains, the archaeologist does not object to the proposed approach. The existing slab will need to be inspected once it's broken, but this is not expected to delay or halt crushing efforts. Note that all materials are to remain onsite until archaeological monitoring is completed.**

Question 3: "Will the existing magnolia tree located on the Northeast corner of the site be trimmed prior to construction?"

Response 3: **No trees or landscaping will be trimmed by the Owner prior to construction. Contractor shall hire a certified arborist to perform trimming of the magnolia tree.**

Question 4: "Does the existing vegetation along the South elevation remain in place, or is it being removed and replaced?"

Response 4: **Existing vegetation is to be removed and replaced with new plantings, refer to the landscape plan on sheet L1.**

Question 5: "Please confirm that all windows are to be demolished. Some are not clearly flagged."

Response 5: **Confirmed, all existing windows are to be demolished.**

Question 6:	"What is the purpose of the recycled concrete in the crawlspace?"
Response 6:	**Placement of excavated materials in the crawlspace is intended to satisfy both flood hazard and DAHP permit requirements. All excavated materials are to remain on site. If the amount of excavated material exceeds the capacity of the crawlspace, the excess material will be placed elsewhere on site at a location to be determined.**
Question 7:	"What is the construction of the new ADA Ramp? Is it a wood framed structure?"
Response 7:	**The ADA ramp will be a wood framed structure with PVC composite decking (ie: Trex, Timbertech). Additional details and specifications will be provided in Addendum #2.**
Question 8:	"Specification Section 08 91 00 – Louvers, Section 2.02-B.2 states "*Type "R" Vents to be operable to allow for crawlspace access*". Please clarify "operable". Are these supposed to be removable or hinged? The only thing I can find as "operable" opens and closes the fins like a damper, not for access."
Response 8:	**Intent is for all flood vent louvers to be easily removable for access to the crawlspace. Either a hinged frame or readily accessible removable fasteners are acceptable.**
Question 9:	"The civil and architectural drawings don't seem to be coordinated on what we're doing with the existing asphalt. On the arch drawing A0.10 we're told the existing asphalt is grind and overlay. On CD101 that area gets pulverized in place which is technically different. Also, there's some asphalt on A0.10 that is shown as being demolished that is not shown on the civil CD101. Does all the demoed asphalt need to remain on site?"
Response 9:	**Refer to the civil drawings for scope and extent of asphalt work. Sheet A0.10 has been reissued in this addendum for clarity. All demolished asphalt is to remain on site.**
Question 10:	"Are the soffits being replaced? Are the exposed rafter tails being cut off?
Response 10:	**No, both the existing roof sheathing and rafter tails are to remain. All exposed soffits and framing members are to be scraped, primed, and field painted. New sheet metal endcaps are to be installed over the existing rafter tails, detail to be provided in Addendum #2.**
Question 11:	"Does the Owner wish to salvage the existing generator located in the shop building?"
Response 11:	**WCLS does not wish to salvage the generator. Contractor to remove and dispose.**
Question 12:	"How does the PVC paneling attach to the waste enclosure shown on detail 1/A0.13?"
Response 12:	**The waste enclosure is intended to be a manufactured unit per Section 32 35 00. Paneling is installed within a slotted extruded aluminum channel at the columns. Additional detailing to be provided in Addendum #2.**
Question 13:	"Does the waste enclosure have to be manufactured, or can it be fabricated locally?"
Response 13:	**A locally fabricated waste enclosure is acceptable so long as it meets certain quality and performance requirements. Requirements to be clarified in Addendum #2.**
Question 14:	"What size and diameter are the cable railings for the ADA ramp?"
Response 14:	**Additional details to be provided in Addendum #2.**
Question 15:	"Tree sizes: 2" @ 1- Gal are not the same and 1 Gal, Pot- plants don't exist. Could you please confirm tree sizes?"
Response 15:	**Response to be included with Addendum #2.**

ATTACHMENTS:

- Pre-Bid Conference/Walkthrough Agenda (4 pages).
- Pre-Bid Walkthrough Attendee Sign-In Sheet (4 pages).
- Exhibit A – Acknowledgement of Addendum (1 page)
- Exhibit B – Anti-Collusion Certification (1 page)
- Exhibit C – Bid Proposal Form (2 pages)
- Exhibit D – Bid Security Form, Bond (2 pages)
- Exhibit E – Bid Security Form, Check (1 page)
- Exhibit F – Bidders Qualification Form & Subcontractor Listing Form (2 pages)
- Geotechnical Report prepared by GeoEngineers (66 pages).
- Sheet A0.10 – Existing Site and Demolition Plan
- Sheet A0.11 – Architectural Site Plan
- Sheet E1-2 - Electrical Site Plan
- Sheet E2-0 - Electrical – Basement Power Plan
- Sheet E2-1 - Electrical – 1st Floor Power Plan
- Sheet E2-2 - Electrical – 2nd Floor Power Plan
- Sheet E3-2 - Electrical – 2nd Floor Lighting Plan & Lighting Fixture Schedule
- Sheet E4-1 - Electrical – 1st Floor Ancillaries Plan
- Sheet E4-2 - Electrical – 2nd Floor Ancillaries Plan
- Sheet E5-1 - Electrical – 1ST Floor Plan Telecom Plan
- Sheet E5-2 - Electrical – 2nd Floor Plan Telecom Plan
- Sheet E5-3 - Electrical – Telecom Details

End of Addendum 1

PRE-BID CONFERENCE/WALKTHROUGH AGENDA

Birch Bay Vogt Library Express Renovation

Project Title: **WCLS Birch Bay Vogt Library Express**
Date: **Thursday April 23, 2026, 2:00PM**
Location: **7948 Birch Bay Drive, Blaine, WA 98230**

I. General Bidding Procedures/Requirements:

A. Introductions & Sign-In Sheet Reminder

- Project Team for Whatcom County Library System (WCLS):
  - Michael Cox, Deputy Director
  - Ryan Cullup, Facilities Services Manager
  - Dianne Marrs-Smith, Branch Manager
- Project Team for OAI:
  - Joe Muller, Project Architect (jmuller@oaips.com)
  - Clark Yoder, Construction Administrator (cyoder@oaips.com)

B. Walk-Through Procedure (OAI)

- During the pre-bid walk-through meeting, all conversations are considered informal and are not contractually binding unless stated in the contract manual, drawings, or modified by a written addendum. The order of precedence is written addendum, project manual, and lastly contract drawings.
- Any discussions or questions asked during pre-bid walk-through and any time after the meeting while on site will be answered through Addendum.

C. Bid Opening Deadline and Proposal Submission (WCLS, OAI)

- Bids to be received by **no later than 5:00 PM Wednesday, May 13, 2026**. Bid packages may be submitted electronically to Ryan Cullup via email at ryan.cullup@wcls.org. Proposals may also be delivered in person or mailed via United States Postal Service to:

  Ryan Cullup, Facilities Service Manager
  Whatcom County Library System
  5205 Northwest Drive
  Bellingham, WA, 98226

- Ensure all proposals and correspondence are clearly titled "**Birch Bay Library - Bid Proposal**". Confirmation of receipt may be provided by WCLS upon request.
- Received bids will be opened virtually and electronically published to the WCLS website on Monday, May 18, 2026. Refer to the Invitation to Bid for additional information.
- Addenda: Questions asked during bidding period and will be addressed through Addendum. All Addenda will be posted on the WCLS website at https://www.wcls.org/rfq/. Bidders must acknowledge receipt of all addenda on **Exhibit A** when submitting their proposal.
- Bidders are advised that a plan holder list is not being maintained by WCLS or OAI for this project. The WCLS website (https://www.wcls.org/rfq/) is the official source for Project Documents. Update notifications for this page will not automatically generated. **Bidding Contractors are solely responsible for monitoring the WCLS procurement website for project updates and revisions to Project Documents.** OAI and WCLS are not responsible for the distribution of Project Documents, including Addenda, through third-party plan centers.
- E-mail notifications can be provided upon request via email at ryan.cullup@wcls.org.
- A copy of the Non-Collusion Declaration is required to be included with all proposals at the time of bid. Refer to **Exhibit B** and the Invitation to Bid for additional information.
- All applicable taxes, including Washington State Sales Tax, **are to be included in the total Bid Amount**. Refer to the Bid Proposal Form in **Exhibit C** for additional information.

- Bid Security is required in the form of a Bid Bond or Cashiers Check equal to 5% of the total Bid Amount (including WSST). Refer to **Exhibits D and E** for additional information and required bid security forms.
- Bidder Responsibility Criteria, including verification of Subcontractor Responsibility Criteria, is required to be submitted at time of bid. Refer to the Invitation to Bid and **Exhibit F** for additional information.
- Refer to the contract Allowances specified in Section 01 21 00 of the Project Manual. The value of all allowances are to be included in the total Bid Amount.
- Mandatory Apprenticeship Participation is required based on the estimated dollar value. Refer to the Invitation to Bid for additional information.
- Contract Time: Substantial completion shall be achieved within **180 calendar days** after issuance of the Notice to Proceed (NTP). Final completion shall be achieved within 30 calendar days after Substantial Completion.
    - Anticipated date for issuance of Notice to Proceed is Tuesday, June 9, 2026.
    - Coordination efforts related to the installation of PSE transformer equipment will not impact or prevent issuance of substantial completion. Adjustments to the Contract Duration will be made accordingly, if required.
- Liquidated Damages: $500 for each consecutive calendar day this project is in default after the Contract Time.

D. Bidder Questions and Substitution Requests (OAI)

- Direct all pre-bid questions and substitution requests to the Architect and WCLS via email at:
  Joe Muller (jmuller@oaips.com)
  Clark Yoder (cyoder@oaips.com)
  Ryan Cullup (ryan.cullup@wcls.org)
- The last date to ask questions and submit substitution requests is May 5, 2026, by 5:00PM.

E. Projected Addendum Issuance (OAI)

- A copy of the pre-bid agenda, sign-in sheet, and any questions asked during the pre-bid conference will be included in Addendum #1. Anticipated issuance is by Monday, April 27th.
- The projected last date for issuance of Addenda is Thursday, May 7th, 2026.
- Anticipated Project Manual and Specification Revisions via Addendum:
    - Copy of the Geotechnical Report prepared by GeoEngineers.
    - Issue new specification Section 06 73 00 – Composite Decking.
    - Issue new specification Section 07 18 00 – Traffic Coatings.
    - Reissue specification Section 08 71 00 – Door Hardware.
    - Issue new specification Section 09 96 00 – High Performance Coatings.
    - Reissue specification Section 10 20 00 – Interior Specialties.
- Anticipated Drawing Revisions via Addendum:
    - Minor paving plan revisions to align with Architectural site plan.
    - Supplemental detailing for the new accessible ramp shown on sheet A0.14.
    - Add demolition/removal of the existing parking pad at the NE corner of the property.
    - Supplemental casework and exterior detail drawings.

II. General Project Description:

A. Estimated Bid Range

- The estimated Bid Range for this project is $1,265,000 - $1,395,000 (**Excluding WSST**).
- Reminder that **WSST is to be included in total Bid Amount**.

B. Archaeological Resources

- Cultural resources including shell midden material have been identified onsite.
- DAHP Excavation Permit efforts are underway. Approval and issuance anticipated in June.
- Any right of way and ground disturbing work may not proceed until DAHP permit is issued.
- The Archaeological Monitor (Drayton) must be present for all ground disturbing activity.
- Contractor must comply with the Archaeological Monitor's field direction.
- All excavated materials are to remain on site, refer to the project drawings.
- Contractor shall anticipate the potential for delays and be proactive in scheduling and sequencing of the work to minimize impact to the overall project schedule.
- Labor and material costs to be billed to Allowance #1, refer to Section 01 21 00.

C. Permits & Other Special Conditions

- Whatcom County Approvals:
  i. Conditional Use Permit (CUP2025-00001)
  ii. Shoreline Substantial Development Permit (SHR2025-00002)
  iii. Commercial Building Permit (COM2026-00011)
- Pre-Construction meeting with WCPW is required prior to start of work.
- Maintain a printed, color copy of the approved permit drawings onsite at all times.
- Project is located in a flood zone, work to comply with all flood conditions noted in the plans.
- Hazardous materials including asbestos and lead are anticipated. Refer to specifications and limited haz-mat survey included in the Project Manual.
- Other Permits:
  i. Sign Permit – ***Pending***.
  ii. PSCAA Asbestos Permit – ***Pending***.
  iii. DAHP Permit – ***Pending***.
  iv. Trade permits by Contractor (fire alarm, low-volt, etc.)

D. Site Improvements

- Demolish existing pole buildings, site fencing, and other items indicated in the drawings.
- Provide temporary site fencing and TESC controls noted in the civil drawings.
- Refer to the Landscape drawings for existing trees and landscaping to be removed.
- Protect all trees and vegetation noted to remain, including the Magnolia tree to the North.
- Coordinate installation of new utilities with required archaeological monitoring.
- New transformer and service upgrade to be provided by PSE, expected towards end of year.
  i. Upgrade needed to satisfy future EV charging infrastructure.
  ii. Existing service is sufficient to support current design loads.
  iii. Contractor maintain existing service following demolition of the existing meter.
- WCLS is finalizing a lot line adjustment with the neighboring property to the East.
  i. Contractor will need to remove a portion of the existing RV slab; Additional info and direction to be provided via Addendum.
- Refer to the civil drawings for new paving, parking, and widening of the existing driveway.
- Grind and overlay existing asphalt paving noted to remain, see civil.

E. Building Renovation

- Fill existing crawlspace with excavated site materials to comply with flood requirements.
- Install new flood vents and sump pump in crawlspace. Infill existing openings per plan.
- Refer to the structural drawings for new framing and structural improvements.
  i. New footings, LSL beams, and sistering of the existing floor joists in crawlspace.
  ii. New columns and beams as shown on the first floor.
- Replace all existing exterior doors, windows, and siding. Infill and modify openings per plan.

- Demolish all interior fixtures, furnishings, appliance, and finishes per plan.
    i. Demolish existing lath and plaster finishes throughout the first floor per plan.
    ii. Repair or replace existing lath and plaster finishes on the second floor. Refer to Allowance #2 in Section 01 21 00. Paint all areas under the Base Bid scope of work.
- Insulate all exterior walls and install new fiber-cement siding. All trim boards to be PVC as specified in Section 06 65 00. Provide rabbeted profiles as detailed in the drawings.
- Replace existing gutters and downspouts. Provide new endcaps at exposed rafter tails.
- Repair and repoint all existing masonry and stone copings. Provide seismic brace at chimney.
- Prep and apply new elastomeric coating at concrete steps and copings.
- Replace deck surface at covered porch area with new sloped sheathing and traffic coating.
- Demolish existing HVAC system entirely, provide new heat-pump system per mechanical.
- New electrical work including lighting, electrical distribution, data, and comm systems.
- AV and access control equipment by Owner. Provide rough-in and pathways per plan.

III Other Notes & Discussion Items:

Note that Pre-bid Conference notes and sign-in sheet will be included in an addendum. Questions asked in Pre-bid Conference do not change the contract requirements. All changes resulting from questions asked during Pre-bid Conference will be issued through addendum.

Sign In Sheet: Birch Bay Vogt Library Express

Name: Daniel Litovchenko
Email: litodan2@live.com
Title: Electrician Company: Clearline Electric

Name: DEREK LoPRESTI
Email: Bids@tiger-construction.com
Title: PM Company: TIGER

Name: Ryan Cullup
Email: ryan.cullup@wcls.org
Title: Facilities Mgr Company: ~~Whatcom~~ WCLS

Name: Mike O'Herron
Email: OFFICE@henrfin.com
Title: project manager Company: Henrfin Const.

Name: SONIA Beckles
Email: SONIA.B@pacificfs.net
Title: PM Company: PFS

Name:
Email:
Title: Company:

Sign In Sheet: Birch Bay Vogt Library Express

Name: Emily Weik

Email: bids@wellmanzuck.com

Title: Project Manager Company: Wellman and Zuck

Name: Clark Yoder

Email: cyoder@oaips.com

Title: Con Admin Company: OAI

Name: Joe Muller

Email: jmuller@oaips.com

Title: Architect Company: OAI

Name: William Acosta

Email: ~~IRONWOODFAB@gmail.com~~ IRONWOODFABmike@Gmail.com

Title: ~~Estimator~~ Company: IRonwood

Name: _____

Email: _____

Title: _____ Company: _____

Name: _____

Email: _____

Title: _____ Company: _____

Sign In Sheet: Birch Bay Vogt Library Express

Name: Ryan Hope
Email: ryanh@lautenbachrecycling.com
Title: Demo Company: Lautenbach Recycling

Name: Ken Helms
Email: khelms@dawson.com
Title: PM/Est. Company: Dawson Construction LLC

Name: Mary Swanson
Email: marys@cgius.net
Title: PM/Est. Company: CGI (D&A sub)

Name: Joe Roman
Email: joe@jmsmasonryrestoration.com
Title: PM/estimator Company: JMS Masonry Restoration LLC

Name: MIKE ROMAN
Email: MIKE@JMSmasonryrestoration.com
Title: estimator Company: JMS masonry restoration LLC

Name: William Acosta
Email: ~~IRONWOODFAB@gmail.com~~ IRONWOODFABmike@Gmail.com
Title: ~~Estimator~~ Company: IRonwood

Sign In Sheet: Birch Bay Vogt Library Express

Name: Greg Brumbill
Email: bids@faberConstruction.com
Title: PM Company: Faber Construction

Name: Nick Freesh
Email: bids@faberconstruction.com
Title: Estimator Company: Faber Construction

Name: Robert Corey
Email: jcoy@cdkconstruction.com
Title: Sup Company: CDK Const. Services

Name: TJC Carlson
Email: KC@pacificfs.net
Title: Paint Manager Company: Pacific Facility Solutions

Name: David Bermilee
Email: ~~Champis Painting~~ Champispaintinginc@gmail.com
Title: Manager Company: Champis Painting

Name: Brant Carson
Email: brant@valleyP.E.com
Title: Commercial Plumbing Manager Company: Valley P.E.

Exhibit A
ACKNOWLEDGEMENT OF ADDENDA

The Proposer acknowledges receipt of any addenda issued to this solicitation by completing the blocks below or by completion of the applicable information on the addendum and returning it not later than the date and time for receipt of the statement of qualification. Failure to acknowledge an addendum that has a material impact on this solicitation may negatively impact the responsiveness of your statement of qualification. Material impacts include but are not limited to changes to specifications, scope of work/services, delivery time, performance period, quantities, bonds, letters of credit, insurance, or qualifications.

Addendum No. _____, Date _____
Addendum No. _____, Date _____
Addendum No. _____, Date _____
Addendum No. _____, Date _____
Addendum No. _____, Date _____
Addendum No. _____, Date _____
Addendum No. _____, Date _____

AUTHORIZED SIGNATORIES/NEGOTIATORS

The respondent represents that the following principals are authorized to sign statements of qualifications, proposals, negotiate and/or sign contracts and related documents to which the proposer will be duly bound. Principal is defined as an employee, officer or other technical or professional in a position capable of substantially influencing the development or outcome of an activity required to perform the covered transaction.

_____ Name (print)
_____ Title
_____ Signature
_____ Date
_____ Address
_____ City
_____ State
_____ Phone Number
_____ Email address

Exhibit B
NON-COLLUSION DECLARATION

This form must be submitted by all respondents with their statement of qualifications. WCLS will not accept any statement of qualification that is not accompanied by a completed Non-Collusion Declaration.

STATE OF WASHINGTON }

} ss

COUNTY OF _____ }

, being first duly sworn, on her/his oath says that the statement of qualifications above submitted is a genuine and not a sham or collusive statement of qualifications, or made in the interest or on behalf of any person not therein named; and he/she further says that the said respondent has not directly or indirectly induced or solicited any proposal or statement of qualification on the above Work or supplies for the Work to put in a sham bid, statement of qualifications, or any other person or entity to refrain from bidding or responding to the above work; and that said respondent has not in any manner sought by collusion to secure itself an advantage over any other respondents.

Signature

Print Name

Print Title and Company Name

Subscribed and Sworn before me this _____ day of _____, 20____.

Signature

Print Name

Notary Public in and for the State of Washington,
Residing at:
Appointment expires:

Exhibit C
Bid Proposal Form

Bid To: WHATCOM COUNTY LIBRARY SYSTEM Date:

Job Name: BIRCH BAY VOGT LIBRARY EXPRESS RENOVATION

Bidder Company Name: _____

Contact Name: _____

Contact Phone: _____ Contact Email: _____

1. This Bid Proposal (this "Bid") is made in connection with the Invitation to Bid (the "Invitation to Bid"), dated _____ issued by WHATCOM COUNTY LIBRARY SYSTEM ("WCLS") for a public works project described therein (the "Work") and known by the name Birch Bay Vogt Library Express Renovation. Capitalized terms used but not defined herein shall have the meanings given in the Invitation to Bid.

2. The undersigned, as or on behalf of the bidder (the "Bidder"), proposes and agrees, if this Bid is accepted, to enter into an Agreement with WCLS in accordance with the terms set forth in the Invitation to Bid to perform the Work.

3. Bidder hereby accepts all of the terms and conditions of the Invitation to Bid governing the procedures for bidding on the Work including, without limitation, requirements pertaining to the provision, retention and return of the Bid Security. Bidder acknowledges that this Bid will not be accepted if it is not accompanied by the Bid Security and Non-Collusion Affidavit described in the Invitation to Bid.

4. This Bid will remain open until it is withdrawn by the Bidder pursuant to Section 10 of the Invitation to Bid or until the Bidder has received bid results disclosing that this Bid was not successful. If this Bid is successful, the Bidder will sign and return the Agreement and furnish the Performance and Labor & Material Payment Bond if so required, retainage selection if so required, a certificate of insurance coverage and a statement of intent to pay prevailing wages within fourteen (14) days of the Notice of Award date. The Bidder's failure to timely sign and return the Agreement or furnish such other documents will result in the annulment of all rights of the Bidder with regard to the Work and the forfeiture of the Bidder's Bid Security to WCLS.

5. Bidder has examined the Invitation to Bid including the bid specifications, terms, conditions and deadlines for commencement and completion set forth therein.

6. Bidder has attended the Pre-Bid Showing and has examined the premises and site so as to compare them with the drawings and specifications provided by WCLS, and to have satisfied itself as to the facilities and difficulties attending the performance of the Agreement. Bidder has familiarized itself with the nature and extent of the Work, the site and locality where the Work is

to be performed, the legal requirements (including applicable federal, state and local laws, ordinances, rules, regulations and taxes), and the other conditions (including uncertainty of weather and all other contingencies) which may affect cost, progress or performance of the Work and has made such independent investigations as Bidder deems necessary. Bidder hereby acknowledges that no allowance shall be subsequently made on behalf of Bidder by reason of any error or neglect on the part of the Bidder in the submission of this Bid.

7. If the Bidder is a corporation or company, this Bid shall include the printed name of the corporation or company, the printed name and title and the signature of the President, Secretary or other officer authorized to bind the corporation or company with this Bid. If the Bidder is a corporation, this Bid includes an impression of the Bidder's corporate seal. If the Bidder is a firm, this Bid includes the printed firm name and member or agent name. If the undersigned is an agent for another or others, the undersigned has filed a certificate or other legal evidence of his authority to submit this Bid.

For the complete and timely performance of all Work described in the Invitation to Bid for that project entitled as above the Bidder agrees to accept in full payment therefore the bid amount stated below.

Bid amount (including all applicable sales tax): _____

Dated: _____ Bidder: _____

By: _____
(Signature)

_____
(Print Name)

Title: _____

Address: _____

_____

Telephone: _____

Exhibit D
Bid Security (Bond)

(BID GUARANTY BOND)

KNOW ALL PERSONS BY THESE PRESENTS THAT: _____, hereinafter called "Principal", and _____, a corporation organized under the laws of the State of _____ and authorized to transact surety business in the State of Washington, hereinafter called the "Surety," are jointly and severally held and firmly bound unto the Whatcom County Library System, hereinafter called "Owner", in the sum of $_____ (which amount equals five percent (5%) of the aggregate of the Bid proposal of Principal for the Work) lawful money of the United States. The Principal binds itself, its heirs, executors, administrators, successors, and assigns, and the Surety binds itself, its heirs, executors, administrators, successors and assigns, all jointly and severally.

WHEREAS, this Bid Security is submitted in connection with the Invitation to Bid (the "Invitation to Bid"), dated _____ issued by WHATCOM COUNTY LIBRARY SYSTEM ("WCLS") for a public works project described therein (the "Work") and known by the name "Birch Bay Vogt Library Express Renovation" Capitalized terms used but not defined herein shall have the meanings given in the Invitation to Bid.

NOW, THEREFORE, the condition of this obligation is such that if Principal is notified that it is the lowest responsible bidder for the Work, and if Principal within fourteen (14) days from the Notice of Award date enters into, executes, and delivers to Owner a signed Agreement, certificate of insurance coverage, intent to pay prevailing wages and the Performance and Labor & Material Payment Bond and retainage selection if so required, then this obligation shall be void. If, however, the Principal fails or refuses to furnish, execute and deliver to Owner all such documents within the time required, then Principal and Surety shall forfeit to Owner the sum hereof, and Surety shall pay such sum to the Owner within ten (10) days following written demand by the Owner.

AND IT IS HEREBY DECLARED AND AGREED the Surety shall be liable under this obligation as Principal, and that nothing of any kind or nature whatsoever that will not discharge Principal shall operate as a discharge or a release of liability of Surety.

SIGNED AND SEALED THIS _____ day of _____, 20_____.

Seal

_____
Name of Principal

By: _____
Signature

_____
Print Name

Seal

_____
Name of Surety

By: _____
Signature

_____
Print Name

[Power of Attorney Must be Attached]

Surety's Mailing Address:

_____

_____

_____

Surety's Phone and Fax Number:

_____

Exhibit E
Bid Security (CASHIER'S CHECK)

Herewith find the deposit in the form of a certified check in the amount of $_____, which amount is equal to five percent (5%) of the total Bid submitted by or on behalf of the undersigned Principal. This amount is submitted as Bid Security in connection with the Invitation to Bid (the "Invitation to Bid"), dated _____, _____, 20____, issued by Whatcom County Library System ("WCLS") for a public works project described therein and known by the name Birch Bay Vogt Library Express Renovation, and may be forfeited to WCLS as provided in the Invitation to Bid.

_____
Name of Principal

By: _____
Signature

_____
Print Name

Exhibit F
Bidder Qualification Forms

The undersigned hereby certifies and submits the following qualifications:

1. Name and Address: _____
_____
_____

2. State of Washington Contractor Registration Number: _____
Expires: _____

3. Washington Unified Business Identifier (UBI): _____

4. Bidder must meet additional criteria listed in the Invitation to Bid, if applicable:

   a. Does the Bidder have Industrial Insurance coverage (worker's compensation) for the bidder's employees working in Washington as required in Title 51 RCW?
      Yes _____ No _____ Not applicable _____

   b. Does the Bidder have an employment security department number as required in Title 50 RCW?
      Yes _____ No _____ Not applicable _____

   c. Does the Bidder have a Washington Department of Revenue state excise tax registration number as required in Title 82 RCW?
      Yes _____ No _____ Not applicable _____

5. The undersigned certifies that the Bidder has not been disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).

Bidder: _____

By: _____ Title: _____
(Authorized Signature)

Exhibit F - Continued
Bidder Qualification Forms

SUBCONTRACTOR LISTING FORM *(Prepared in compliance with RCW 39.30.060)*

At the published bid submittal time, the bidder shall submit the names and license numbers of the licensed subcontractors with whom the bidder, if awarded the contract, will directly subcontract for performance of the work of: heating, ventilation and air conditioning (HVAC); plumbing, as described in Chapter 18.106 RCW; and electrical, as described in Chapter 19.28 RCW. Alternatively, the bidder may name itself for the work if it is licensed to perform the work for which it has named itself.

In addition, at the published bid submittal time, or within 48 hours after the published bid submittal time, the bidder shall submit the names of the subcontractors with whom the bidder, if awarded the contract, will directly subcontract for performance of the work of structural steel installation and rebar installation. Alternatively, the bidder may name itself for the work.

The bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the bidder must indicate which subcontractor will be used for which alternate.

Failure of the bidder to submit, within the required time frames, the names of such subcontractors or to name itself for any such work that it is self-performing, will render the bidder's bid nonresponsive and, therefore, void.

To the extent the Project includes one or more categories of work referenced in RCW 39.30.060, and the bidder has not listed a subcontractor or itself for such work, the bidder certifies that the work will be performed by a lower tier subcontractor who will not contract directly with the bidder.

Work	**Subcontractor Name*** (List bidder's name if work will be self-performed.)	**License Number** (if required)
HVAC		
Plumbing		
Electrical		
Structural Steel Installation		
Rebar Installation		

* List "N/A" or leave blank if project does not involve such work.

The undersigned certifies that the information provided by bidder in the subcontractor listing form is true and correct to the best of his or her knowledge and belief.

Signature _____ Date _____

Print Signatory's Name _____ Bidder Name _____

Geotechnical Engineering Services

Birch Bay Vogt Community Library
7968 Birch Bay Drive
Blaine, Washington

for
Whatcom County Library System
c/o Osborn Architects Inc.

January 14, 2025

554 West Bakerview Road
Bellingham, Washington 98226
360.647.1510

GeoEngineers

Geotechnical Engineering Services

Birch Bay Vogt Community Library
7968 Birch Bay Drive
Blaine, Washington

File No. 24450-003-02
January 14, 2025

Prepared for:

Whatcom County Library System
c/o Osborn Architects Inc.
7574 Hannegan Road
Lynden, Washington 98264

Attention: Joe Muller, AIA

Prepared by:

GeoEngineers, Inc.
554 West Bakerview Road
Bellingham, Washington 98226
360.647.1510

Piradeepan Uthayakumar, EIT
Staff Geotechnical Engineer

Sean W. Cool, PE
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SEAN W. COOL
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40802
REGISTERED
PROFESSIONAL ENGINEER

01/14/2025

PU:SWC:seh

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Appendices

1.0 Introduction and Scope

This report presents the results of GeoEngineers, Inc.'s (GeoEngineers') geotechnical engineering services for the proposed Birch Bay Vogt Community Library project to be located at 7968 Birch Bay Drive in Blaine, Washington. The site location is shown in the Vicinity Map, Figure 1. Existing site conditions are shown in the Site and Exploration Plan, Figure 2.

Our understanding of the project is based on information provided by Osborn Architects Inc., our previous experience in the vicinity of the site, and our previous experience on similar projects. We understand the Whatcom County Library System (WCLS) has revised their facility plan for the site and is now planning to renovate the existing structure rather than construct a new building. The proposed improvements will consist of filling the crawlspace, possible installation of new interior or exterior columns and footings, and construction of an Americans with Disabilities Act (ADA) ramp. Appurtenant site improvements include added parking and drive areas to the south and east of the existing structure, including pervious concrete pavement. We understand that site grades surrounding the building will not be altered significantly from existing.

Our scope of services for this project included reviewing available geotechnical information near the site, completing site explorations consisting of four hand augers and two cone penetration tests (CPTs), completing laboratory testing on representative samples obtained from the explorations, and providing geotechnical conclusions and recommendations for design and construction of the proposed improvements. Our specific scope of services is described in our proposal for this revised project dated September 11, 2024, and authorized on October 15, 2024.

2.0 Site Conditions

2.1 SURFACE CONDITIONS

The Birch Bay Vogt Community Library project site consists of 0.85 acres in Birch Bay. The site is bounded an empty field and mobile home complex to the north and east, Birch Bay Drive and Birch Bay to the west, and a residence to the south. The site is generally level, with approximately less than 1 foot of vertical relief across the site. Existing site grades range from approximately 9 to 10 feet (NAVD88).

The site is currently developed with a two-story library (formerly a residence) in the northern section of the lot. There are also two warehouse outbuildings behind the library in the northeast corner of the lot. Vegetation surrounding the building consists of a manicured lawn, bushes, and sparse tress of variable sizes and species. Utilities identified at the site include underground water, sewer, natural gas, communications and electrical connections.

2.2 GEOLOGY

We reviewed Washington State Department of Natural Resources (DNR) maps for the project area, "Geologic Map of the Bellingham 1:100,000 Quadrangle, Washington" by Lapen (2000), and "Geologic Map of western Whatcom County, Washington," Easterbrook, D.J (1976). The site lies within an area mapped as Holocene age beach and alluvial deposits. Glaciomarine drift and glacial outwash of the Sumas

Stade is also mapped nearby. We also understand that historical archaeological surficial deposits have been identified at the project site by Drayton Archaeology. Beach and alluvial deposits are likely from the nearby Birch Bay. Glaciomarine drift is typically composed of unsorted, unstratified silt and clay with varying amounts of sand, gravel, cobbles, and occasional boulders. This unit is derived from sediment melted out of floating glacial ice that was deposited on the sea floor during periods of glacial retreat, while the land surface was depressed 500 to 600 feet below present levels from previous glaciations.

2.3 SUBSURFACE EXPLORATIONS

Subsurface soil and groundwater conditions at the Birch Bay Vogt Community Library project site were evaluated by completing four hand auger explorations (HA-1 through HA-4) and two CPTs (CPT-1 and CPT-2). Explorations were completed on July 27, 2020. Hand augers were completed by a representative of our firm and were terminated at depths ranging from 3¼ to 5 feet below the ground surface (bgs). CPTs were completed by a track-rig subcontracted to GeoEngineers and were terminated at depths of 30 and 31 feet. The approximate locations of the explorations for this evaluation are shown in Figure 2. Details of the field exploration program, laboratory testing, and hand auger logs for this evaluation are presented in Appendix A. The results of the CPT explorations are presented in Appendix B.

2.4 SUBSURFACE CONDITIONS

2.4.1 Soil Conditions

A general description of each of the soil units encountered at the project site is provided below. Our interpreted soil conditions are based on soil conditions encountered during our geotechnical explorations and our experience at nearby project sites.

- **Fill –** Fill soils were encountered at the surface of all explorations. The fill soils consisted of sand and gravel with variable amount of silt and some silt with sand and likely include some reworked beach deposits. The fill soils extended to depths ranging from 3¼ to 4 feet bgs. HA-2 and HA-4 were terminated in the fill unit.
- **Beach Deposits –** Native beach deposits were encountered underlying the fill layers. The beach deposits encountered consisted of loose to medium dense sand with variable amounts of silt and gravel. The beach deposits unit was observed to extend to the full depth explored in HA-1 and HA-3. Based on interpretation of the CPT logs, the granular beach deposits extend to approximately 12 feet bgs.
- **Glaciomarine Drift –** Glaciomarine drift was encountered at approximately 12 feet bgs underlying the beach deposit in both CPT-1 and CPT-2. Glaciomarine drift consisted of medium stiff clay and silt. Soil types and behavior characteristics in this unit were interpreted from CPT data by Conetec.

2.4.2 Groundwater Conditions

Groundwater was encountered in both CPT explorations completed at the site at depths of approximately 5 to 6 feet bgs. Groundwater was not encountered in any of the hand auger explorations. The groundwater conditions should be expected to vary as a function of season, precipitation, tides, and other factors. We anticipate that the seasonal high groundwater elevation will be generally higher, and approach near the existing ground surface during flood events at approximately Elevation 14 feet (NAVD88).

3.0 Geologically Hazardous Areas and Mitigation

Whatcom County requires a geologically hazardous area site assessment for the proposed project in accordance with Whatcom County Code (WCC), Chapter 16.16, Article 3 Geologically Hazardous Areas. Our geologically hazardous area site assessment included reviewing geologic maps and other relevant references, evaluating our geotechnical explorations of soil conditions at the site, completing a geological reconnaissance at the site, and providing conclusions regarding mitigations appropriate for development at the site. Designation of the hazards and their presence/absence at the site are discussed in Section 3.1, and discussion of mitigation strategies is discussed in Section 3.2.

3.1 DESIGNATION OF GEOLOGIC HAZARDS

The methods of designating specific hazard areas are presented in WCC Section 16.16.310 and are briefly discussed below.

3.1.1 Landslide Hazard, Alluvial Fan Hazard, and Volcanic Hazard, Seiche and Mine Hazard Areas

The site does not meet the definition of a landslide, alluvial fan, volcanic, seiche or mine hazard based on the definitions as presented in WCC Section 16.16.310 and in the Whatcom Critical Areas Ordinance (CAO) – Geologically Hazardous Areas Map. Therefore, no impacts or mitigation are required related to these hazard areas and landslide hazards are not addressed further in this report.

3.1.2 Erosion Hazard

The site also does not meet the definition of an erosion hazard area based on site slopes. The grading and construction will require excavation and cause temporary disturbance of site soils and potential for erosion. In our opinion, a temporary erosion and sediment control plan (TESCP) designed by the civil engineer and use of appropriate best management practices (BMPs) should be implemented to mitigate temporary erosion concerns. Long-term erosion potential will be mitigated by relatively flat site grades and hard surfacing.

3.1.3 Seismic Hazard

Seismic hazard areas, by WCC Section 16.16.310 definition, include areas that are designated as having a “high” and “moderate to high” risk of liquefaction susceptibility as mapped on the Liquefaction Susceptibility Map by the Washington State Department of Natural Resources. The site is also susceptible to liquefaction based on site-specific subsurface explorations. A discussion of seismic considerations is provided in Section 4.1, including surface fault rupture, seismic shaking, liquefaction, and lateral spreading risks. The site is not considered to be at risk of surface fault rupture and lateral spreading. Mitigation for seismic hazards is required and is discussed in Sections 3.2.1 and 4.3 of this report.

3.1.4 Tsunami Hazard

Tsunami hazard areas, by WCC Section 16.16.310 definition, include coastal areas susceptible to flooding, inundation, debris impact, and/or mass wasting as the result of a tsunami generated by seismic events. The site is located in an area that is a mapped tsunami inundation zone (DNR 2022) with modeled depth of inundation of approximately 2 to 4 feet.

3.2 GEOLOGIC HAZARD MITIGATION

3.2.1 Seismic Hazards

All of Puget Sound region is a seismically active area. The 2021 International Building Code (IBC) requires incorporation of structural and/or foundation considerations into the project to adequately mitigate effects of seismic shaking and liquefaction on the proposed structures. As discussed previously, the project site is not believed to be at risk from surface faulting nor lateral spreading and no mitigation will be required for this risk.

The beach deposits below the groundwater table are susceptible to earthquake-induced soil liquefaction, as discussed later in this report. These seismic hazards will require mitigation for site development to the minimum required by code. In waterfront environments such as this site, a combination of overexcavation and replacement, ground improvement technologies, rigid grade-beam or mat foundations, aggregate piers, and/or use of pile supported foundations could all mitigate the liquefaction and lateral spreading seismic hazards. We assume that the mitigation will be provided by structural improvement only, as required to meet relevant code for remodels. Section 4.3 of this report provides detailed discussion of the specific mitigation strategy that we recommend for this project.

3.2.2 Tsunami Hazards

We recommend that the tsunami hazard be considered when planning the finished floor elevation and structural improvements to mitigate tsunami loading for the project. The structural engineer should account for up to approximately 4 feet of tsunami inundation and the associated load anticipated on the structure during a tsunami.

4.0 Conclusions and Recommendations

It is our opinion that the site is suitable for the proposed improvements which can be supported on shallow spread footing foundations with additional considerations for performance related to settlement and seismic conditions. A summary of the primary design and construction considerations for the project is provided below. The summary is presented for introductory purposes and should only be used in conjunction with the complete recommendations presented in this report.

- A seismic Site Class E is appropriate for design. The site soils are considered potentially liquefiable based on our analysis of the explorations and local knowledge.
- Placement of approximately 2 to 3½ feet of structural fill to fill the basement will result in long-term settlement of up to ½ inch of the underlying glaciomarine drift clay soils. The magnitude of settlement is expected to be limited due to the previous net unloading of the in-situ soil during excavation of the basement. This settlement will occur over the site area where the basement is being filled and will take several years.
- The proposed foundation improvements, if required, will result in foundations being supported on either imported structural fill or existing fill overlying beach deposits and glaciomarine drift clay. The proposed conditions will provide adequate support for new shallow spread footings. We recommend a maximum allowable soil bearing pressure of 1,500 pounds per square foot (psf), with limits as noted in Section 4.3 of this report.

- Stormwater is planned to be managed by means of permeable pavements and possible downspout infiltration.
- The site soils are generally granular and will support rubber-tired or other heavy equipment during wet weather. However, earthwork should be planned for the drier summer months to reduce construction costs.

4.1 SEISMIC DESIGN CONSIDERATIONS

4.1.1 General Seismicity

The site is located within the Puget Sound region, which is seismically active. Seismicity in this region is attributed primarily to the interaction between the Pacific, Juan de Fuca, and North American plates. The Juan de Fuca plate is subducting beneath the North American plate. It is thought that the resulting deformation and breakup of the Juan de Fuca plate might account for the deep focus earthquakes in the region. Hundreds of earthquakes have been recorded in the Puget Sound area. In recent history, four of these earthquakes were large events: (1) in 1946, a moment magnitude (Mw) 7.5 earthquake occurred in the Vancouver Island, British Columbia area; (2) in 1949, a Mw 6.7 earthquake occurred in the Olympia area; (3) in 1965, a Mw 6.7 earthquake occurred between Seattle and Tacoma; and (4) the 2001, Mw 6.8 Nisqually earthquake.

Research has concluded that historical large magnitude subduction-related earthquake activity has occurred along the Washington and Oregon coasts. Evidence suggests several large magnitude earthquakes (Mw 8 to 9) have occurred in the last 1,500 years, the most recent of which occurred about 300 years ago. No earthquakes of this magnitude have been documented during the recorded history of the Pacific Northwest. Local design practice in Puget Sound and local building codes now include the possible effect of a very large subduction earthquake and local known faults in the design of structures.

4.1.2 Surface Fault Rupture

The closest active faults identified by the United States Geological Survey (USGS) Quaternary Fault map (USGS 2020) include the Drayton Harbor fault scarp which is 3.8 miles to the northeast and Birch Bay fault 1.7 miles to the southwest. According to the 2016 version of Minimum Design Loads for Buildings and Other Structures (American Society of Civil Engineers [ASCE] 7-16) Section 11.4.1, the site is not classified as a near-fault site due to the faults being likely incapable of producing a Mw 6 or larger event. Therefore, the site is not considered to be at risk of surface rupture from these two faults.

4.1.3 2021 International Building Code Seismic Design Information

We expect that the project will be designed utilizing the 2021 IBC. The 2021 IBC references ASCE 7-16 for the Site Class determination and the development of seismic design parameters.

Per ASCE 7-16 Section 20.3.1, the site is classified as Site Class F due to the presence of potentially liquefiable soils. Site-response analysis is required for Site Class F sites per Section 11.4.8; however, Section 20.3.1 provides an exception for structures that have fundamental periods of vibration less than 0.5 seconds, whereby the site class may be determined in accordance with Section 20.3 (i.e., the underlying site class not considering liquefaction) and the corresponding site coefficients determined based on mapped seismic parameters in Section 11.4.4. We anticipate the remodeled two-story building will have a fundamental period of vibration that is less than 0.5 seconds; therefore, the exception in Section 20.3.1

applies. Based on this exception, the IBC permits the Site Class to be determined in accordance with the remaining site class definitions. Based on the subsurface data from our explorations, the weighted average of the inferred blow counts from the CPT exploration data in the top 100 feet was estimated, which is used as a parameter to estimate the seismic site class of the site, as per ASCE 7-16. Based on the subsurface data from our explorations, the site is best classified as Site Class E.

Per ASCE 7-16 Section 11.4.8, a ground motion hazard analysis or site-specific response analysis is required to determine the design ground motions for structures on Site Class E sites with S_S greater than or equal to 1.0 g or S_1 greater than or equal to 0.2 g. The mapped S_S and S_1 values for this site are 1.013 g and 0.355 g, respectively. Therefore, this provision applies. Alternatively, mapped seismic design parameters may be used to determine the design ground motions provided Exception 3 of Section 11.4.8 is used. "T" represents the fundamental period of the structure and "T_S" is 0.75 seconds, where T and T_S are defined in Section 11.4.8 of ASCE 7-16.

The design parameters for the 2021 IBC are summarized in Table 1. These values are based on an earthquake event that has a 2 percent chance of exceedance in a 50-year period (2,475-year return period).

If requested, we can complete a site-specific seismic response analysis which might provide reduced seismic demands from the parameters in Table 1 and the requirements for using Exception 3 of Section 11.4.8 in ASCE 7-16. Use of Exception 3 should be determined by the structural engineer.

TABLE 1. SPECTRAL RESPONSE ACCELERATIONS (SRAS)

SEISMIC DESIGN PARAMETERS	RECOMMENDED VALUE[1, 2]
Site Class	E[3]
Mapped Spectral Response Acceleration at Short Period (S_S)	1.013g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.355g
Peak Ground Acceleration (PGA)	0.435g
Site Modified Peak Ground Acceleration (PGA_M)	0.579g
Site Amplification Factor at 0.2 second period (F_a)	1.200[2]
Site Amplification Factor at 1.0 second period (F_v)	2.580
Design Spectral Acceleration at 0.2 second period (S_{DS})	0.810g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.611g
S_{D1}/S_{DS} (T_S)	0.75 seconds

Notes:

[1] Parameters developed based on Latitude 48.9312488° and Longitude -122.7457493° using the online ASCE 7 Hazard Tool.

[2] These values are only valid if the structural engineer utilizes Exception 1 and Exception 3 of Section 11.4.8 (ASCE 7-16).

[3] Soil Profile Type E Description: Soft Soil Profile (N<15).

4.1.4 Liquefaction Potential

Liquefaction is a phenomenon where soils experience a rapid loss of internal strength as a consequence of strong ground shaking. Ground settlement, lateral spreading, and/or sand boils may result from liquefaction. Structures supported on liquefied soils could suffer foundation settlement or lateral

movement that could be severely damaging to the structure. Conditions favorable to liquefaction occur in loose to medium dense, clean to moderately silty sand that is below the groundwater level. Dense soils or soils that exhibit cohesion are less likely to be susceptible to liquefaction.

The evaluation of liquefaction potential is complex and is dependent on numerous site parameters, including soil grain size, soil density, site geometry, static stresses, and the magnitude and ground acceleration of the design-level earthquake. Typically, the liquefaction potential of a site is evaluated by comparing the cyclic shear stress ratio (the ratio of the cyclic shear stress to the initial effective overburden stress) induced by an earthquake to the cyclic shear stress ratio required to cause liquefaction. The CPT data collected at the site was evaluated in accordance with Youd et al. (2001) methodology to estimate liquefaction potential of the saturated beach deposits underlying the site. Liquefaction-induced vertical settlement was estimated from CPT data based on the Boulanger & Idriss (2014) methodology. The cyclic shear stress ratio required to cause liquefaction was estimated using an empirical procedure based on the in-situ static ground stresses, the blow count data obtained during sampling in the borings, data from the CPT, and a design earthquake with a moment magnitude of 7.10 and a peak horizontal ground acceleration of 0.579g. The design earthquake parameters were developed using published hazard maps associated with an earthquake event that has a 2 percent chance of exceedance in a 50-year period (2,475-year event) as required by IBC.

The building is underlain by generally by loose to medium dense granular soils which have a moderate susceptibility to liquefaction overlying medium stiff cohesive soils, which are not considered susceptible to liquefaction. Our analysis indicates that the saturated granular near-shore deposits have a moderate to high potential for liquefaction during the design earthquake. The upper unsaturated fill that exists at the site will provide some separation between the foundation and the liquefaction zone. However, ground subsidence of the site and surrounding area will occur as a result of a large design earthquake. Sand boils and localized loss of ground support can also occur. We estimate liquefaction-induced settlement on the order of ½ to 2 inches during a design-level event. Differential settlement of ½ to ⅔ of the total settlement should be assumed over relatively short distances of 30 to 50 feet, or about ¼ to 1½ inches during a design event. The structural design should be evaluated to accommodate these effects to the extent required by code for remodels.

4.1.5 Lateral Spreading

Lateral spreading involves lateral displacements of large volumes of liquefied soil during an earthquake. In this environment, lateral spreading occurs as blocks of surface soils are displaced toward a nearby slope or free-face as a result of loss of strength of the underlying liquefied soil. Lateral spreading can also occur on moderately sloping ground as blocks of surface soils are displaced relative to adjacent blocks. Based on the relatively flat regional topography of the site, there is a low risk of lateral spreading hazard at the site.

4.2 FILL AND SETTLEMENT CONSIDERATIONS

The soft clay glaciomarine drift layer underlying the building will experience settlement resulting from any additional loads contributing from anticipated foundation and floor loads, as well as any new structural fill that will be imported. We evaluated the placement of the proposed 2 to 3½ feet of structural fill to fill in the basement to approximate surrounding ground level, utilizing the Settle3 Settlement and Consolidation Analysis software (version 5.023) developed by Rocscience Inc (2024). We estimate that the settlement

associated with the fill placement will be on the order of ½ inch or less. This limited magnitude of settlement is the result of previous net unloading that the in-situ soil experienced during original excavation of the basement, and recompression of the in-situ soil from the new backfill.

4.3 SHALLOW FOUNDATION DESIGN

Based on our explorations, and the concept of the proposed improvements, we recommend that any required new structural improvements be supported on conventional shallow spread footings that bear on a limited thickness of compacted structural fill overlying native soils. The structural engineer should confirm that the structure meets minimum code requirements for post-seismic performance with the previously described liquefaction potential and effects, and incorporate additional bearing area, reinforcing, or structural ties as necessary or required by code.

We recommend that individual column footings have minimum widths of 24 inches and are embedded a minimum of 18 inches below the lowest adjacent grade. We recommend that the footings be designed or evaluated using a maximum allowable soil bearing pressure of 1,500 psf for dead plus live loads. This bearing pressure can generally be increased by 1/3 for wind and seismic inertial effects; however, we recommend this bearing pressure not be increased for footings bearing 3 feet or greater below surrounding grade (e.g. basement footings) due to the underlying liquefiable soils that will experience a reduction in strength following an earthquake.

We recommend that the subgrade be prepared in accordance with the procedures described in Section 4.3.2 of this report and include a layer of compacted structural fill below the footings. The allowable soil bearing pressure includes potential strength reduction of deeper liquefiable layers and may be increased by one-third for transient seismic and wind loads.

4.3.1 Settlement

We estimate that the total settlement of spread footings (static condition) founded on compacted structural fill over the prepared subgrade will be on the order of ¾-inch with differential settlement limited to less than about ½-inch over 50 feet during static conditions. The majority of this settlement will occur rapidly as loads are applied. As discussed, post-seismic settlement resulting from liquefaction could be on the order of ½ to 2 inches with differential settlement on the order of ¼ to 1½ inch.

4.3.2 Building Footing Subgrade Preparation

We recommend all topsoil and sod be stripped from the surface prior to placement of structural fill. We understand that soil removal should be limited due to cultural resource considerations at the site and all excavation should comply with applicable restrictions. We also understand material stripped from the site is to remain on-site. We recommend that stripped material be placed below landscape areas and not below or used for the basement filling or building footings. Based on our explorations, removal of the surficial sod layer will generally expose existing granular fill soils. We understand that a portion of the existing structure has a basement. We recommend that the basement be backfilled with compacted structural fill or controlled density fill (CDF) as defined in this report.

We recommend that any new footings bear on a minimum of 12 inches of compacted structural fill placed over the prepared subgrade.

4.3.3 Lateral Resistance

Lateral loads can be resisted by passive resistance on the sides of the footings and by friction on the base of the footings. Passive resistance should be evaluated using an equivalent fluid density of 350 pounds per cubic foot (pcf) where footings are surrounded by structural fill compacted to at least 95 percent of MDD, as recommended. The value assumes that the soil in front of the foundation element is horizontal for a lateral distance equivalent to 2.5 times the depth of the element. Resistance to passive pressure should be calculated from the bottom of adjacent floor slabs and paving or below a depth of 1 foot where the adjacent area is unpaved, as appropriate. Frictional resistance can be evaluated using 0.35 for the coefficient of base friction against footings. The above values incorporate a factor of safety of about 1.5.

If soils adjacent to footings are disturbed during construction, the disturbed soils must be recompacted or replaced with compacted structural fill, otherwise the lateral passive resistance value must be reduced.

4.4 STORMWATER INFILTRATION CONSIDERATIONS

We understand that the stormwater will be managed by means of infiltration consisting of permeable pavements. The anticipated wet season high groundwater level is near the existing ground surface elevation. The infiltration facilities will be designed such that the necessary separation to groundwater for these shallow dispersed infiltration facilities can be maintained.

4.4.1 Sieve Infiltration Rate Determination Methods

The Washington State Department of Ecology (Ecology) 2019 Stormwater Management Manual for Western Washington (2019 SMMWW) provides guidelines for determining infiltration rates for stormwater systems. The SMMWW allows for use of grain size analyses as a substitute for pilot infiltration tests (PITs) on sites with soils unconsolidated by glacial advance. The alluvial soils and beach deposits at the site are interpreted to be unconsolidated by glacial processes.

The 2019 SMMWW provides a "Soil Grain Size Analysis Method" for correlation between grain-size distribution and design infiltration rate using an equation (Massman equation) presented in Volume V-5.4 of the manual. This method requires determining the grain sizes for which 10, 60 and 90 percent of the sample is finer (D_{10}, D_{60}, and D_{90}, respectively) and the percent fines (%F) in the soil sample. These grain-size parameters are used in the equation to determine an estimated short-term infiltration rate. Long-term infiltration rates are calculated using correction factors from Table V-5.1 of the 2019 SMMWW.

4.4.2 Infiltration Rate Determination Results

We completed grain-size analyses on representative samples of the existing near-surface fill soils at depths between 1 and 3½ feet bgs. Table 2 below presents short-term and factored long-term infiltration rates based on the Grain Size Analysis Method equation from the 2019 SMMWW.

TABLE 2. LABORATORY AND INFILTRATION RATE SUMMARY

EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	USCS SYMBOL	SHORT-TERM RATE BASED ON GRAIN SIZE[1] (IN/HR)	LONG-TERM RATE BASED ON GRAIN SIZE[1] AND CF=0.25[2] (IN/HR)
HA-1	0.5	GP-GM	24	5.2
HA-1	3.5	SP	90	19.4

HA-2	3	GP	66	14.3
HA-3	1	GP-GM	44	9.5
HA-3	3.2	GP	120	26
HA-4	1	SM	6	1.3
HA-4	2.5	GP-GM	17	5.5

Notes:

[1] Based on 2019 SMMWW Volume V-5.4

[2] CF based on following correction values: CF_v=0.7, CF_t=0.4, CF_m=0.9 (2019 SMMWW Table V-5.1).

4.4.3 Recommended Preliminary Infiltration Rate

Based on laboratory testing and the results of the soil grain size equation, we recommend a long-term infiltration rate of about 1.3 inches per hour for preliminary design of infiltration elements. We understand that the soils tested may become saturated during winter months and that the layers tested would be limiting layers during winter months. Infiltration facilities should be designed with an appropriate separation between the base of the facility and the seasonal high groundwater elevation (assumed to be approximately the existing ground surface at Elevation 14 feet [NAVD88]).

The 2019 SMMWW specifies that the base of most shallow infiltration facilities, including pervious pavement, provide 1 foot or greater of separation from the base of the facility to the seasonal high groundwater level.

4.4.4 Downstream Impacts of Stormwater Infiltration

Under existing conditions, we would anticipate that the majority stormwater runoff at the site infiltrates at the site. Under proposed conditions, site stormwater from impermeable surfaces would be conveyed to the infiltration trenches or through pervious pavements. It is our opinion that the proposed stormwater design will mimic existing conditions including the rate at which stormwater infiltrates into native soils. We anticipate that construction of the proposed stormwater system will not adversely increase stormwater and groundwater flow to adjacent downstream properties.

4.4.5 Cation Exchange Capacity and Organic Content

Laboratory testing for the project included submitting three representative samples be analyzed for Cation Exchange Capacity (CEC) per EPA Method 9080 and Organic Content per ASTM International (ASTM) D 2974. Test samples were taken from the fill layer in all hand auger explorations. The results of the analytical testing are presented in Table 3 below.

TABLE 3. RESULTS OF CATION EXCHANGE CAPACITY AND ORGANIC CONTENT TESTING

EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	USCS SYMBOL	CATION EXCHANGE CAPACITY, CEC (MEQ/100G)	ORGANIC CONTENT (%)
HA-1	0.5	GP-GM	8.96	7
HA-3	2.5	GP	4.11	3
HA-4	1	SM	10.6	4

The 2019 SMMWW requires that infiltration soils used for pollutant treatment have CEC values greater

than or equal to 5 milliequivalents CEC per 100 grams of dry soil and a minimum of one percent organic content (Volume V-5.6, Site Suitability Criteria 6). Based on laboratory testing, the fill soils in HA-3 and HA-4 met the organic content requirement and the CEC requirement. HA-3 has a CEC less than 5 meq/100g.

4.5 EARTHWORK

The site soils within the excavation depths anticipated for the project generally consist of existing granular fill soils with variable silt and gravel content. These soils are moisture sensitive and susceptible to disturbance by construction equipment during wet weather. If practical, the excavation to design subgrades should be performed during extended periods of dry weather. Exposed subgrades should not be left exposed to inclement weather. Earthwork costs will be significantly greater if performed during wet weather.

4.5.1 Temporary Erosion Control

The site soils have a high susceptibility to erosion when disturbed. Temporary erosion control measures should be used during construction depending on the water, location, soil type and other factors. Surface water should be prevented from flowing across disturbed areas and not directed toward slopes during construction. Temporary erosion protection (e.g., straw, plastic, or rolled erosion control products [RECPs]) may be necessary to reduce sediment transport until vegetation is established or permanent surfacing applied. Appropriate best management practices (BMPs) should be incorporated into the temporary erosion and sediment control plan by the civil engineer. We are available to provide input if requested.

All finished slopes should be protected and/or vegetated before the rainy season. Provided that proper grading practices are used and BMPs are incorporated into the grading plans, we conclude that the erosion hazard will be adequately mitigated during and after site development.

4.5.2 Excavation

The excavation for the proposed improvements will be limited to sod and existing fill removal (which must remain on-site) due to cultural resources considerations. Excavation can be completed using conventional earthwork equipment. The existing basement should be backfilled with compacted structural fill.

4.5.3 Temporary Slopes

Regardless of the soil type encountered in the excavation, either shoring, trench boxes or sloped sidewalls will be required for excavations deeper than 4 feet under Washington State Administrative Code (WAC) 296-155, Part N. We expect that the excavations will be made as open cuts in conjunction with the use of a trench box and/or sloped sidewalls for shielding workers. Based on our explorations, fill/disturbed soils at the site and native beach/alluvial deposits would be classified as “Type C” and require 1.5H:1V slopes.

The above regulations assume that surface loads such as construction equipment and storage loads will be kept a sufficient distance away from the top of the cut so that the stability of the excavation is not affected. Flatter slopes and/or shoring will be necessary for those portions of the excavations which are subjected to significant seepage in order to maintain the stability of the cut. It should be expected that unsupported cut slopes will experience some sloughing and raveling if exposed to surface water. Berms, hay bales or other provisions should be installed along the top of the excavation to intercept surface runoff to reduce the potential for sloughing and erosion of cut slopes during wet weather.

In our opinion, the contractor will be in the best position to observe subsurface conditions continuously throughout the construction process and to respond to the soil and groundwater conditions. Construction site safety is generally the sole responsibility of the contractor, who also is solely responsible for the means, methods, and sequencing of the construction operations and choices regarding temporary excavations and shoring. We are providing this information only as a service to our client. Under no circumstances should the information provided below be interpreted to mean that GeoEngineers is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

4.5.4 Subgrade Preparation

We recommend keeping construction equipment off the exposed subgrades as much as possible during the wet season or when the subgrade is wet.

Recommendations for preparation of foundation subgrades are described in Section 4.3.2 of this report. Prior to placement of structural fill, capillary break, or gravel base, we recommend that slab, pavement, or sidewalk subgrades be compacted to a firm condition and evaluated by a representative of GeoEngineers. The subgrade may also be proof-rolled with a loaded dump truck during dry weather at the direction of the Engineer.

Any soft, loose, pumping, or otherwise unsuitable areas should be repaired or removed and replaced with structural fill. The depth of overexcavation should be determined by the geotechnical engineer's representative. In slabs areas, overexcavation can typically be limited to 2 feet or less. Any overexcavation will require coordination with the cultural resources representative for the project.

4.5.5 Structural Fill

Structural fill materials should be free of debris, organic contaminants and rocks or rock fragments larger than 6 inches or one half the lift thickness, whichever is smaller. All fill placed beneath structures or pavement should be placed as structural fill. Structural fill should be placed in horizontal lifts and uniformly compacted. The appropriate lift thickness will depend on the material and the compaction equipment being used. Loose lift thicknesses of 8 to 10 inches are typical when using heavy self-propelled vibratory equipment. All excavations should be wide enough to accommodate the appropriate compaction equipment for the thickness of the fill.

4.5.5.1 SUITABILITY OF ON-SITE SOIL

Excavation of existing soils will be very limited due to cultural resource concerns. We recommend that structural fill consist of select import fill.

4.5.5.2 SELECT IMPORT FILL

We recommend using a select import fill for earthwork on this project site. The select import should consist of well-graded sand and gravel, with at least 30 percent retained on the U.S. No. 4 sieve and less than 5 percent passing the U.S. No. 200 sieve. The percentage passing the U.S. No. 200 sieve should be based on that fraction passing the U.S. No. ¾-inch sieve. Structural fill below pervious pavements should meet infiltration and water treatment requirements per SWMMWW.

4.5.5.3 CONTROLLED DENSITY FILL

The basement excavation could alternatively be backfilled with CDF, as self-compacting, cementitious, flowable material requiring no subsequent vibration or tamping to achieve consolidation. The CDF should meet the requirements of WSDOT Standard Specification 2-09.3(1)E.

4.5.5.4 FILL PLACEMENT AND COMPACTION CRITERIA

Structural fill should be mechanically compacted to a firm, non-yielding condition. Structural fill should be placed in loose lifts not exceeding 10 inches in loose thickness or that necessary to attain the specified compaction. Each lift should be conditioned to the proper moisture content and compacted to the specified density before placing subsequent lifts. Structural fill should be compacted to the following criteria:

- Structural fill placed in building areas (supporting foundations) should be compacted to at least 95 percent of the MDD estimated in accordance with ASTM D 1557.
- Structural fill placed in hardscape areas should be compacted to at least 90 percent of the same standard where 2 feet below the pavement subgrade, and 95 percent of the same standard in the top 2 feet.
- Fill in non-structural areas should be compacted to at least 85 percent MDD to limit excessive postconstruction settlement.

Sufficient earthwork monitoring and a sufficient number of in-place density tests should be performed to evaluate fill placement and compaction operations and to confirm that the required compaction is being achieved. We recommend that GeoEngineers be present during probing of the exposed subgrade soils in building areas and placement of structural fill. We will evaluate the adequacy of the subgrade soils and identify areas needing further work, perform in-place moisture-density tests in the fill to verify compliance with the compaction specifications, and advise on any modifications to the procedures, which may be appropriate for the prevailing conditions.

4.6 RECOMMENDED ADDITIONAL GEOTECHNICAL SERVICES

GeoEngineers should be retained to review the project plans and specifications when complete to confirm that our design recommendations have been implemented as intended. During construction, GeoEngineers should evaluate the suitability of the foundation subgrades, installation of subsurface drainage measures, evaluate structural backfill, and provide a summary letter of our construction observation services. The purposes of GeoEngineers construction phase services are to confirm that the subsurface conditions are consistent with those observed in the explorations and other reasons described in Appendix C, Report Limitations and Guidelines for Use.

5.0 Limitations

We have prepared this report for the exclusive use by Osborn Architects Inc., and their authorized agents for the proposed Birch Bay Vogt Community Library project located at 7968 Birch Bay Drive, in Blaine, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix C titled Report Limitations and Guidelines for Use for additional information pertaining to use of this report.

6.0 References

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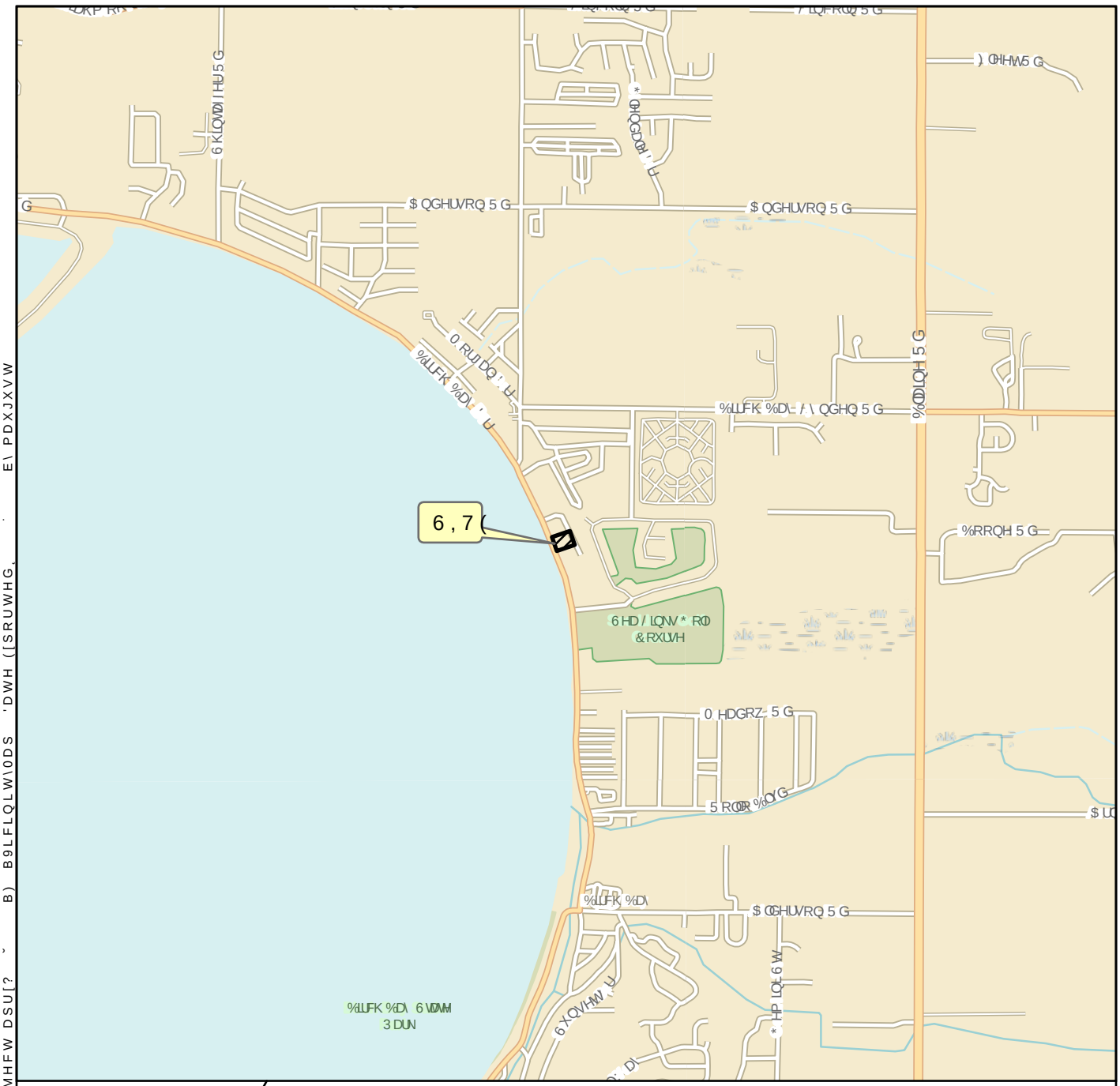
Figures



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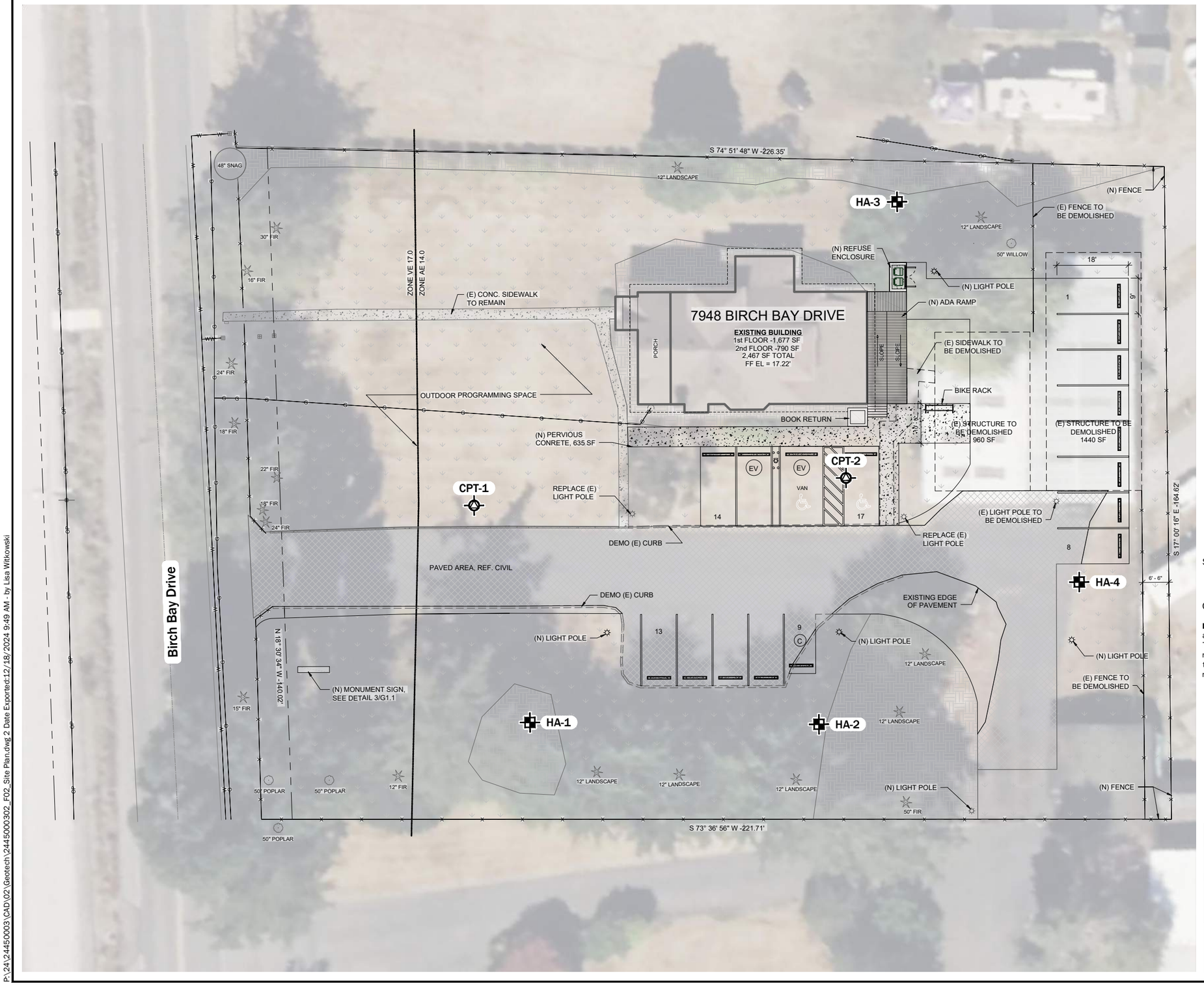

Legend

HA-1 — Hand Auger by GeoEngineers, 2020

CPT-1 — Cone Penetrometer Test by GeoEngineers, 2020

Source(s):

- Aerial from Bing
- Background from Osborn Architects, dated 11/04/2024

Coordinate System: Washington State Plane, North Zone, NAD83, US Foot

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

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Feet

Site and Exploration Plan

Birch Bay Vogt Community Library
Blaine, Washington

GeoEngineers

Figure 2

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Appendices

Appendix A
Field Explorations and Laboratory Testing

Appendix A
Field Explorations and Laboratory Testing

FIELD EXPLORATIONS

Geotechnical field explorations for this project consisted of hand augers and cone penetration tests, as detailed below.

Hand Explorations

GeoEngineers, Inc. (GeoEngineers) explored subsurface conditions at the site by completing four hand augers (HA-1 through HA-4) on July 27, 2020. The hand augers were completed by a representative of our firm. The approximate locations of the explorations are shown in the Site and Exploration Plan, Figure 2. The locations of the explorations were estimated by recreational grade global positioning system (GPS) and measuring to existing site features; therefore, the locations shown in Figure 2 should be considered accurate to the degree implied by the methods used.

Disturbed soil samples were obtained from hand auger explorations. The samples were placed in plastic bags to maintain the moisture content and transported back to our laboratory for analysis and testing. The hand auger holes were backfilled with the excavated material upon completion and tamped with hand tools.

The hand augers were completed by a geotechnical engineer from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration. Soils encountered were classified visually in general accordance with ASTM International (ASTM) Standard Practices Test Method D 2488-90, which is described in Figure A-1. An explanation of our exploration log symbols is also shown in Figure A-1.

The logs of the hand augers are presented in Figures A-2 through A-5. The exploration logs are based on our interpretation of the field and laboratory data and indicate the various types of soils encountered. They also indicate the depths at which these soils or their characteristics change, although the change might actually be gradual. If the change occurred between samples in the hand augers, it was interpreted.

Cone Penetration Tests

GeoEngineers explored subsurface conditions at the site by completing two cone penetration tests (CPT-1 and CPT-2) on July 27, 2020. The CPTs were completed using a rig subcontracted to GeoEngineers. The approximate locations of the explorations are shown in the Site and Exploration Plan, Figure 2. The locations of the explorations were estimated by recreational grade global positioning system (GPS) and measuring to existing site features; therefore, the locations shown in Figure 2 should be considered accurate to the degree implied by the methods used.

The CPT explorations measure the resistance encountered by 1½-inch-diameter rod as the cone at the end of the rod is pushed through the soil strata. The CPT specifically measures tip resistance, side friction, and pore water pressure encountered while the cone is pushed into the soil. As samples are not collected during the CPT explorations, the correlation between these parameters was used to infer a “soil behavior type” for classification of the various soils encountered. The CPT soundings were backfilled in general accordance

with procedures outlined by the Washington State Department of Ecology. The full CPT report prepared by our subcontractor, ConeTec, is presented in Appendix B.

LABORATORY TEST RESULTS

Soil samples obtained from the explorations were transported to our laboratory and examined to confirm or modify field classifications, as well as to evaluate index properties of the soil samples. Representative samples were selected for laboratory testing consisting of the determination of the moisture content and sieve analysis. The tests were performed in general accordance with test methods of ASTM or other applicable procedures.

Moisture Content Testing

The natural moisture contents of selected soil samples obtained from the exploratory borings were estimated in general accordance with ASTM D 2216 test procedures. The results from the moisture content determinations are displayed shown in the exploration logs in Appendix A in the column labeled "Moisture Content %" adjacent to the corresponding samples.

Percent Passing U.S. No. 200 Sieve

Selected samples were "washed" through the U.S. No. 200 mesh sieve to estimate the relative percentage of coarse- and fine-grained particles in the soil. The percent passing value represents the percentage by weight of the sample finer than the U.S. No. 200 sieve. These tests were conducted in general accordance with ASTM D 1140. The results from the percent fines estimations are displayed in the column labeled "Fines Content (%)" adjacent to the corresponding samples on the summary exploration logs.

Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 6913 to estimate the sample grain size distribution. The wet sieve analysis method was used to estimate the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted, classified in general accordance with the Unified Soil Classification System (USCS), and are presented in Figures A-6 and A-7.

Organic Content

Organic content testing was completed on three samples in accordance with ASTM D 2974. This test estimates the fraction of the soil (by mass) that consists of volatile, carbon-based compounds such as wood, plants or animal tissue in various stages of decomposition. The results of these tests are summarized in Table A-1 below and are presented in the remarks section on the exploration logs at their respective sample depths.

TABLE A-1. RESULTS OF ORGANIC CONTENT TESTING

EXPLORATION NUMBER	SAMPLE DEPTH (FT)	ORGANIC CONTENT (%)
HA-1	0.5	7
HA-3	2.5	3
HA-4	1	4

Cation Exchange Capacity (CEC)

Laboratory testing for the project included submitting three representative samples to be analyzed for CEC per EPA Method 9080. The results of the analytical testing are summarized in Table A-2 below.

TABLE A-2. RESULTS OF CATION EXCHANGE CAPACITY TESTING

EXPLORATION NUMBER	SAMPLE DEPTH (FT)	CATION EXCHANGE CAPACITY, CEC[1] (MEQ/100G)
HA-1	0.5	8.96
HA-3	2.5	4.11
HA-4	1	10.6

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

- Modified California Sampler (6-inch sleeve) or Dames & Moore
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab
- Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

- Measured groundwater level in exploration, well, or piezometer
- Measured free product in well or piezometer

Graphic Log Contact

- Distinct contact between soil strata
- Approximate contact between soil strata

Material Description Contact

- Contact between geologic units
- Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Date Excavated 7/27/2020	Total Depth (ft) 5	Logged By NBD Checked By AJH	Excavator GeoEngineers, Inc. Equipment Hand Auger	Groundwater not observed Caving not observed
Surface Elevation (ft) 9 Vertical Datum NAVD88		Easting (X) 1180638 Northing (Y) 710100	Coordinate System WA State Plane North Horizontal Datum NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
8	1		1 SA; CEC; OC		GP-GM	Brown fine to coarse gravel with silt, sand and rootlets (loose to medium dense, moist) (fill)	6	6	OC = 7%
7	2				SP	Brown fine to coarse sand with gravel and rootlets (loose to medium dense, moist)			
6	3		2 SA				2	2	
5	4		3 MC		SP-SM	Gray to light brown fine to medium sand with silt and occasional gravel (loose to medium dense, moist) (beach deposits)			
4	5								

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Topographic Survey.

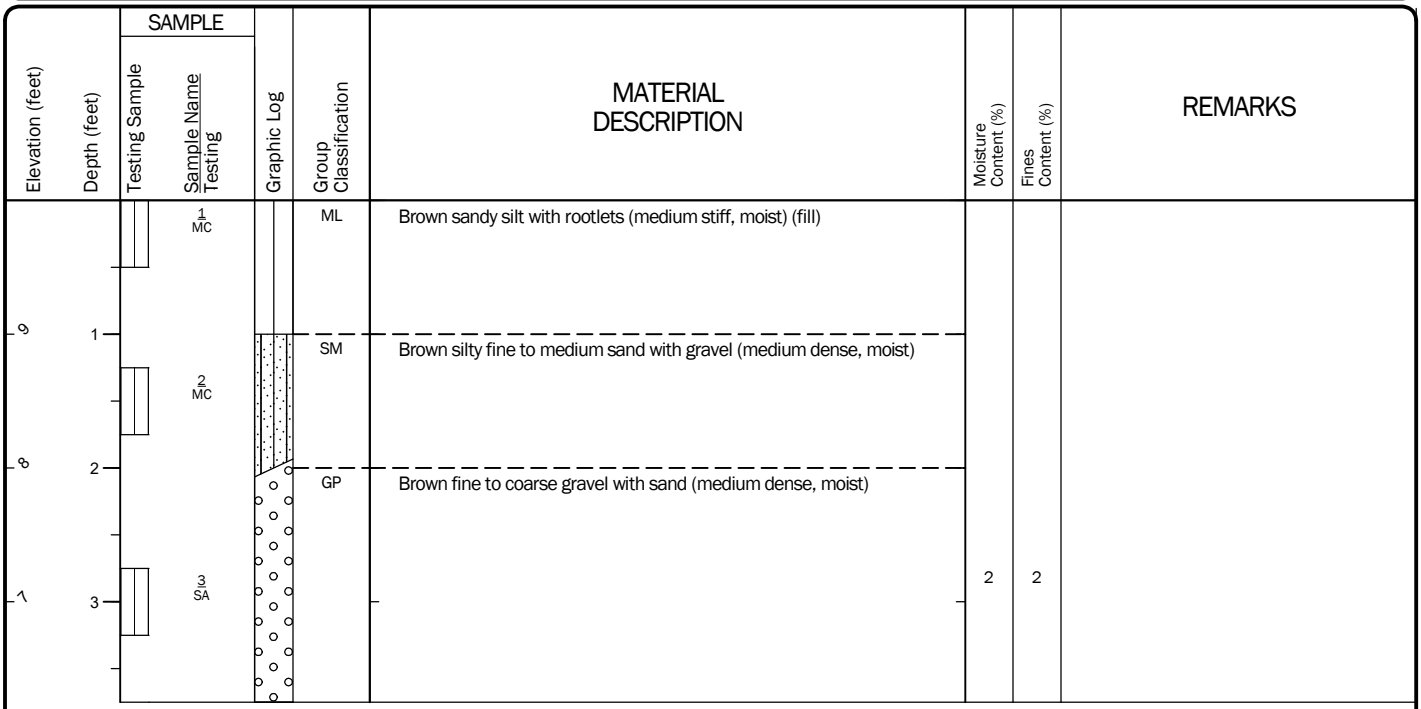
Log of Hand Auger HA-1

GeoEngineers

Project: Birch Bay Vogt Community Library
Project Location: Blaine, Washington
Project Number: 24450-003-02

Figure A-2
Sheet 1 of 1

Date Excavated 7/27/2020	Total Depth (ft) 3.75	Logged By NBD Checked By AJH	Excavator GeoEngineers, Inc. Equipment Hand Auger	Groundwater not observed Caving not observed
Surface Elevation (ft) 10 Vertical Datum NAVD88		Easting (X) 1180708 Northing (Y) 710122	Coordinate System WA State Plane North Horizontal Datum NAD83 (feet)	



Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Topographic Survey.

Log of Hand Auger HA-2

GeoEngineers

Project: Birch Bay Vogt Community Library
Project Location: Blaine, Washington
Project Number: 24450-003-02

Figure A-3
Sheet 1 of 1

Date Excavated	7/27/2020	Total Depth (ft)	5	Logged By NBD Checked By AJH	Excavator GeoEngineers, Inc. Equipment Hand Auger	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	10 NAVD88	Easting (X) Northing (Y)	1180688 710254	Coordinate System Horizontal Datum	WA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
9	1	1	SA		GP-GM	Dark brown fine to coarse gravel with silt, sand and rootlets (loose, moist) (fill)	7	5	
8	2	2	MC; CEC; OC		GP	Brown to gray fine to coarse gravel with sand (medium dense, moist)	4		OC = 3%
7	3	3	SA				4	2	
6	4	4	%F		SP	Brown to light brown fine to medium sand with gravel (medium dense, moist) (beach deposits)	3	2	
5	5								

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Topographic Survey.

Log of Hand Auger HA-3

GeoEngineers

Project: Birch Bay Vogt Community Library
Project Location: Blaine, Washington
Project Number: 24450-003-02

Figure A-4
Sheet 1 of 1

Date Excavated 7/27/2020	Total Depth (ft) 3.25	Logged By NBD Checked By AJH	Excavator GeoEngineers, Inc. Equipment Hand Auger	Groundwater not observed Caving not observed
Surface Elevation (ft) 10 Vertical Datum NAVD88		Easting (X) 1180760 Northing (Y) 710176	Coordinate System WA State Plane North Horizontal Datum NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
			1 MC		SM	Dark brown silty fine sand with gravel (medium dense, moist) (fill)	4		
9	1		2 SA; CEC; OC				10	15	OC = 4%
8	2		3 SA		GP-GM	Dark brown fine to coarse gravel with silt and sand (medium dense, moist)	6	6	
7	3					Practical refusal at 3¼ feet on gravel			

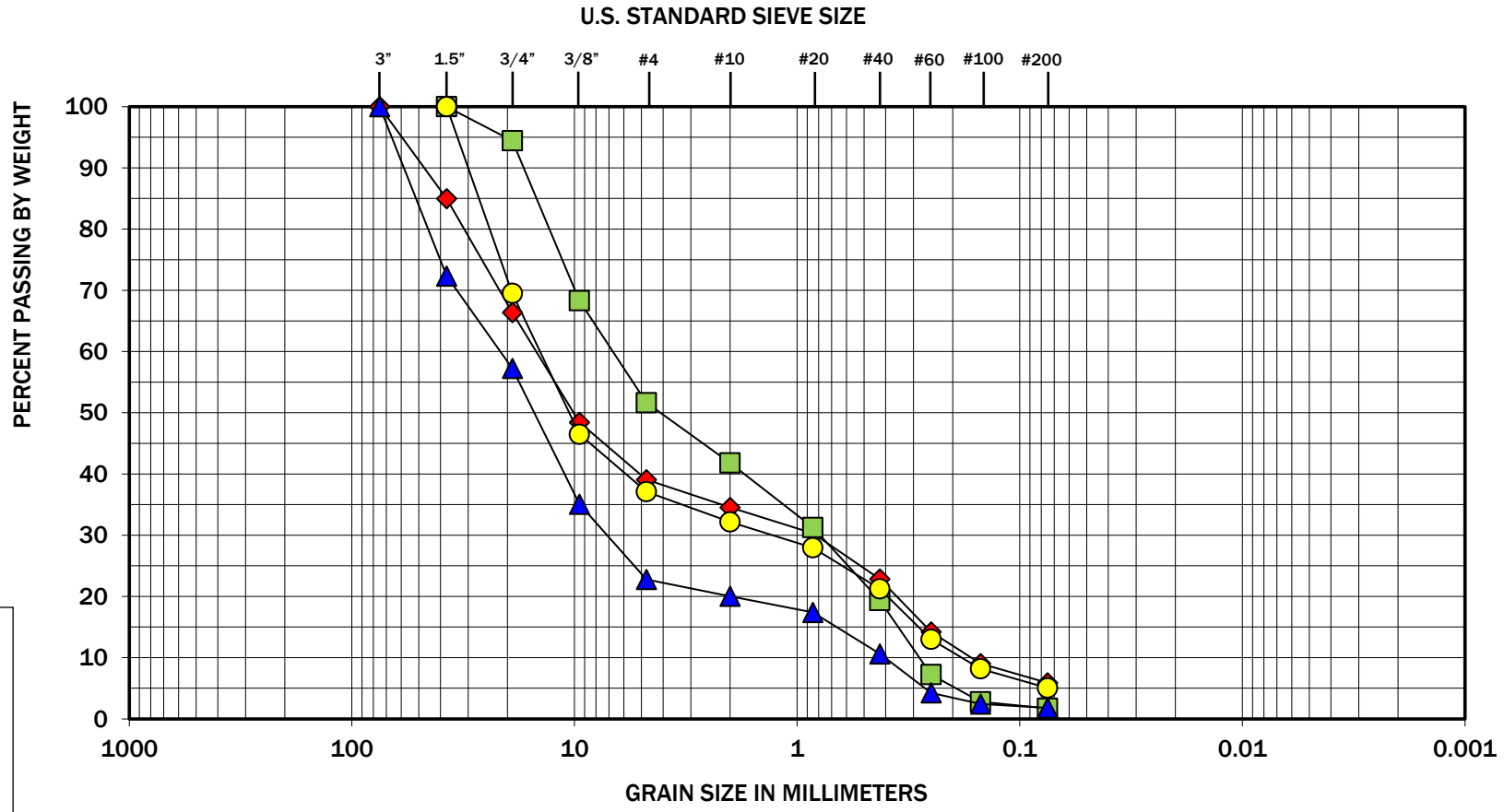
Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Topographic Survey.

Log of Hand Auger HA-4

GeoEngineers

Project: Birch Bay Vogt Community Library
Project Location: Blaine, Washington
Project Number: 24450-003-02

Figure A-5
Sheet 1 of 1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	HA-1	0.5	6	Fine to medium gravel with silt and sand (GP-GM)
■	HA-2	0.5	2	Fine to coarse sand with gravel (SP)
▲	HA-2	3	2	Fine to coarse gravel with sand (GP)
●	HA-3	1	7	Fine to coarse gravel with silt and sand (GP-SM)

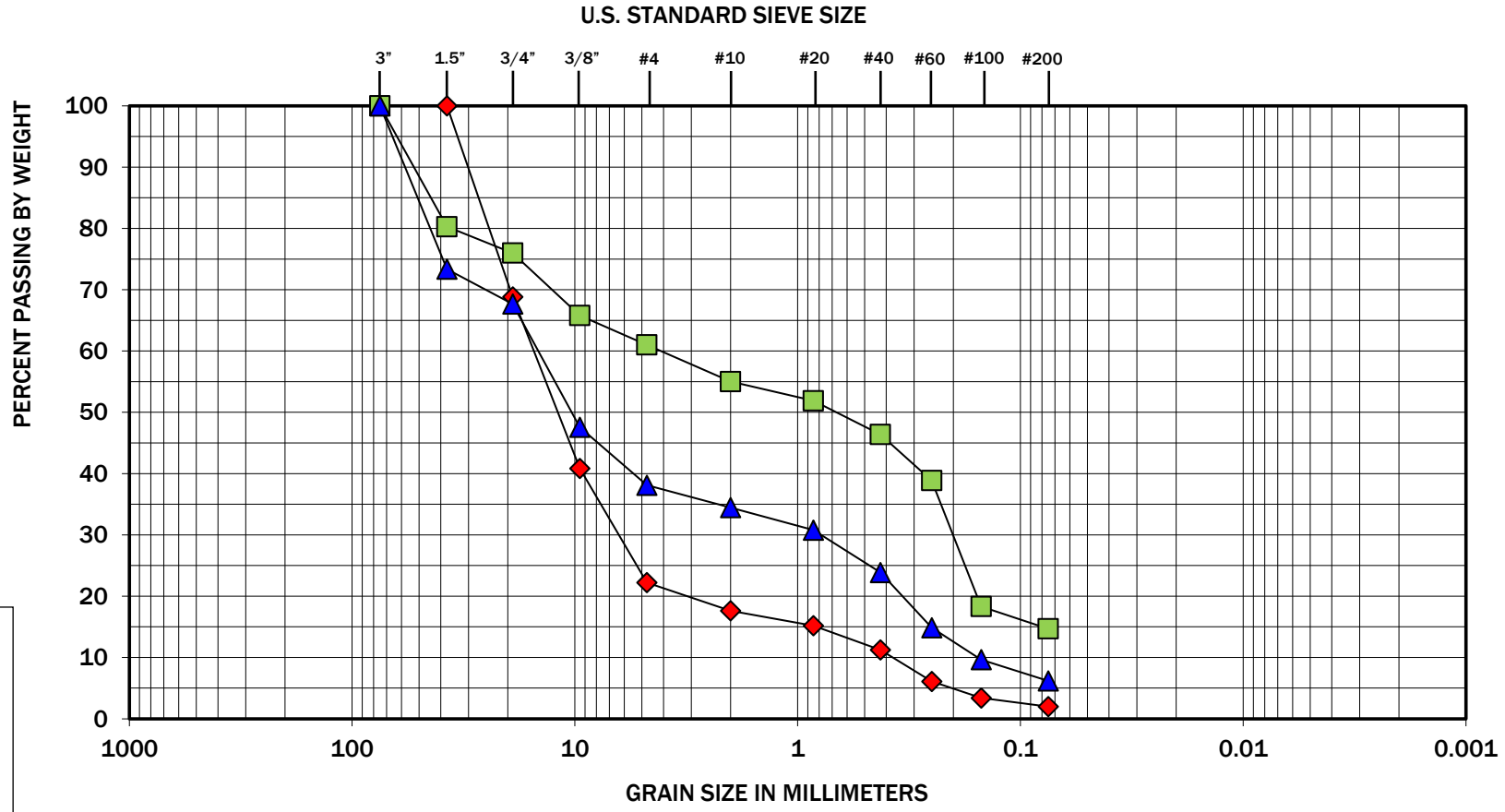
The grain size analysis results were obtained in general accordance with ASTM D 6913. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

GeoEngineers

Figure A-6

Birch Bay Vogt Community Library
Blaine, Washington

Sieve Analysis Results



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	HA-3	3.2	4	Fine to coarse gravel with sand (GP)
■	HA-4	1	10	Silty fine sand with gravel (SM)
▲	HA-4	2.5	6	Fine to coarse gravel with silt and sand (GP-GM)

The grain size analysis results were obtained in general accordance with ASTM D 6913. GeoEngineers 17425 NE Union Hill Road Ste 250, Redmond, WA 98052

Sieve Analysis Results

Birch Bay Vogt Community Library
Blaine, Washington

GeoEngineers

Figure A-7

Appendix B
Cone Penetration Test Exploration Report

PRESENTATION OF SITE INVESTIGATION RESULTS

Birch Bay Library.

Prepared for:

GeoEngineers, Inc.

ConeTec Job No: 20-59-20666

Project Start Date: 27-JUL-2020
Project End Date: 27-JUL-2020
Report Date: 30-JUL-2020

Prepared by:

ConeTec Inc.
1508 O Street SW, Unit 103-104
Auburn, WA 98001

Tel: (253) 397-4861

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www.conetecdataservices.com

Introduction

The enclosed report presents the results of the site investigation program conducted by ConeTec Inc. for GeoEngineers, Inc. at 7968 Birch Bay Dr., Blaine, WA 98230. The program consisted of cone penetration tests.

Project Information

Project	
Client	GeoEngineers, Inc.
Project	Birch Bay Library
ConeTec project number	20-59-20666

An aerial overview from Google Earth including the CPTu test locations is presented below.

Rig Description	Deployment System	Test Type
C05-023_20Ton Track Rig	Integrated Push Cylinders	CPTu

Coordinates		
Test Type	Collection Method	EPSG Number
CPTu	Consumer grade GPS	4326

Cone Penetrometers Used for this Project						
Cone Description	Cone Number	Cross Sectional Area (cm^2)	Sleeve Area (cm^2)	Tip Capacity (bar)	Sleeve Capacity (bar)	Pore Pressure Capacity (bar)
528:T1500F15U35	528	15	225	1500	15	35
Cone 528 was used for all CPTu soundings						

Cone Penetration Test (CPTu)	
Depth reference	Depths are referenced to the existing ground surface at the time of each test.
Tip and sleeve data offset	0.1 meter This has been accounted for in the CPT data files.
Additional plots	• Advanced plots with Ic, Su, phi and N(60)/N1(60) • Soil Behaviour Type (SBT) scatter plots

Calculated Geotechnical Parameter Tables	
Additional information	The Normalized Soil Behaviour Type Chart based on Q_{tn} (SBT Q_{tn}) (Robertson, 2009) was used to classify the soil for this project. A detailed set of calculated CPTu parameters have been generated and are provided in Excel format files in the release folder. The CPTu parameter calculations are based on values of corrected tip resistance (q_t) sleeve friction (f_s) and pore pressure (u_2). Effective stresses are calculated based on unit weights that have been assigned to the individual soil behaviour type zones and the assumed equilibrium pore pressure profile. Soils were classified as either drained or undrained based on the Q_{tn} Normalized Soil Behaviour Type Chart (Robertson, 2009). Calculations for both drained and undrained parameters were included for materials that classified as silt mixtures (zone 4).

Limitations

This report has been prepared for the exclusive use of GeoEngineers, Inc. (Client) for the project titled "Birch Bay Library". The report's contents may not be relied upon by any other party without the express written permission of ConeTec Inc. (ConeTec). ConeTec has provided site investigation services, prepared the factual data reporting and provided geotechnical parameter calculations consistent with current best practices. No other warranty, expressed or implied, is made.

The information presented in the report document and the accompanying data set pertain to the specific project, site conditions and objectives described to ConeTec by the Client. In order to properly understand the factual data, assumptions and calculations, reference must be made to the documents provided and their accompanying data sets, in their entirety.

Cone penetration tests (CPTu) are conducted using an integrated electronic piezocone penetrometer and data acquisition system manufactured by Adara Systems Ltd., a subsidiary of ConeTec.

ConeTec's piezocone penetrometers are compression type designs in which the tip and friction sleeve load cells are independent and have separate load capacities. The piezocones use strain gauged load cells for tip and sleeve friction and a strain gauged diaphragm type transducer for recording pore pressure. The piezocones also have a platinum resistive temperature device (RTD) for monitoring the temperature of the sensors, an accelerometer type dual axis inclinometer and two geophone sensors for recording seismic signals. All signals are amplified and measured with minimum sixteen-bit resolution down hole within the cone body, and the signals are sent to the surface using a high bandwidth, error corrected digital interface through a shielded cable.

ConeTec penetrometers are manufactured with various tip, friction and pore pressure capacities in both 10 cm^2 and 15 cm^2 tip base area configurations in order to maximize signal resolution for various soil conditions. The specific piezocone used for each test is described in the CPT summary table presented in the first appendix. The 15 cm^2 penetrometers do not require friction reducers as they have a diameter larger than the deployment rods. The 10 cm^2 piezocones use a friction reducer consisting of a rod adapter extension behind the main cone body with an enlarged cross sectional area (typically 44 millimeters diameter over a length of 32 millimeters with tapered leading and trailing edges) located at a distance of 585 millimeters above the cone tip.

The penetrometers are designed with equal end area friction sleeves, a net end area ratio of 0.8 and cone tips with a 60 degree apex angle.

All ConeTec piezocones can record pore pressure at various locations. Unless otherwise noted, the pore pressure filter is located directly behind the cone tip in the "u_2" position (ASTM Type 2). The filter is six millimeters thick, made of porous plastic (polyethylene) having an average pore size of 125 microns (90-160 microns). The function of the filter is to allow rapid movements of extremely small volumes of water needed to activate the pressure transducer while preventing soil ingress or blockage.

The piezocone penetrometers are manufactured with dimensions, tolerances and sensor characteristics that are in general accordance with the current ASTM D5778 standard. ConeTec's calibration criteria also meets or exceeds those of the current ASTM D5778 standard. An illustration of the piezocone penetrometer is presented in Figure CPTu.

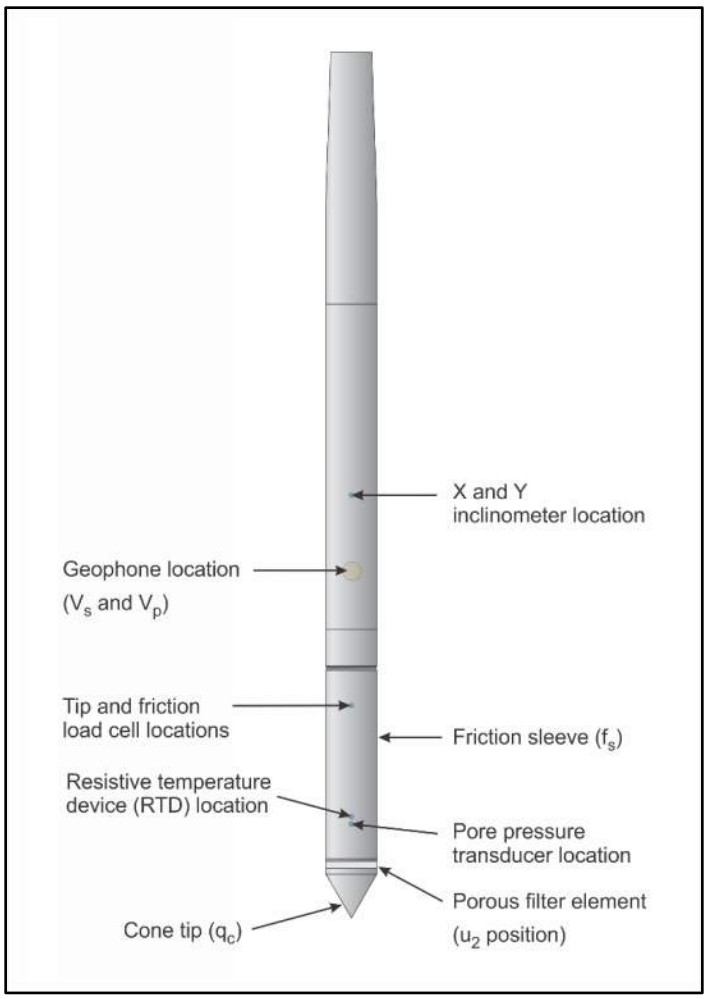


Figure CPTu. Piezocone Penetrometer (15 cm^2)

The ConeTec data acquisition systems consist of a Windows based computer and a signal interface box and power supply. The signal interface combines depth increment signals, seismic trigger signals and the downhole digital data. This combined data is then sent to the Windows based computer for collection and presentation. The data is recorded at fixed depth increments using a depth wheel attached to the push cylinders or by using a spring loaded rubber depth wheel that is held against the cone rods. The typical recording interval is 2.5 centimeters; custom recording intervals are possible.

The system displays the CPTu data in real time and records the following parameters to a storage media during penetration:

- Depth
- Uncorrected tip resistance (q_c)
- Sleeve friction (f_s)
- Dynamic pore pressure (u)
- Additional sensors such as resistivity, passive gamma, ultra violet induced fluorescence, if applicable

All testing is performed in accordance to ConeTec's CPTu operating procedures which are in general accordance with the current ASTM D5778 standard.

Prior to the start of a CPTu sounding a suitable cone is selected, the cone and data acquisition system are powered on, the pore pressure system is saturated with silicone oil and the baseline readings are recorded with the cone hanging freely in a vertical position.

The CPTu is conducted at a steady rate of two centimeters per second, within acceptable tolerances. Typically one meter length rods with an outer diameter of 1.5 inches (38.1 millimeters) are added to advance the cone to the sounding termination depth. After cone retraction final baselines are recorded.

Additional information pertaining to ConeTec's cone penetration testing procedures:

- Each filter is saturated in silicone oil under vacuum pressure prior to use
- Baseline readings are compared to previous readings
- Soundings are terminated at the client's target depth or at a depth where an obstruction is encountered, excessive rod flex occurs, excessive inclination occurs, equipment damage is likely to take place, or a dangerous working environment arises
- Differences between initial and final baselines are calculated to ensure zero load offsets have not occurred and to ensure compliance with ASTM standards

The interpretation of piezocone data for this report is based on the corrected tip resistance (q_t), sleeve friction (f_s) and pore water pressure (u). The interpretation of soil type is based on the correlations developed by Robertson et al. (1986) and Robertson (1990, 2009). It should be noted that it is not always possible to accurately identify a soil behavior type based on these parameters. In these situations, experience, judgment and an assessment of other parameters may be used to infer soil behavior type.

The recorded tip resistance (q_c) is the total force acting on the piezocone tip divided by its base area. The tip resistance is corrected for pore pressure effects and termed corrected tip resistance (q_t) according to the following expression presented in Robertson et al. (1986):

$$q_t = q_c + (1\text{-}a) \bullet u_2$$

where: q_t is the corrected tip resistance
q_c is the recorded tip resistance
u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)
a is the Net Area Ratio for the piezocone (0.8 for ConeTec probes)

The sleeve friction (f_s) is the frictional force on the sleeve divided by its surface area. As all ConeTec piezocones have equal end area friction sleeves, pore pressure corrections to the sleeve data are not required.

The dynamic pore pressure (u) is a measure of the pore pressures generated during cone penetration. To record equilibrium pore pressure, the penetration must be stopped to allow the dynamic pore pressures to stabilize. The rate at which this occurs is predominantly a function of the permeability of the soil and the diameter of the cone.

The friction ratio (R_f) is a calculated parameter. It is defined as the ratio of sleeve friction to the tip resistance expressed as a percentage. Generally, saturated cohesive soils have low tip resistance, high friction ratios and generate large excess pore water pressures. Cohesionless soils have higher tip resistances, lower friction ratios and do not generate significant excess pore water pressure.

A summary of the CPTu soundings along with test details and individual plots are provided in the appendices. A set of files with calculated geotechnical parameters were generated for each sounding based on published correlations and are provided in Excel format in the data release folder. Information regarding the methods used is also included in the data release folder.

For additional information on CPTu interpretations and calculated geotechnical parameters, refer to Robertson et al. (1986), Lunne et al. (1997), Robertson (2009), Mayne (2013, 2014) and Mayne and Peuchen (2012).

The cone penetration test is halted at specific depths to carry out pore pressure dissipation (PPD) tests, shown in Figure PPD-1. For each dissipation test the cone and rods are decoupled from the rig and the data acquisition system measures and records the variation of the pore pressure (u) with time (t).

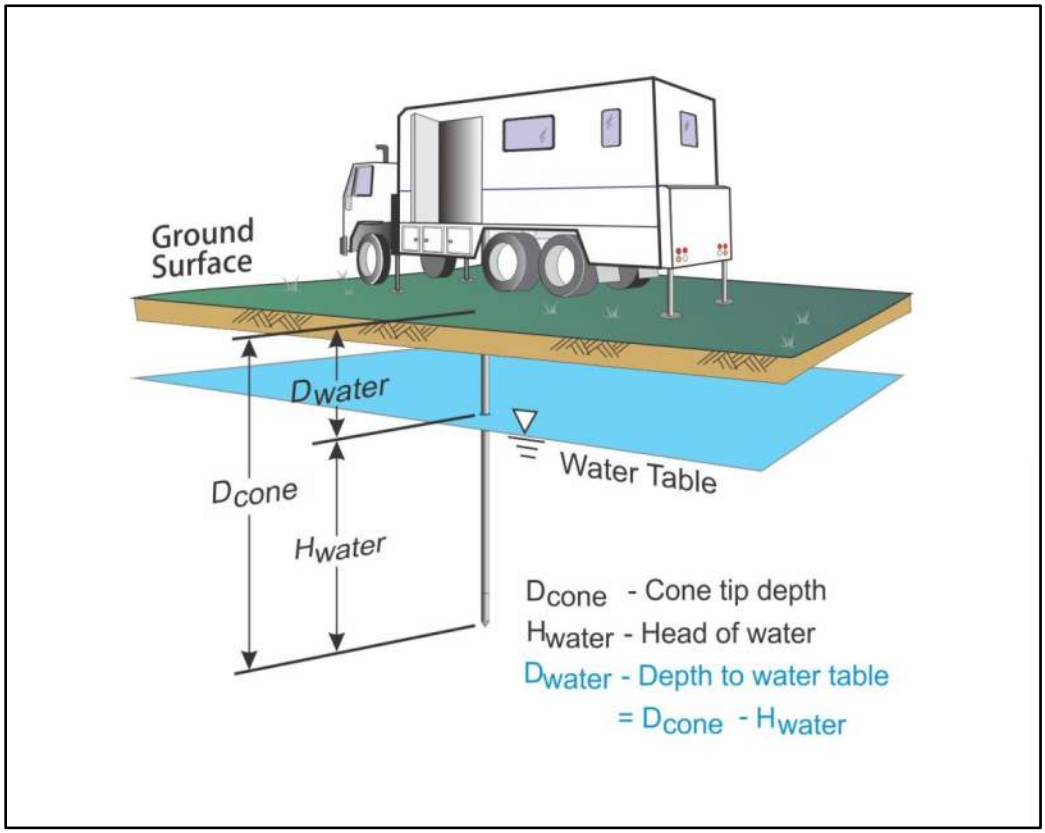


Figure PPD-1. Pore pressure dissipation test setup

Pore pressure dissipation data can be interpreted to provide estimates of ground water conditions, permeability, consolidation characteristics and soil behavior.

The typical shapes of dissipation curves shown in Figure PPD-2 are very useful in assessing soil type, drainage, in situ pore pressure and soil properties. A flat curve that stabilizes quickly is typical of a freely draining sand. Undrained soils such as clays will typically show positive excess pore pressure and have long dissipation times. Dilative soils will often exhibit dynamic pore pressures below equilibrium that then rise over time. Overconsolidated fine-grained soils will often exhibit an initial dilatory response where there is an initial rise in pore pressure before reaching a peak and dissipating.

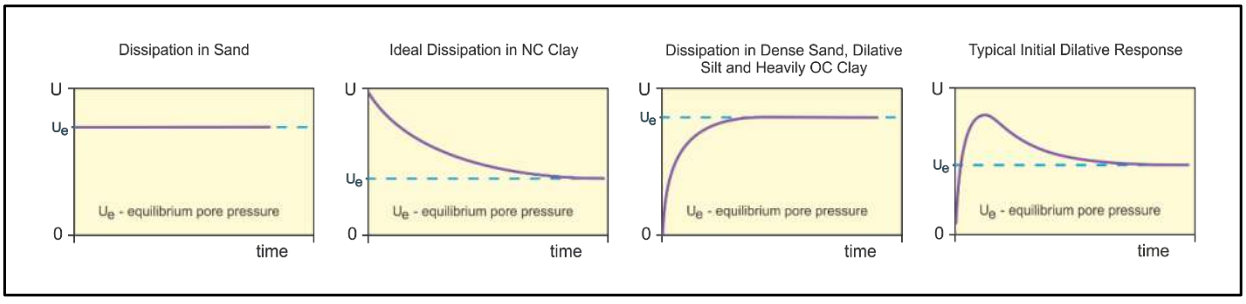


Figure PPD-2. Pore pressure dissipation curve examples

In order to interpret the equilibrium pore pressure (u_{eq}) and the apparent phreatic surface, the pore pressure should be monitored until such time as there is no variation in pore pressure with time as shown for each curve in Figure PPD-2.

In fine grained deposits the point at which 100% of the excess pore pressure has dissipated is known as t_{100}. In some cases this can take an excessive amount of time and it may be impractical to take the dissipation to t_{100}. A theoretical analysis of pore pressure dissipations by Teh and Houlsby (1991) showed that a single curve relating degree of dissipation versus theoretical time factor (T*) may be used to calculate the coefficient of consolidation (c_h) at various degrees of dissipation resulting in the expression for c_h shown below.

$$c_h = \frac{T^* \cdot a^2 \cdot \sqrt{I_r}}{t}$$

Where:
T* is the dimensionless time factor (Table Time Factor)
a is the radius of the cone
I_r is the rigidity index
t is the time at the degree of consolidation

Table Time Factor. T* versus degree of dissipation (Teh and Houlsby (1991))

Degree of Dissipation (%)	20	30	40	50	60	70	80
T* (u_2)	0.038	0.078	0.142	0.245	0.439	0.804	1.60

The coefficient of consolidation is typically analyzed using the time (t_{50}) corresponding to a degree of dissipation of 50% (u_{50}). In order to determine t_{50}, dissipation tests must be taken to a pressure less than u_{50}. The u_{50} value is half way between the initial maximum pore pressure and the equilibrium pore pressure value, known as u_{100}. To estimate u_{50}, both the initial maximum pore pressure and u_{100} must be known or estimated. Other degrees of dissipations may be considered, particularly for extremely long dissipations.

At any specific degree of dissipation the equilibrium pore pressure (u at t_{100}) must be estimated at the depth of interest. The equilibrium value may be determined from one or more sources such as measuring the value directly (u_{100}), estimating it from other dissipations in the same profile, estimating the phreatic surface and assuming hydrostatic conditions, from nearby soundings, from client provided information, from site observations and/or past experience, or from other site instrumentation.

For calculations of c_h (Teh and Houlsby (1991)), t_{50} values are estimated from the corresponding pore pressure dissipation curve and a rigidity index (I_r) is assumed. For curves having an initial dilatory response in which an initial rise in pore pressure occurs before reaching a peak, the relative time from the peak value is used in determining t_{50}. In cases where the time to peak is excessive, t_{50} values are not calculated.

Due to possible inherent uncertainties in estimating I_r, the equilibrium pore pressure and the effect of an initial dilatory response on calculating t_{50}, other methods should be applied to confirm the results for c_h.

Additional published methods for estimating the coefficient of consolidation from a piezocone test are described in Burns and Mayne (1998, 2002), Jones and Van Zyl (1981), Robertson et al. (1992) and Sully et al. (1999).

A summary of the pore pressure dissipation tests and dissipation plots are presented in the relevant appendix.

ASTM D5778-12, 2012, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils", ASTM International, West Conshohocken, PA. DOI: 10.1520/D5778-12.

Burns, S.E. and Mayne, P.W., 1998, "Monotonic and dilatory pore pressure decay during piezocone tests", Canadian Geotechnical Journal 26 (4): 1063-1073. DOI: 1063-1073/T98-062.

Burns, S.E. and Mayne, P.W., 2002, "Analytical cavity expansion-critical state model cone dissipation in fine-grained soils", Soils & Foundations, Vol. 42(2): 131-137.

Jones, G.A. and Van Zyl, D.J.A., 1981, "The piezometer probe: a useful investigation tool", Proceedings, 10th International Conference on Soil Mechanics and Foundation Engineering, Vol. 3, Stockholm: 489-495.

Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, "Cone Penetration Testing in Geotechnical Practice", Blackie Academic and Professional.

Mayne, P.W., 2013, "Evaluating yield stress of soils from laboratory consolidation and in-situ cone penetration tests", Sound Geotechnical Research to Practice (Holtz Volume) GSP 230, ASCE, Reston/VA: 406-420. DOI: 10.1061/9780784412770.027.

Mayne, P.W. and Peuchen, J., 2012, "Unit weight trends with cone resistance in soft to firm clays", Geotechnical and Geophysical Site Characterization *4,* Vol. 1 (Proc. ISC-4, Pernambuco), CRC Press, London: 903-910.

Mayne, P.W., 2014, "Interpretation of geotechnical parameters from seismic piezocone tests", CPT'14 Keynote Address, Las Vegas, NV, May 2014.

Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.

Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27: 151-158. DOI: 10.1139/T90-014.

Robertson, P.K., Sully, J.P., Woeller, D.J., Lunne, T., Powell, J.J.M. and Gillespie, D.G., 1992, "Estimating coefficient of consolidation from piezocone tests", Canadian Geotechnical Journal, 29(4): 539-550. DOI: 10.1139/T92-061.

Robertson, P.K., 2009, "Interpretation of cone penetration tests – a unified approach", Canadian Geotechnical Journal, Volume 46: 1337-1355. DOI: 10.1139/T09-065.

Sully, J.P., Robertson, P.K., Campanella, R.G. and Woeller, D.J., 1999, "An approach to evaluation of field CPTU dissipation data in overconsolidated fine-grained soils", Canadian Geotechnical Journal, 36(2): 369-381. DOI: 10.1139/T98-105.

Teh, C.I., and Houlsby, G.T., 1991, "An analytical study of the cone penetration test in clay", Geotechnique, 41(1): 17-34. DOI: 10.1680/geot.1991.41.1.17.

The appendices listed below are included in the report:

- Cone Penetration Test Summary and Standard Cone Penetration Test Plots
- Advanced Cone Penetration Test Plots with Ic, Su(Nkt), Phi and N(60)Ic/N1(60)Ic
- Soil Behavior Type (SBT) Scatter Plots
- Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

Cone Penetration Test Summary and Standard Cone Penetration Test Plots

CONETEC

Job No:	20-59-20666
Client:	GeoEngineers, Inc.
Project:	Birch Bay Library
Start Date:	27-Jul-2020
End Date:	27-Jul-2020

CONE PENETRATION TEST SUMMARY

Sounding ID	File Name	Date	Cone	Assumed Phreatic Surface[1] (ft)	Final Depth (ft)	Latitude[3] (deg)	Longitude[3] (deg)
CPT-01	20-59-20666_CP01	27-Jul-2020	528: T1500F15U35	5.3	31.0	48.93102	-122.74612
CPT-02	20-59-20666_CP02	27-Jul-2020	528: T1500F15U35	5.3	30.2	48.93112	-112.74580
Totals	2 soundings				61.2		

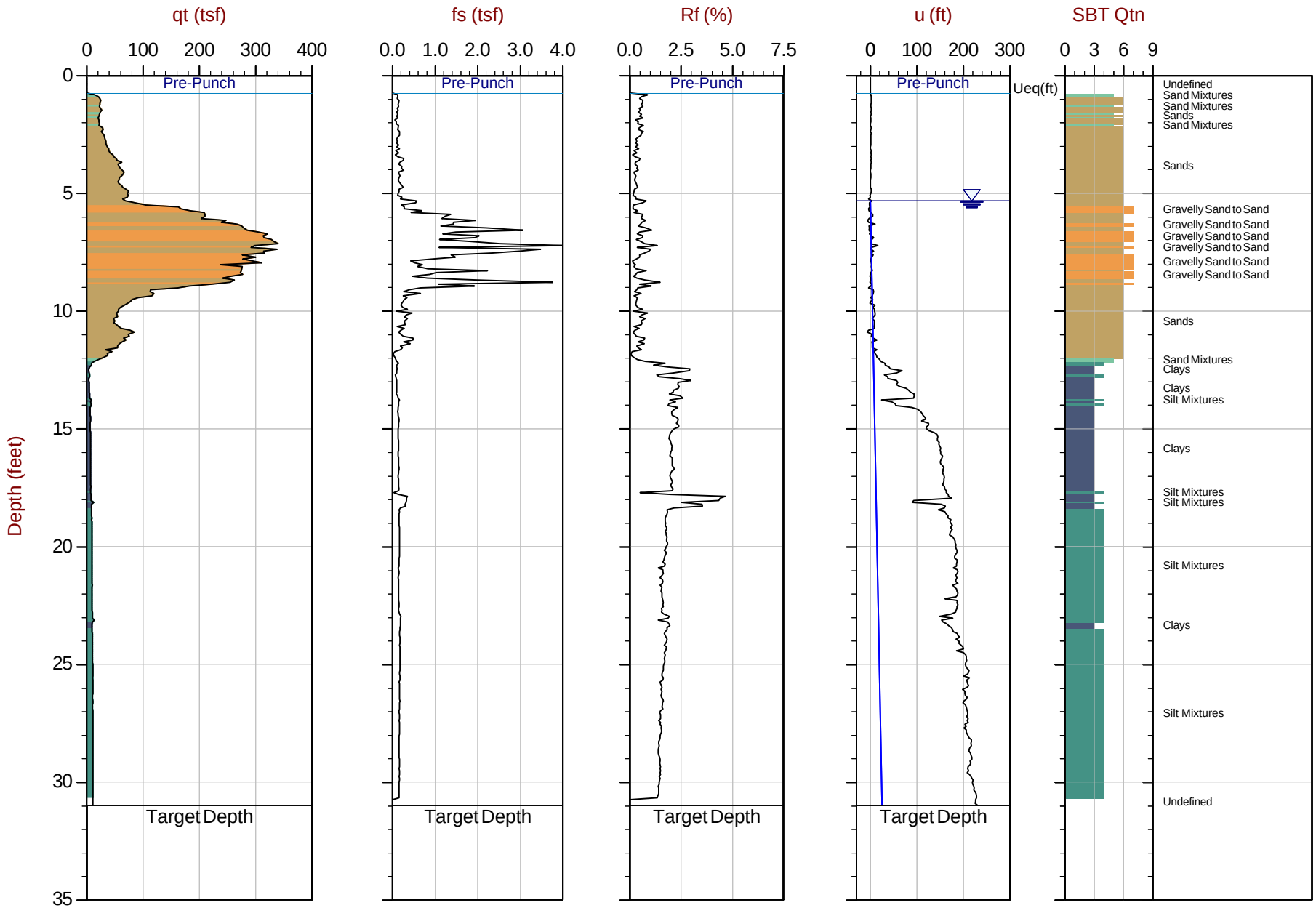
1. Phreatic surface based on pore pressure dissipation test unless otherwise noted.
2. Phreatic surface for CPT-01 was inferred from CPT-02: Hydrostatic profile applied to interpretation tables
3. Coordinates were collected using a handheld GPS - WGS 84 Lat/Long

CONETEC

GeoEngineers, Inc.

Job No: 20-59-20666
Date: 2020-07-27 09:57
Site: Birch Bay Library

Sounding: CPT-01
Cone: 528:T1500F15U35



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-59-20666_CP01.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.93102 Long: -122.74612

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

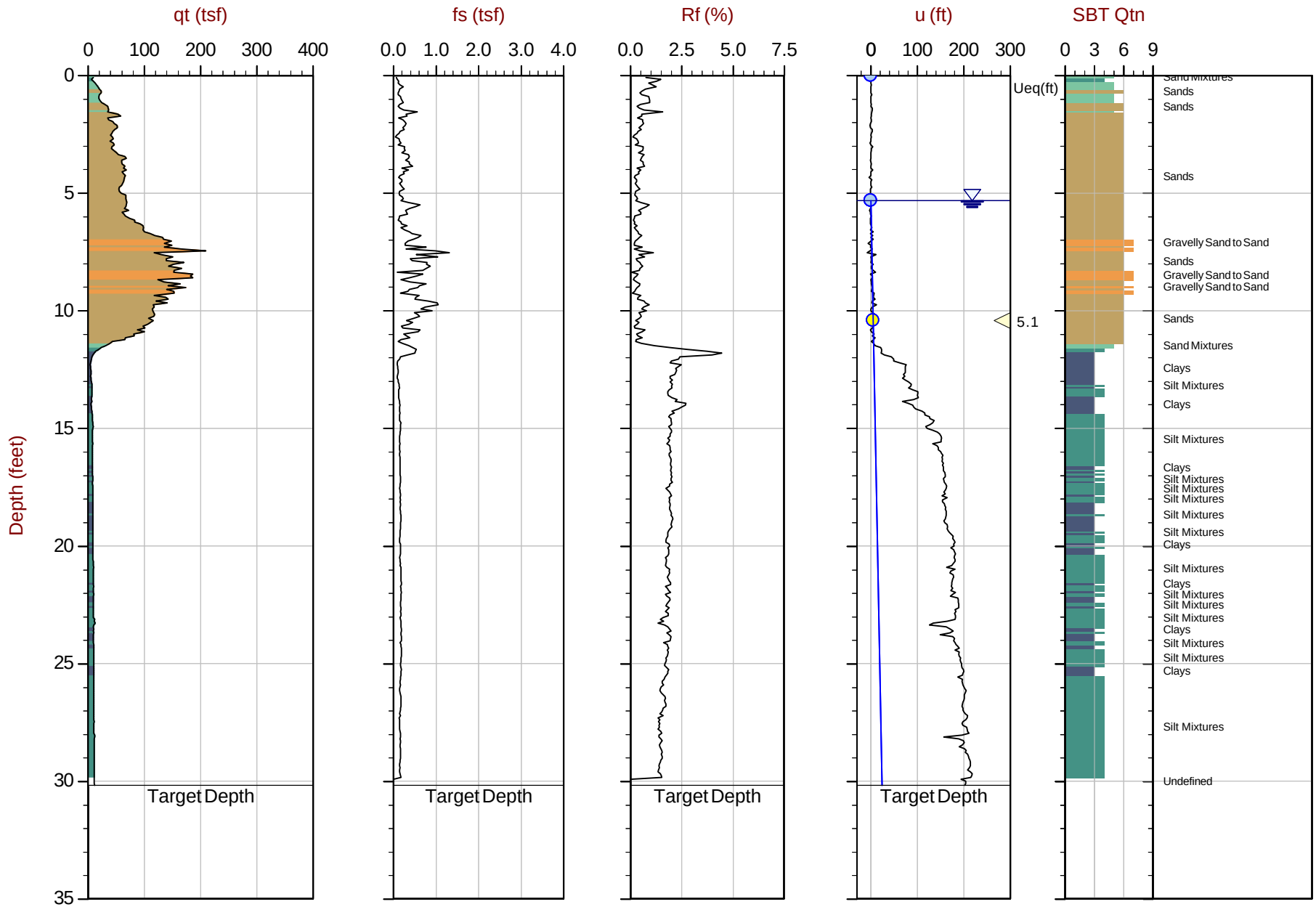
The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

GeoEngineers, Inc.

Job No: 20-59-20666
Date: 2020-07-27 10:51
Site: Birch Bay Library

Sounding: CPT-02
Cone: 528:T1500F15U35



Max Depth: 9.200 m / 30.18 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-59-20666_CP02.COR
Unit Wt: SBTQtn (PKR2009)

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.93112 Long: -122.74580

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Advanced Cone Penetration Test Plots with Ic, Su, Phi and N(60)/N1(60)

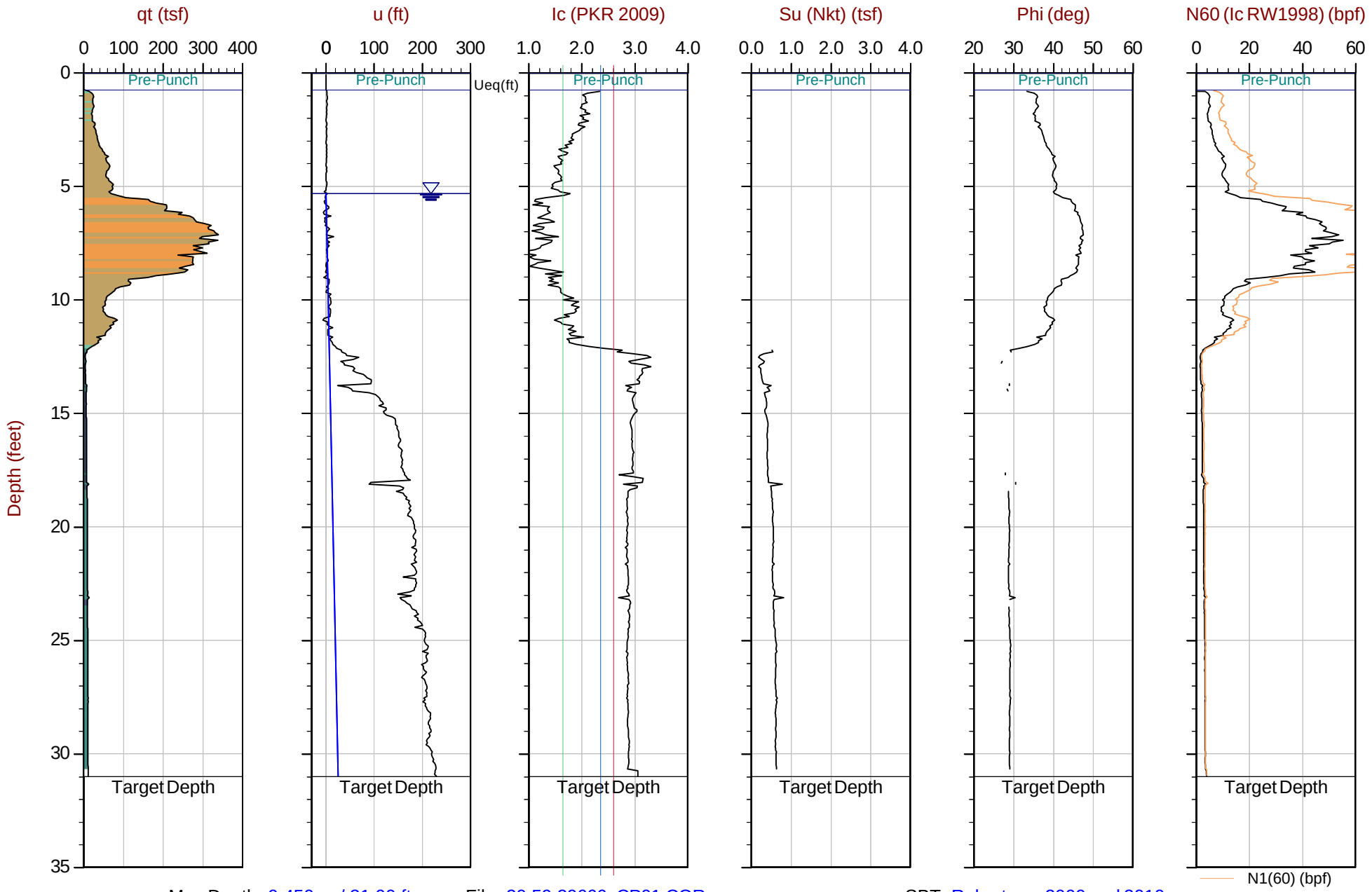
CONETEC

CONETEC

GeoEngineers, Inc.

Job No: 20-59-20666
Date: 2020-07-27 09:57
Site: Birch Bay Library

Sounding: CPT-01
Cone: 528:T1500F15U35



Max Depth: 9.450 m / 31.00 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-59-20666_CP01.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.93102 Long: -122.74612

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

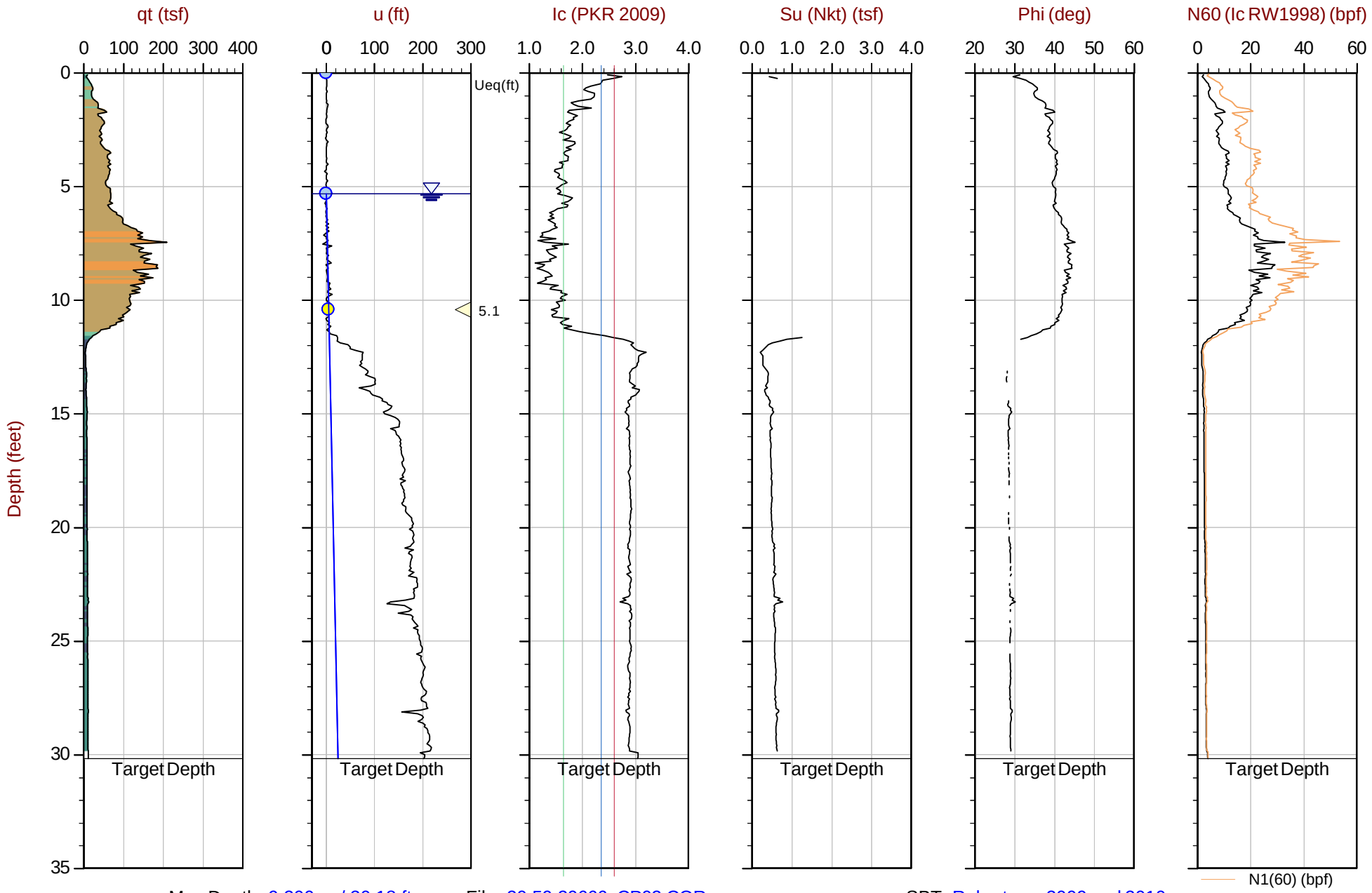
The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

CONETEC

GeoEngineers, Inc.

Job No: 20-59-20666
Date: 2020-07-27 10:51
Site: Birch Bay Library

Sounding: CPT-02
Cone: 528:T1500F15U35



Max Depth: 9.200 m / 30.18 ft
Depth Inc: 0.025 m / 0.082 ft
Avg Int: Every Point

File: 20-59-20666_CP02.COR
Unit Wt: SBTQtn (PKR2009)
Su Nkt: 15.0

SBT: Robertson, 2009 and 2010
Coords: Lat: 48.93112 Long: -122.74580

Equilibrium Pore Pressure (Ueq) | Assumed Ueq | Dissipation, Ueq achieved | Dissipation, Ueq not achieved | Hydrostatic Line

The reported coordinates were acquired from hand-held GPS equipment and are only approximate locations. The coordinates should not be used for design purposes.

Soil Behavior Type (SBT) Scatter Plots

CONETEC

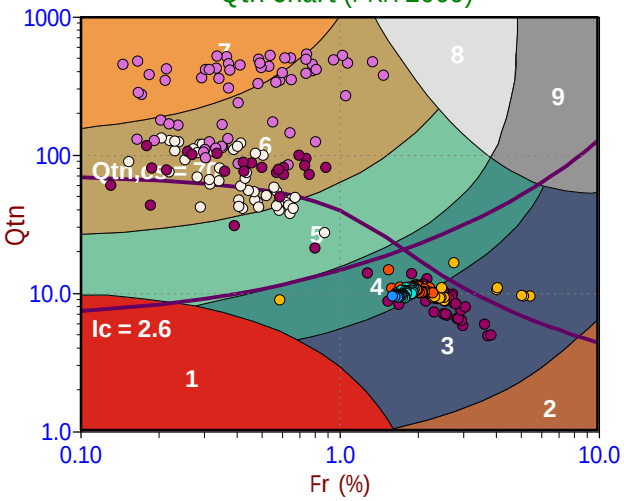
CONETEC

GeoEngineers, Inc.

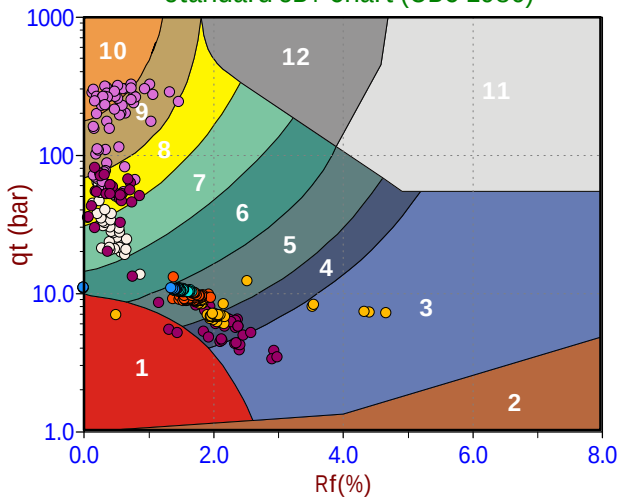
Job No: 20-59-20666
Date: 2020-07-27 09:57
Site: Birch Bay Library

Sounding: CPT-01
Cone: 528:T1500F15U35

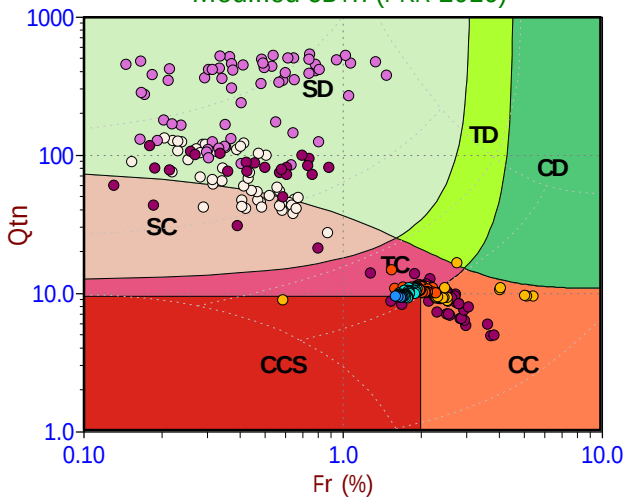
Qtn Chart (PKR 2009)



Standard SBT Chart (UBC 1986)



Modified SBTn (PKR 2016)



Depth Ranges

- >0.0 to 5.0 ft
- >5.0 to 10.0 ft
- >10.0 to 15.0 ft
- >15.0 to 20.0 ft
- >20.0 to 25.0 ft
- >25.0 to 30.0 ft
- >30.0 to 35.0 ft
- >35.0 to 40.0 ft
- >40.0 to 45.0 ft
- >45.0 to 50.0 ft
- >50.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

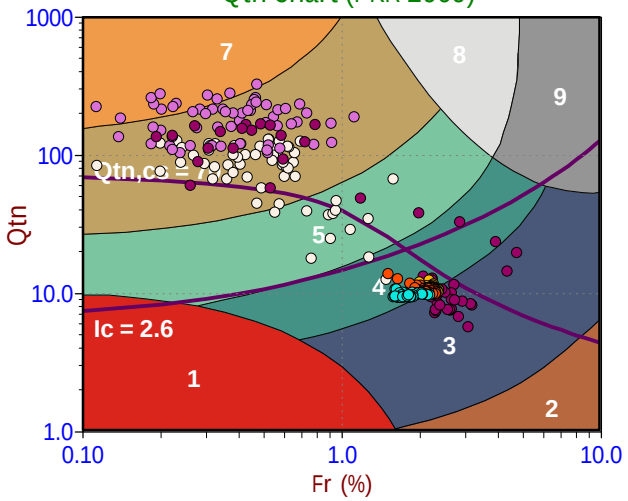
CONETEC

GeoEngineers, Inc.

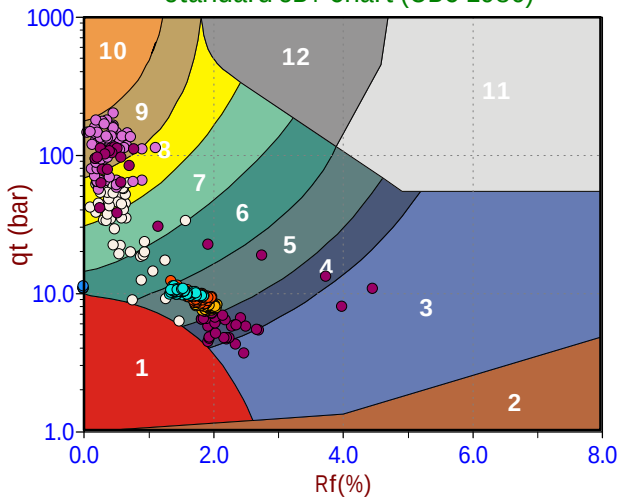
Job No: 20-59-20666
Date: 2020-07-27 10:51
Site: Birch Bay Library

Sounding: CPT-02
Cone: 528:T1500F15U35

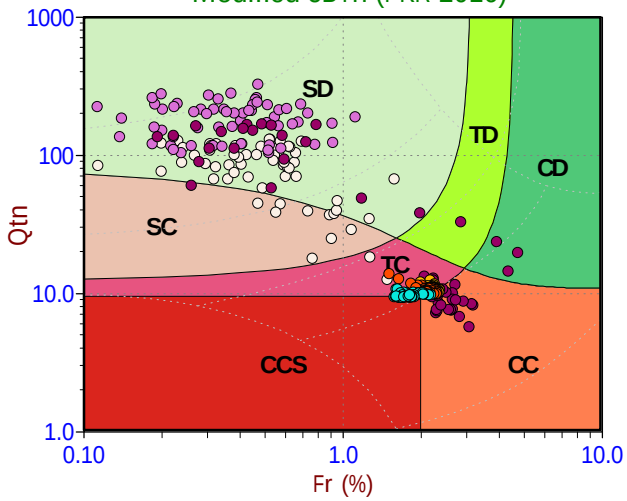
Qtn Chart (PKR 2009)



Standard SBT Chart (UBC 1986)



Modified SBTn (PKR 2016)



Depth Ranges

- >0.0 to 5.0 ft
- >5.0 to 10.0 ft
- >10.0 to 15.0 ft
- >15.0 to 20.0 ft
- >20.0 to 25.0 ft
- >25.0 to 30.0 ft
- >30.0 to 35.0 ft
- >35.0 to 40.0 ft
- >40.0 to 45.0 ft
- >45.0 to 50.0 ft
- >50.0 ft

Legend

- Sensitive, Fine Grained
- Organic Soils
- Clays
- Silt Mixtures
- Sand Mixtures
- Sands
- Gravelly Sand to Sand
- Stiff Sand to Clayey Sand
- Very Stiff Fine Grained

Legend

- Sensitive Fines
- Organic Soil
- Clay
- Silty Clay
- Clayey Silt
- Silt
- Sandy Silt
- Silty Sand/Sand
- Sand
- Gravelly Sand
- Stiff Fine Grained
- Cemented Sand

Legend

- CCS (Cont. sensitive clay like)
- CC (Cont. clay like)
- TC (Cont. transitional)
- SC (Cont. sand like)
- CD (Dil. clay like)
- TD (Dil. transitional)
- SD (Dil. sand like)

Pore Pressure Dissipation Summary and Pore Pressure Dissipation Plots

CONETEC

Job No:	20-59-20666
Client:	GeoEngineers, Inc.
Project:	Birch Bay Library
Start Date:	27-Jul-2020
End Date:	27-Jul-2020

CPTu PORE PRESSURE DISSIPATION SUMMARY

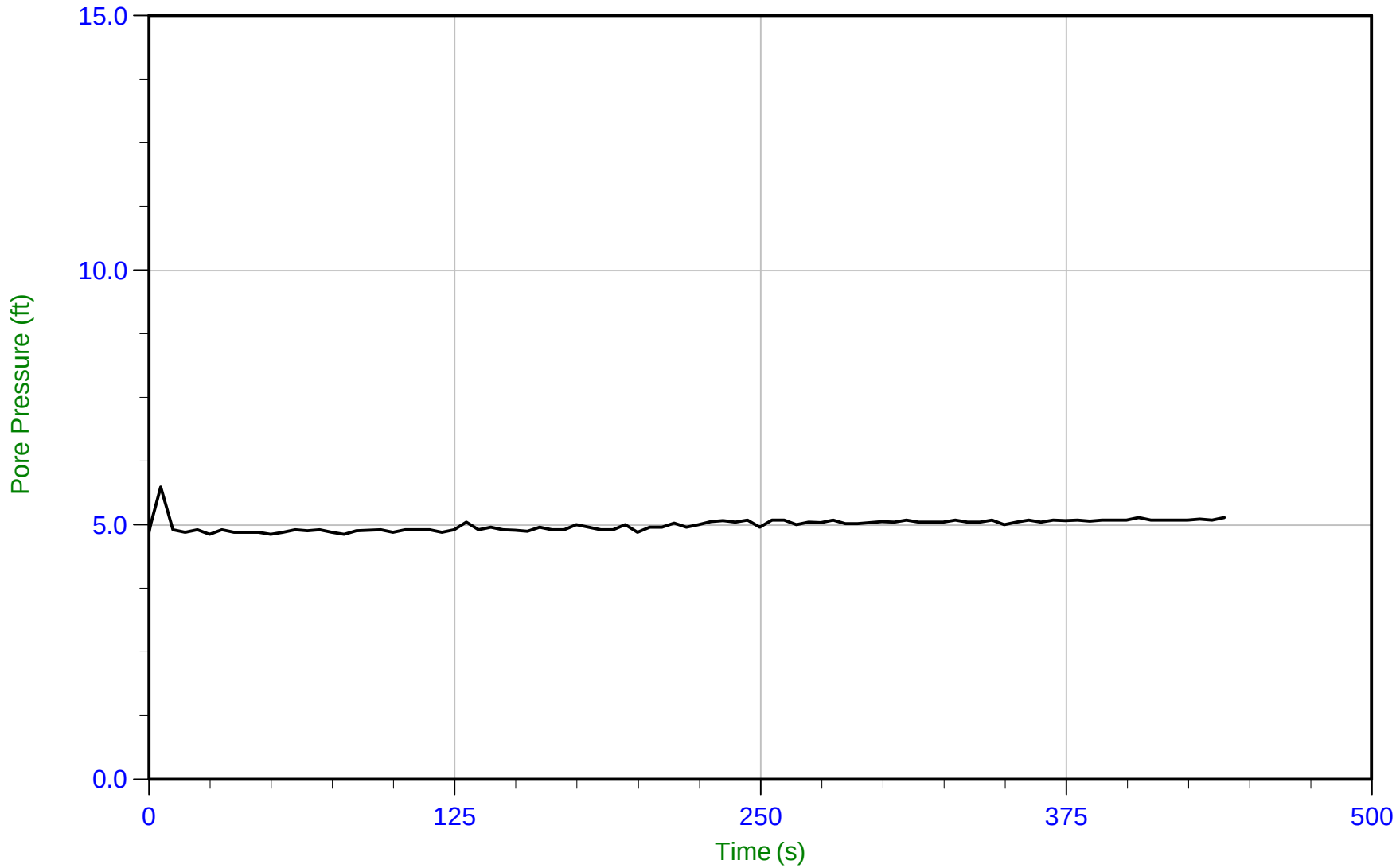
Sounding ID	File Name	Cone Area (cm^2)	Duration (s)	Test Depth (ft)	Estimated Equilibrium Pore Pressure U_{eq} (ft)	Calculated Phreatic Surface (ft)
CPT-02	20-59-20666_CP02	15.0	440	10.4	5.1	5.3
Total Duration			7.3 min			

CONETEC

GeoEngineers, Inc.

Job No: 20-59-20666
Date: 07/27/2020 10:51
Site: Birch Bay Library

Sounding: CPT-02
Cone: 528:T1500F15U35 Area=15 cm²



Trace Summary:

Filename: 20-59-20666_CP02.PPD
Depth: 3.175 m / 10.417 ft
Duration: 440.0 s

u Min: 4.8 ft
u Max: 5.7 ft
u Final: 5.1 ft

WT: 1.622 m / 5.321 ft
Ueq: 5.1 ft

Appendix C
Report Limitations and Guidelines for Use

Appendix C
Report Limitations and Guidelines For Use[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

READ THESE PROVISIONS CLOSELY

It is important to recognize that the geoscience practices (geotechnical engineering, geology, and environmental science) rely on professional judgment and opinion to a greater extent than other engineering and natural science disciplines, where more precise and/or readily observable data may exist. To help clients better understand how this difference pertains to our services, GeoEngineers includes the following explanatory "limitations" provisions in its reports. Please confer with GeoEngineers if you need to know more how these "Report Limitations and Guidelines for Use" apply to your project or site.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS, AND PROJECTS

This report has been prepared for the Whatcom County Library System, Osborn Architects Inc., and their authorized agents and for the Project(s) specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this report is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the Project, and its schedule and budget, our services have been executed in accordance with our Agreement with Osborn Architects Inc. dated October 15, 2024, and generally accepted geotechnical practices in this area at the time this report was prepared. We do not authorize, and will not be responsible for, the use of this report for any purposes or projects other than those identified in the report.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for the proposed Birch Bay Vogt Community Library project at 7968 Birch Bay Drive in Blaine, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or
- Completed before important project changes were made.

1 Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

For example, changes that can affect the applicability of this report include those that affect:

- The function of the proposed structure;
- Elevation, configuration, location, orientation, or weight of the proposed structure;
- Composition of the design team; or
- Project ownership.

If changes occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, new information or technology that becomes available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our report or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this report for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions at other locations. Actual subsurface conditions may differ, sometimes significantly, from the opinions presented in this report. Our report, conclusions and interpretations are not a warranty of the actual subsurface conditions.

GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

We have developed the following recommendations based on data gathered from subsurface investigation(s). These investigations sample just a small percentage of a site to create a snapshot of the subsurface conditions elsewhere on the site. Such sampling on its own cannot provide a complete and accurate view of subsurface conditions for the entire site. Therefore, the recommendations included in this report are preliminary and should not be considered final. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers

cannot assume responsibility or liability for the recommendations in this report if we do not perform construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective means of managing the risks associated with unanticipated conditions. If another party performs field observation and confirms our expectations, the other party must take full responsibility for both the observations and recommendations. Please note, however, that another party would lack our project-specific knowledge and resources.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the report, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable, but separating logs from the report can create a risk of misinterpretation.

GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

To help reduce the risk of problems associated with unanticipated subsurface conditions, GeoEngineers recommends giving contractors the complete geotechnical engineering or geologic report, including these "Report Limitations and Guidelines for Use." When providing the report, you should preface it with a clearly written letter of transmittal that:

- Advises contractors that the report was not prepared for purposes of bid development and that its accuracy is limited; and
- Encourages contractors to conduct additional study to obtain the specific types of information they need or prefer.

CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule, or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and adjacent properties.

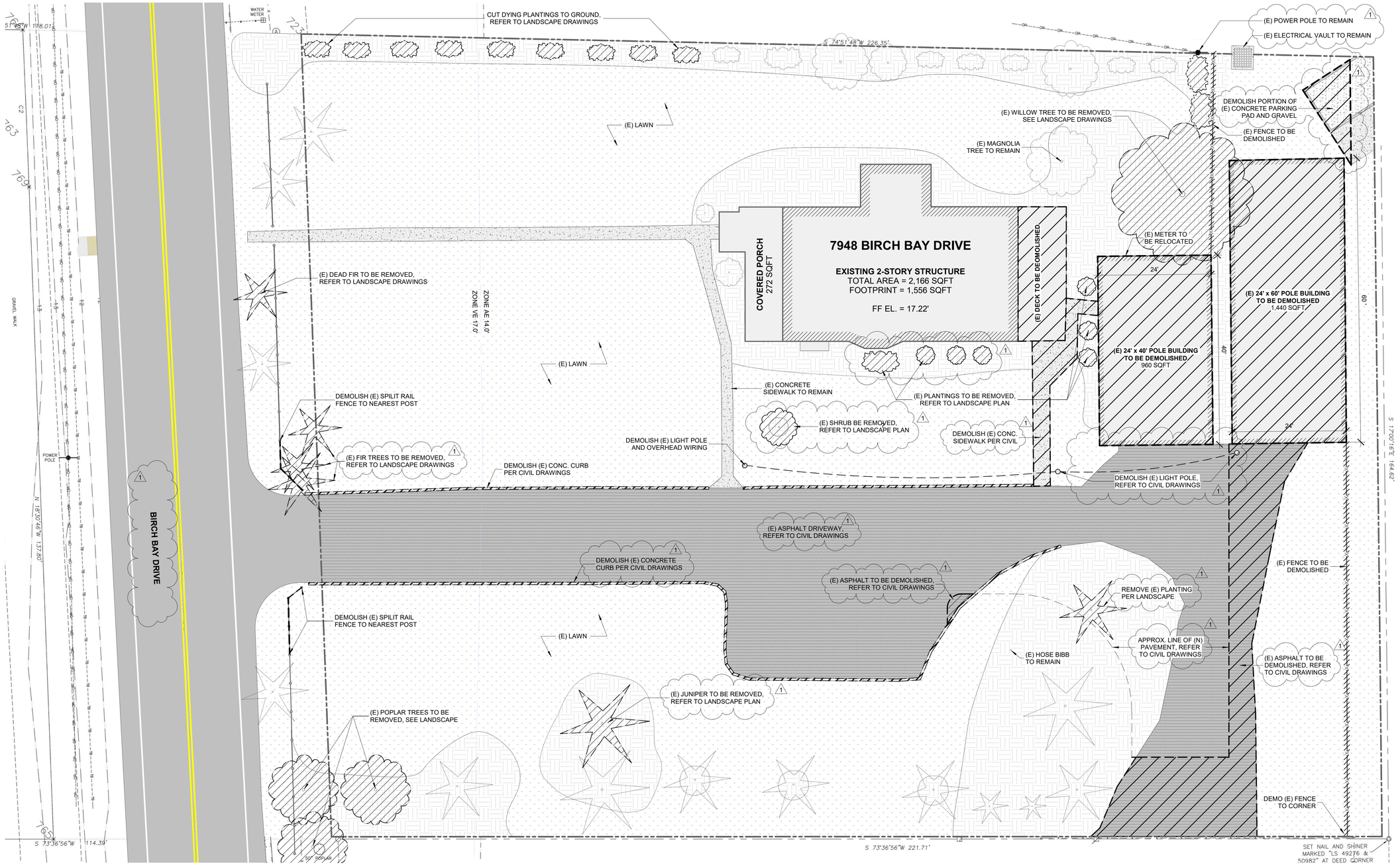
BIOLOGICAL POLLUTANTS

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention, or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

INFORMATION PROVIDED BY OTHERS

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.



1 A0.10 EXISTING SITE AND DEMOLITION PLAN

1" = 10'-0"

REVIEW APPROVAL

REVIEW IS FOR GENERAL COMPLIANCE AND CONSISTENCY WITH APPLICABLE WHATCOM COUNTY CODES, REGULATIONS, AND/OR STANDARDS

NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DATA, DIMENSIONS, OR DETAILS

DEPARTMENT OF PUBLIC WORKS-ENGINEERING SERVICES

BY: _____ DATE:____/____/____

GENERAL SITE NOTE:

CULTURAL RESOURCES INCLUDING INTACT AND DISTURBED ARCHAEOLOGICAL DEPOSITS HAVE BEEN PREVIOUSLY IDENTIFIED ON THE PROJECT SITE. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE SITE DISTURBANCE AND EXCAVATION PERMIT ISSUED BY THE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION (DAHP).

THE MONITORING ARCHAEOLOGIST SHALL DOCUMENT EXCAVATION WITH PHOTOGRAPHS RECORDING PROGRESS, WITH SPECIAL ATTENTION TO THE EMERGENCE OF PILINGS OR OTHER STRUCTURAL ELEMENTS WITHIN THE FILL. ARCHAEOLOGIST SHALL BE PRESENT FOR ALL GROUND-DISTURBING ACTIVITY. FOLLOW ALL FIELD DIRECTION GIVEN BY THE MONITORING ARCHAEOLOGIST, REFER TO SECTION **01 21 00 - ALLOWANCES**.

- (E) LAWN/GRASS
- (E) SOIL/LANDSCAPING
- (E) CONCRETE SIDEWALK
- (E) CONCRETE SIDEWALK TO BE DEMOLISHED PER CIVIL DRAWINGS
- (E) ASPHALT DRIVEWAY, PULVERIZE AND OVERLAY PER CIVIL DRAWINGS
- (E) ASPHALT DRIVEWAY TO BE DEMOLISHED PER CIVIL DRAWINGS
- (E) CONSTRUCTION TO BE DEMOLISHED, TYP.
- (N) LAWN/GRASS PER LANDSCAPE DRAWINGS
- (N) SOIL/LANDSCAPING PER LANDSCAPE PLAN
- (N) CONCRETE PER CIVIL DRAWINGS
- (N) ASPHALT PAVING PER CIVIL DRAWINGS
- PROPERTY LINE
- FEMA FLOOD ZONE BOUNDARY
- (E) FENCE TO BE DEMOLISHED
- (N) FENCE, SEE SITE DETAILS
- EXISTING CONSTRUCTION
- PROPOSED CONSTRUCTION

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SEATTLE, WA 98134 | (206) 631-8442
https://www.oaips.com

CONSULTANT

PROFESSIONAL STAMP

6273 REGISTERED ARCHITECT
JERRY D. OSBORN
STATE OF WASHINGTON

CLIENT AGENCY

whatcom county library system

ADMINISTRATIVE SERVICES
5205 Northwest Drive
Bellingham, WA 98226
https://www.wcls.org

Parcel No. - 400130054356000000

WHATCOM COUNTY LIBRARY SYSTEM
BIRCH BAY VOGT LIBRARY EXPRESS
RENOVATIONS

7948 Birch Bay Drive, Blaine, WA 98230

SUBMISSIONS/REVISIONS

#	DATE	DESCRIPTION	BY
1	4/28/2026	ADDENDUM #1	JJM

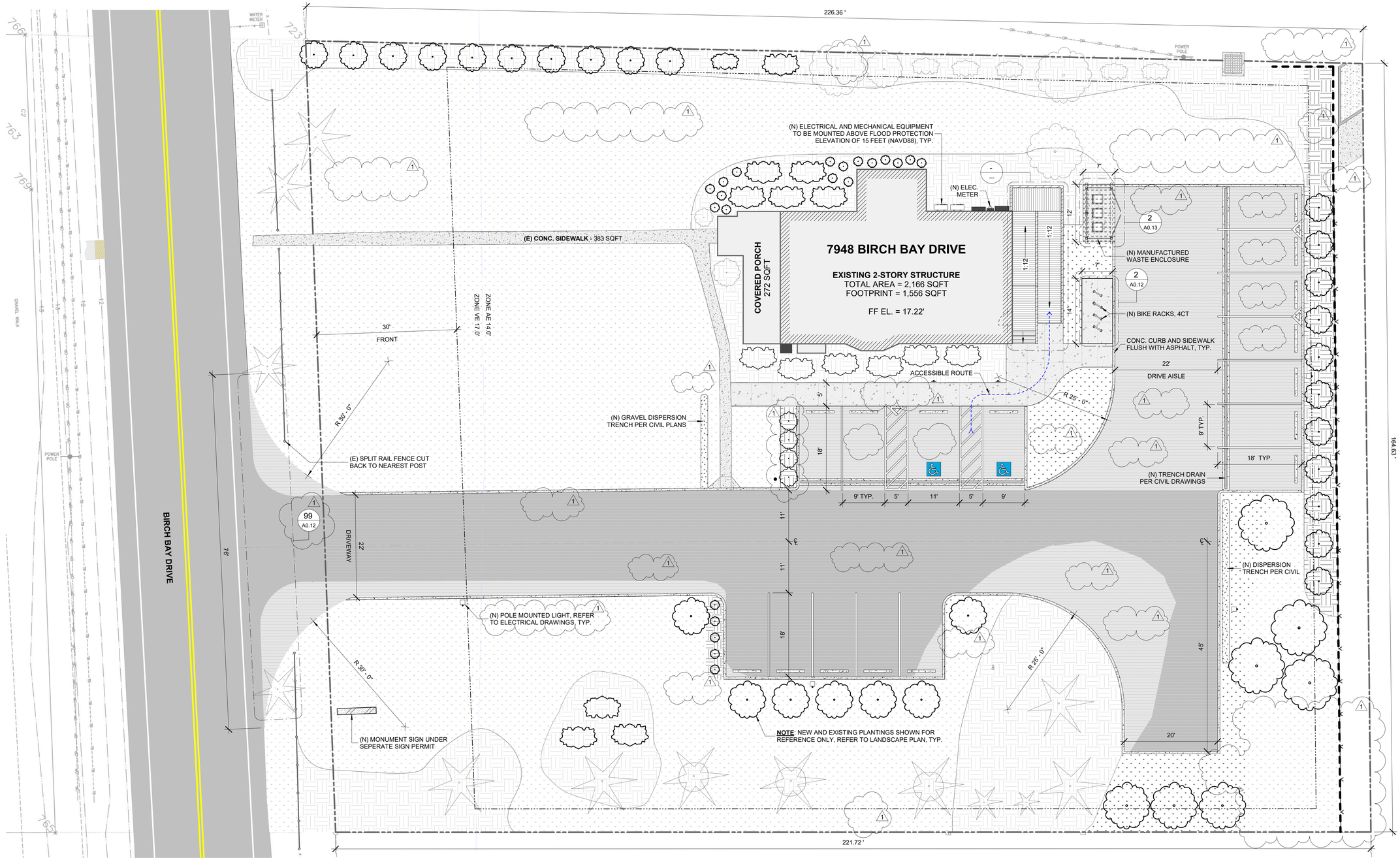
ISSUE STATUS: **BID SET DOCUMENTS**
ISSUE DATE: 04/15/2026
DRAWN BY: JJM
REVIEWED: JJM

SHEET NO. / TITLE:

A0.10

EXISTING SITE AND DEMOLITION PLAN

PROJECT NUMBER: MSC2402



1 / A0.11 SITE PLAN

1" = 10'-0"

REVIEW APPROVAL

REVIEW IS FOR GENERAL COMPLIANCE AND CONSISTENCY WITH APPLICABLE WHATCOM COUNTY CODES, REGULATIONS, AND/OR STANDARDS

NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DATA, DIMENSIONS, OR DETAILS

DEPARTMENT OF PUBLIC WORKS-ENGINEERING SERVICES

BY: _____ DATE:____/____/____

GENERAL SITE NOTE:

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- (E) LAWN/GRASS
- (E) SOIL/LANDSCAPING
- (E) CONCRETE SIDEWALK
- (E) CONCRETE SIDEWALK TO BE DEMOLISHED PER CIVIL DRAWINGS
- (E) ASPHALT DRIVEWAY, PULVERIZE AND OVERLAY PER CIVIL DRAWINGS
- (E) ASPHALT DRIVEWAY TO BE DEMOLISHED PER CIVIL DRAWINGS
- (E) CONSTRUCTION TO BE DEMOLISHED, TYP.
- (N) LAWN/GRASS PER LANDSCAPE DRAWINGS
- (N) SOIL/LANDSCAPING PER LANDSCAPE PLAN
- (N) CONCRETE PER CIVIL DRAWINGS
- (N) ASPHALT PAVING PER CIVIL DRAWINGS
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- FEMA FLOOD ZONE BOUNDARY
- (E) FENCE TO BE DEMOLISHED
- (N) FENCE, SEE SITE DETAILS
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- PROPOSED CONSTRUCTION

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STATE OF WASHINGTON

CLIENT AGENCY

whatcom county library system

ADMINISTRATIVE SERVICES
5205 Northwest Drive
Bellingham, WA 98226
https://www.wcls.org

Parcel No. - 400130054356000

WHATCOM COUNTY LIBRARY SYSTEM
BIRCH BAY VOGT LIBRARY EXPRESS
RENOVATIONS

7948 Birch Bay Drive, Blaine, WA 98230

SUBMISSIONS/REVISIONS

#	DATE	DESCRIPTION	BY
1	4/28/2026	ADDENDUM #1	JJM

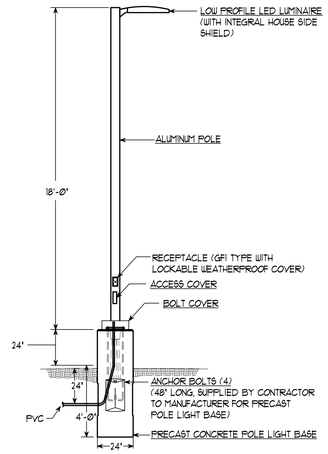
ISSUE STATUS: **BID SET DOCUMENTS** | ISSUE DATE: 04/15/2026
DRAWN BY: JJM
REVIEWED: JJM

SHEET NO. / TITLE:

A0.11

ARCHITECTURAL SITE PLAN

PROJECT NUMBER: MSC2402



DETAIL - TYPE T POLE, BASE & LUMINAIRE

SCALE: NO SCALE

NORTH

1 / E1-2

ELECTRICAL - SITE PLAN

1" = 10'-0"

0 5 10 20

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CONSULTANT
K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

PROFESSIONAL STAMP:
STEVEN B. TVEIT
STATE OF WASHINGTON
41903
REGISTERED
PROFESSIONAL ENGINEER
4/7/2026

CLIENT AGENCY
whatcom county library system
ADMINISTRATIVE SERVICES
5205 Northwest Drive
Bellingham, WA 98226
https://www.wcls.org

Parcel No. - 400130054356000000
WHATCOM COUNTY LIBRARY SYSTEM
BIRCH BAY VOGT LIBRARY EXPRESS RENOVATIONS
7948 Birch Bay Drive, Blaine, WA 98230

SUBMISSIONS/REVISIONS			
#	DATE	DESCRIPTION	BY
1	4/27/2026	ADDENDUM # 1	STV

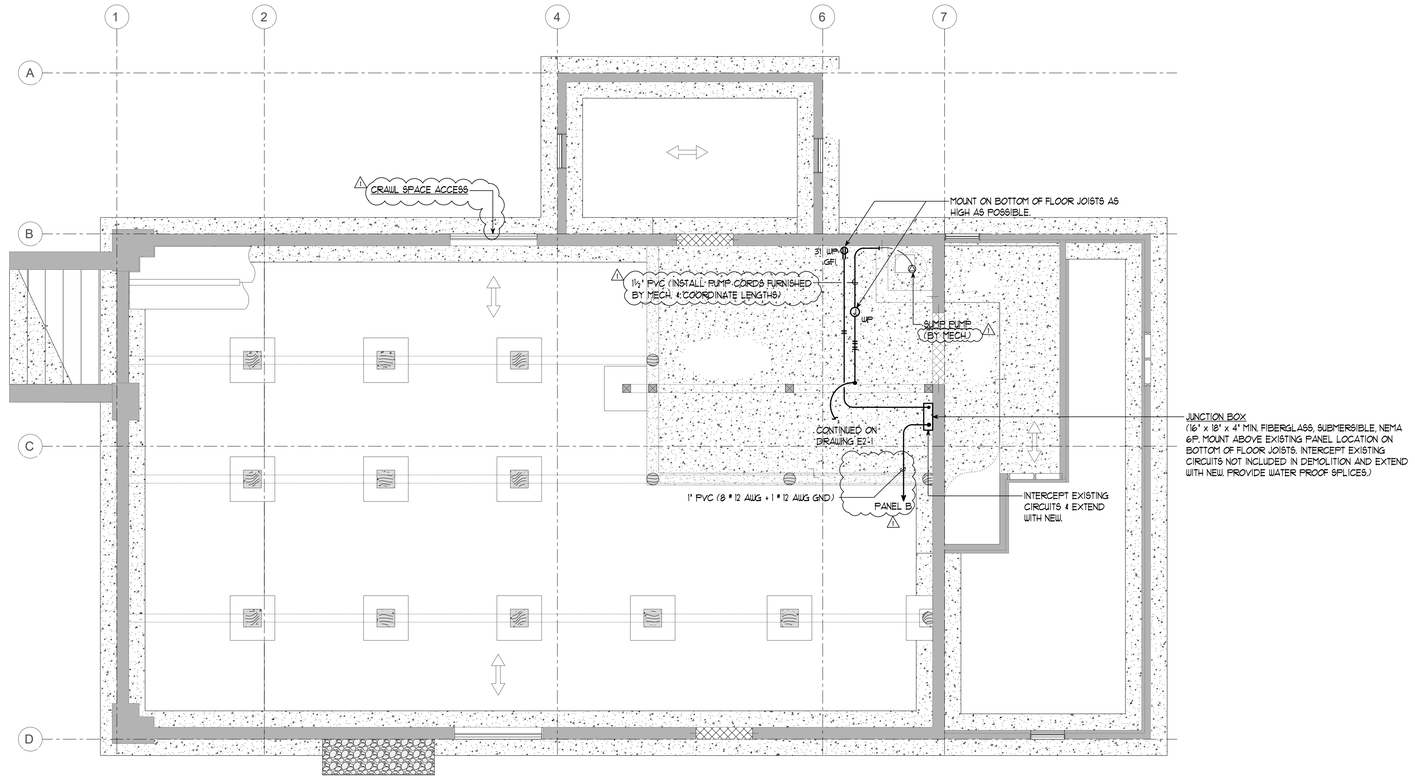
ISSUE STATUS: BID SET
ISSUE DATE: 03/27/2026
DRAWN BY: JJM
REVIEWED:

SHEET NO. / TITLE:

E1-2 R1

ELECTRICAL - SITE PLAN

PROJECT NUMBER: # 2359



NORTH

1 / E2-0 ELECTRICAL - BASEMENT POWER PLAN

1/4" = 1'-0"

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SEATTLE, WA 98134 | (206) 631-8442
https://www.oaips.com

CONSULTANT

K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

PROFESSIONAL STAMP:

STEVEN B. TEVIS — STATE OF WASHINGTON — 41903 — REGISTERED PROFESSIONAL ENGINEER — 4/7/2026

CLIENT AGENCY

whatcom county library system

ADMINISTRATIVE SERVICES
5205 Northwest Drive
Bellingham, WA 98226
https://www.wcls.org

Parcel No. - 4001300543560000

WHATCOM COUNTY LIBRARY SYSTEM
BIRCH BAY VOGT LIBRARY EXPRESS RENOVATIONS

7948 Birch Bay Drive, Blaine, WA 98230

SUBMISSIONS/REVISIONS

#	DATE	DESCRIPTION	BY
1	4/27/2026	ADDENDUM # 1	STV

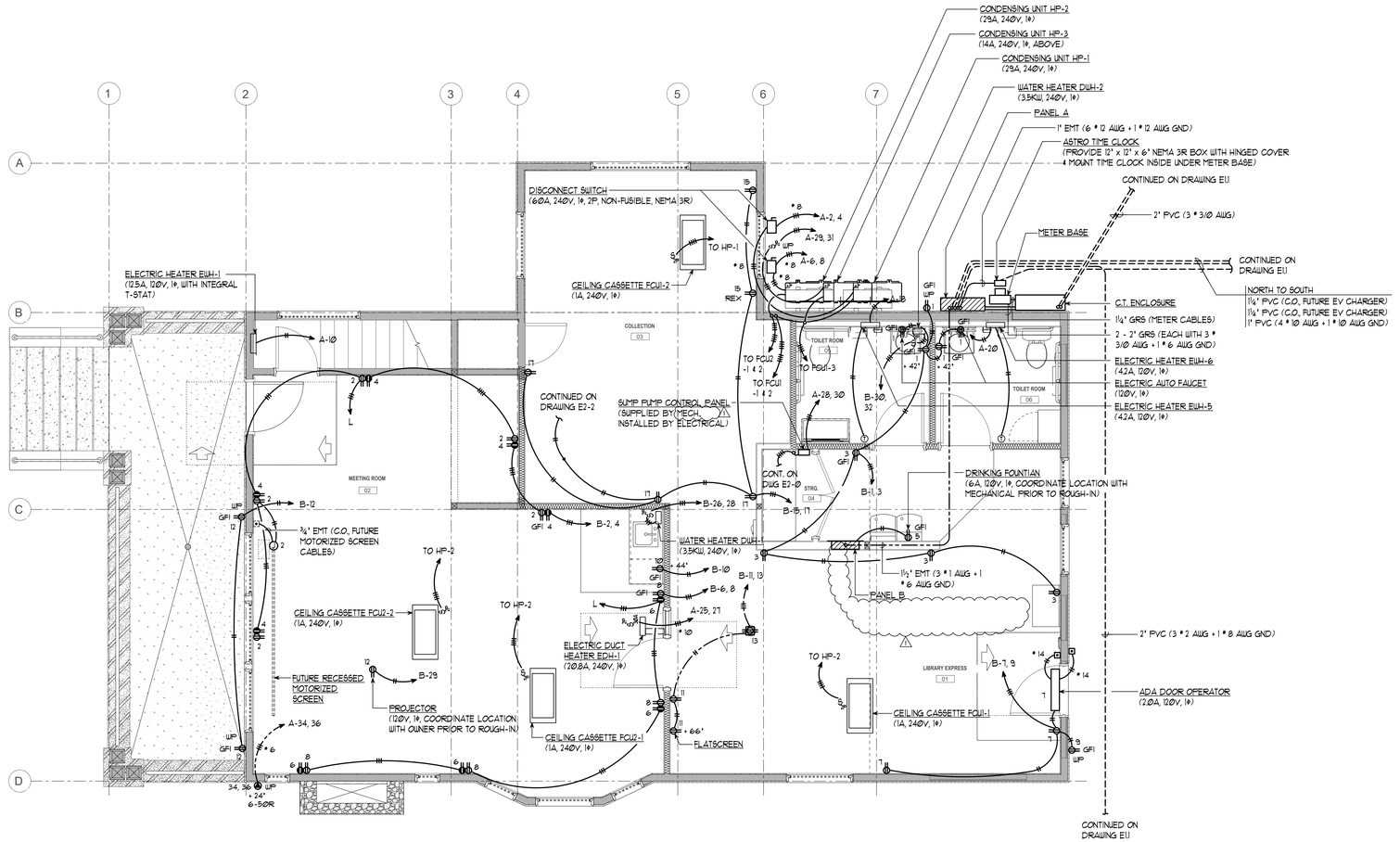
ISSUE STATUS: **BID SET**
ISSUE DATE: 03/27/2026
DRAWN BY: JJM
REVIEWED:

SHEET NO. / TITLE:

E2-0 R1

ELECTRICAL - BASEMENT POWER PLAN

PROJECT NUMBER: # 2359



NORTH

1 / E2-1 ELECTRICAL - 1ST FLOOR POWER PLAN

1/4" = 1'-0"

OAI ARCHITECTURE + PLANNING

1001 SW KLICKITAT WAY, STE. 204
SEATTLE, WA 98134 | (206) 631-8442
https://www.oaips.com

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208 Third Street
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Bus. (360) 354-4757
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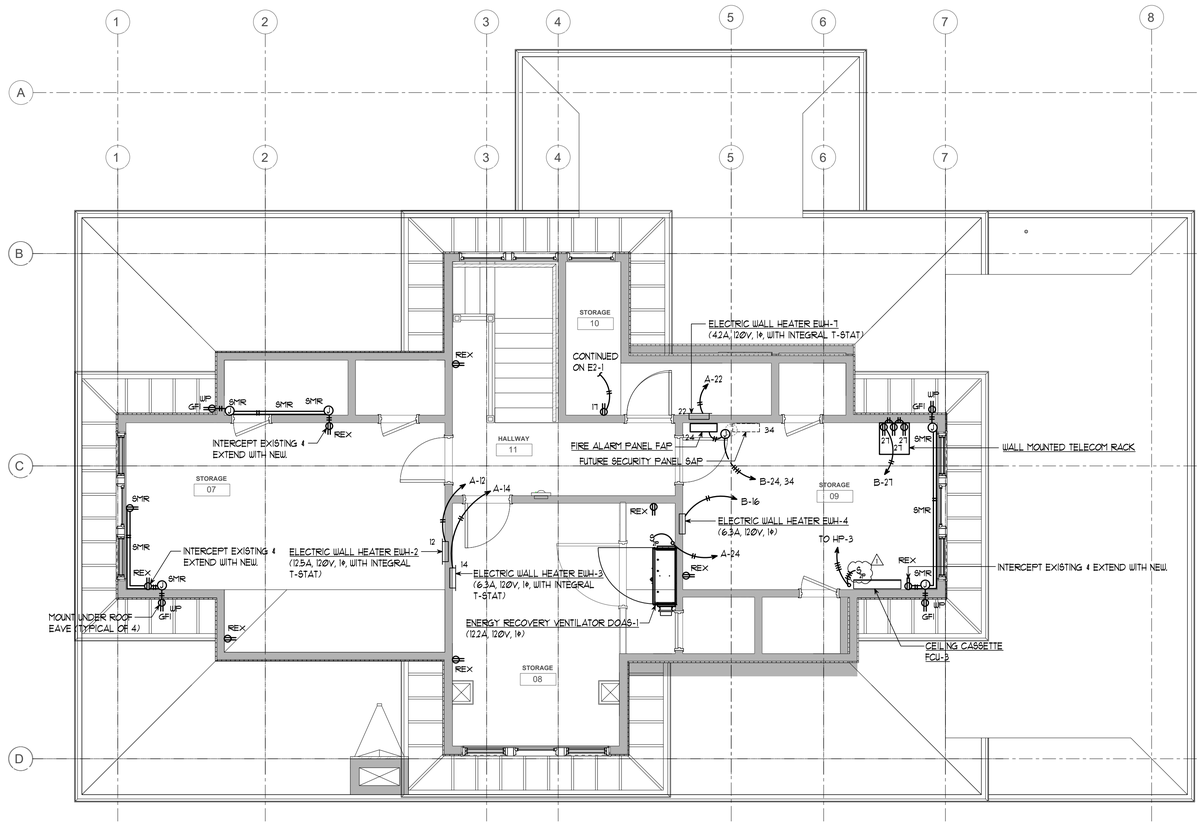
E2-1 R1

ELECTRICAL - 1ST FLOOR POWER PLAN

PROJECT NUMBER: # 2359



NORTH

1 E2-2 ELECTRICAL - 2ND FLOOR POWER PLAN

1/4" = 1'-0"

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E2-2 R1

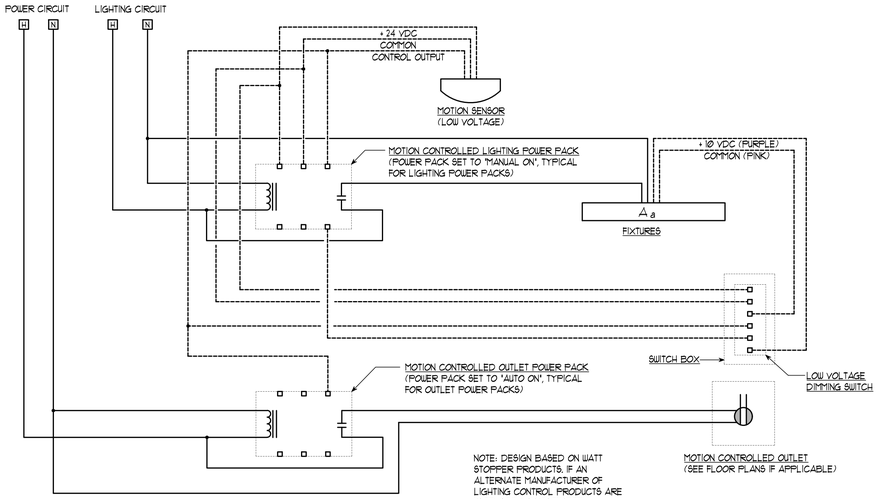
ELECTRICAL - 2ND FLOOR POWER PLAN

PROJECT NUMBER: # 2359

LIGHTING FIXTURE SCHEDULE

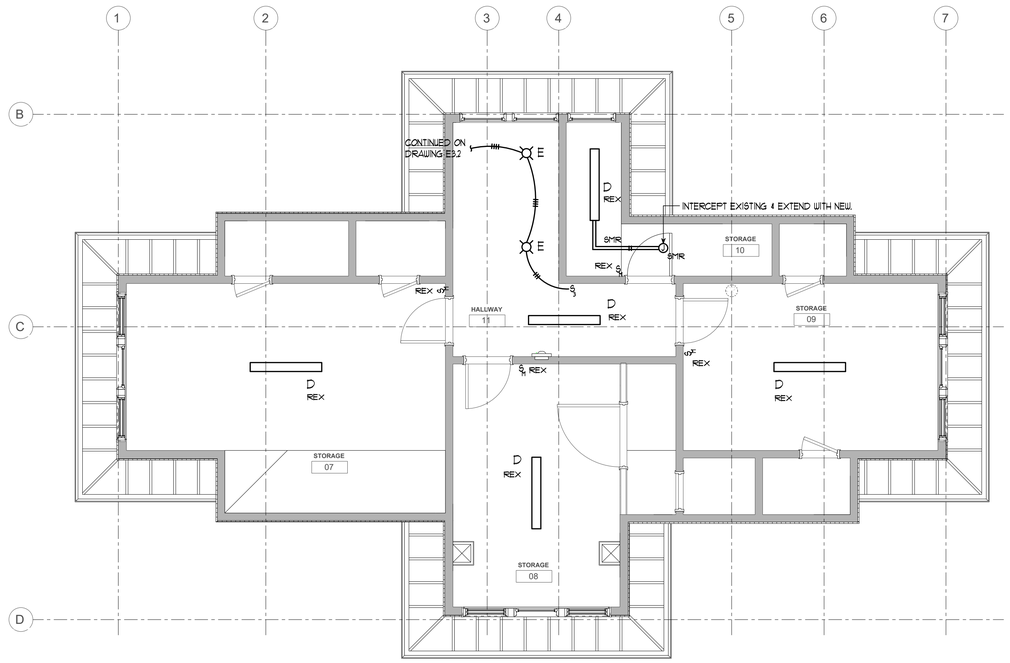
TYPE	DESCRIPTION	VOLTS	MANUFACTURER & CAT. NO. (NO SUBSTITUTIONS, TO MATCH EXISTING)	LAMP(S)	LOADS	
					WATTS	VA
A	LED DOWNLIGHT LUMINAIRE, SURFACE MTD., 1,900 (MIN) LUMEN OUTPUT, 12" ROUND, 4000K COLOR TEMPERATURE CAST ALUMINUM HOUSING , WHITE COLOR, 0-10V DIMMING	120	LITON LCMP12R-WUE-D10-TS40	LED 4000K (INTEGRAL)	14	15
B	LED RECESSED DOWNLIGHT, MEDIUM DISTRIBUTION, THERMALLY PROTECTED, WITH DIECAST ALUMINUM HEAT SINK, SPECULAR ALUMINUM REFLECTOR & WHITE SELF-FLANGE. 4" ROUND 6" HIGH, 1000 LUMENS	120	WAC SKU:WS-38024-BN	LED 4000K (INTEGRAL)	24	25
C	LED RECESSED DOWNLIGHT, MEDIUM DISTRIBUTION, THERMALLY PROTECTED, WITH DIECAST ALUMINUM HEAT SINK, SPECULAR ALUMINUM REFLECTOR & WHITE SELF-FLANGE. 4" ROUND 6" HIGH, 1000 LUMENS, DAMP LOCATION RATED.	120	GOTHAM EVO4-35/10-AR-LS-MD-EZ1 PORTFOLIO LDA3B-10R50-90-35-DO10 PRESCOLITE LFR-4RD-M-10L-35-WD-DM1-LFR-4RD-T-S-WT WILLIAMS 4DR-TL-L10-835-DIM-O-W-OF-SPC-MWT	LED 4000K (INTEGRAL)	10	11
D	LED FLAT PANEL, 4' LONG x 1' WIDE, SURFACE MTD. (UNLESS NOTED OTHERWISE), SUITABLE FOR DAMP LOCATIONS, 3000 (MIN.) LUMEN OUTPUT, 3500K COLOR TEMPERATURE WITH HIGH EFFICIENCY DRIVER.	120	LITHONIA CPX 1X4 4000LM 80CRI 40K SWL MN10	LED 4000K (INTEGRAL)	25	26
E	LED CEILING MTD. DISC, 7.5" ROUND x 1.5" DEEP 1100 LUMEN MIN., 3000 K COLOR TEMPERATURE, ACRYLIC DIFFUSER BUILT-IN OCCUPANCY SENSOR. SUITABLE FOR DAMP LOCATIONS. HIGH EFFICIENCY DRIVER.	120	WAC LIGHTING - FM-306MS 930 14W 1100 WT	LED 4000K (INTEGRAL)	14	15
F	LED ENCLOSED & GASKETED, 4' LONG, SURFACE MTD. (UNLESS NOTED OTHERWISE), SUITABLE FOR WET LOCATIONS, 6000 (MIN.) LUMEN OUTPUT, 3500K COLOR TEMPERATURE WITH HIGH EFFICIENCY DRIVER.	UNIV.	COLUMBIA LXEM-4-35-HL-E DAYBRITE DWAE70L835-4 LITHONIA FEM4 LED-6L-840FL WILLIAMS 96-4'-L62/835-HAFR	LED 4000K (INTEGRAL)	60	63
X	LIGHTED EXIT SIGN, LED TYPE, SINGLE FACE, UNIVERSAL MOUNT, WHITE WITH GREEN LETTERS, POLYCARBONATE OR THERMOPLASTIC HOUSING, SELF-CONTAINED EMERGENCY LIGHTING UNIT, NI-CAD BATTERIES & BUILT-IN DIAGNOSTICS	120	DUAL-LITE LXSGIWEI EXITRONICS GVEX-U-BP-WB-WH-G1 LIGHTOLIER LTN1-GW-SD LITHONIA LQM-SW1-G-ELN-SD McPHILBEN CXXL-1-G-W SURE-LITES APX7G	(INCLUDED)	5	8
T	LED LOW PROFILE MODERN SHAPED LUMINAIRE, 27" x 15" x 5", 4000K, 7000 LUMENS, HIGH/LOW DIMMING, POLE MTD., IP66 RATED, DIE CAST ALUMINUM HOUSING, TYPE 3 OPTICS, BRONZE COLOR, HIGH/LOW MOTION SENSOR (HOUSE SIDE SHIELD) GLARE REDUCING SHIELD. POLE SHALL BE 18' STRAIGHT SQUARE ALUMINUM, .188" WALL THICKNESS, BRONZE PAINTED, BASE MOUNTED, MDH BASE COVER, ANCHOR BOLTS AND EXTRA HANDHOLE FOR RECEPTACLE 12" ABOVE HANDHOLE.	120	LUMINAIRE: COOPER GLAN-SA1C-740-T4FT-T3-BZ-HSS-GRSBK-SPB2 POLE: COOPER SSA-5-M-18-W-C-1-C	LED 4000K (INTEGRAL)	51	54
V	LED EXTERIOR MINI SCONCE, WET LOCATION, ALUMINUM HOUSING WITH CLEAR LENS, WITH FORWARD THROW OPTICS AND MOTION SENSOR.	UNIV.	LUMARK XTOR2B-W-BZ-PC1-MS/DIM-L20	LED 4000K (INTEGRAL)	18	19

NOTES:
(1) CONTRACTOR & LIGHTING FIXTURE SUPPLIER SHALL VERIFY DESCRIPTION, MOUNTING REQUIREMENTS, CATALOG NUMBERS, ETC. MATCH. ADVISE ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.
(2) ALL LED 0-10V DIMMING DRIVERS SHALL BE COMPATIBLE WITH MOTION CONTROLLERS, PHOTO-CONTROLLERS, DIMMER SWITCHES, ETC.



LIGHTING CONTROL DIAGRAM - TYPICAL ROOMS WITH POWER PACKS

NO SCALE



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1 / E3-2 ELECTRICAL - 2ND FLOOR LIGHTING PLAN

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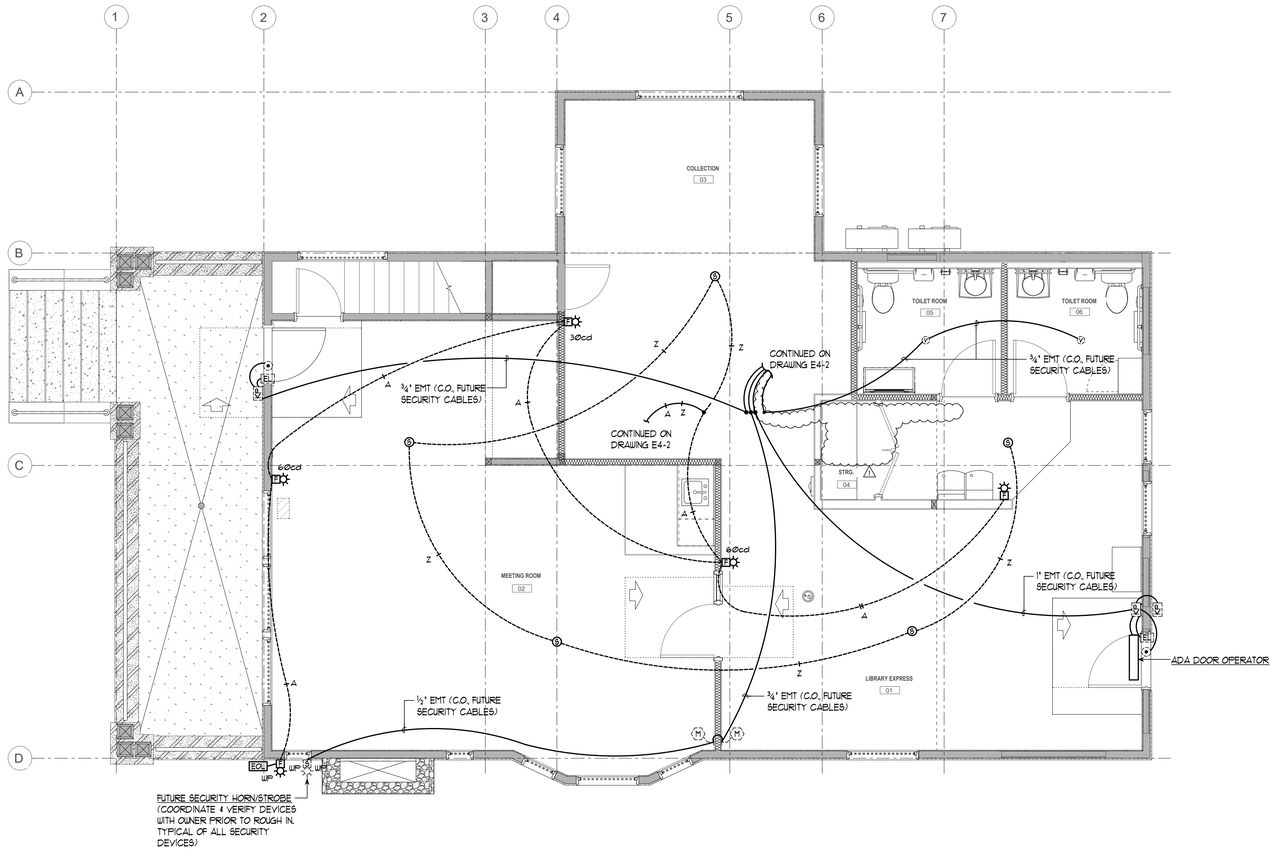
E3-2 R1

ELECTRICAL - 2ND FLOOR LIGHTING PLAN & LIGHTING FIXTURE SCHEDULE

PROJECT NUMBER: # 2359



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1 / E4-1 ELECTRICAL - 1ST FLOOR ANCILLARIES PLAN

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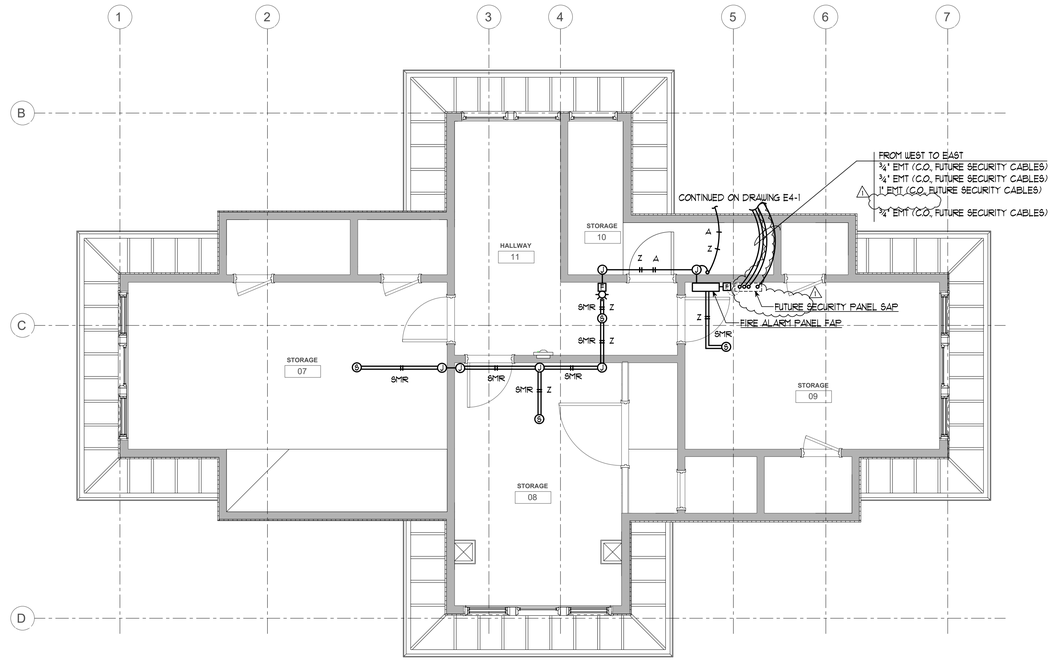

NORTH

1 / E4-2 ELECTRICAL - 2ND FLOOR ANCILLARIES PLAN

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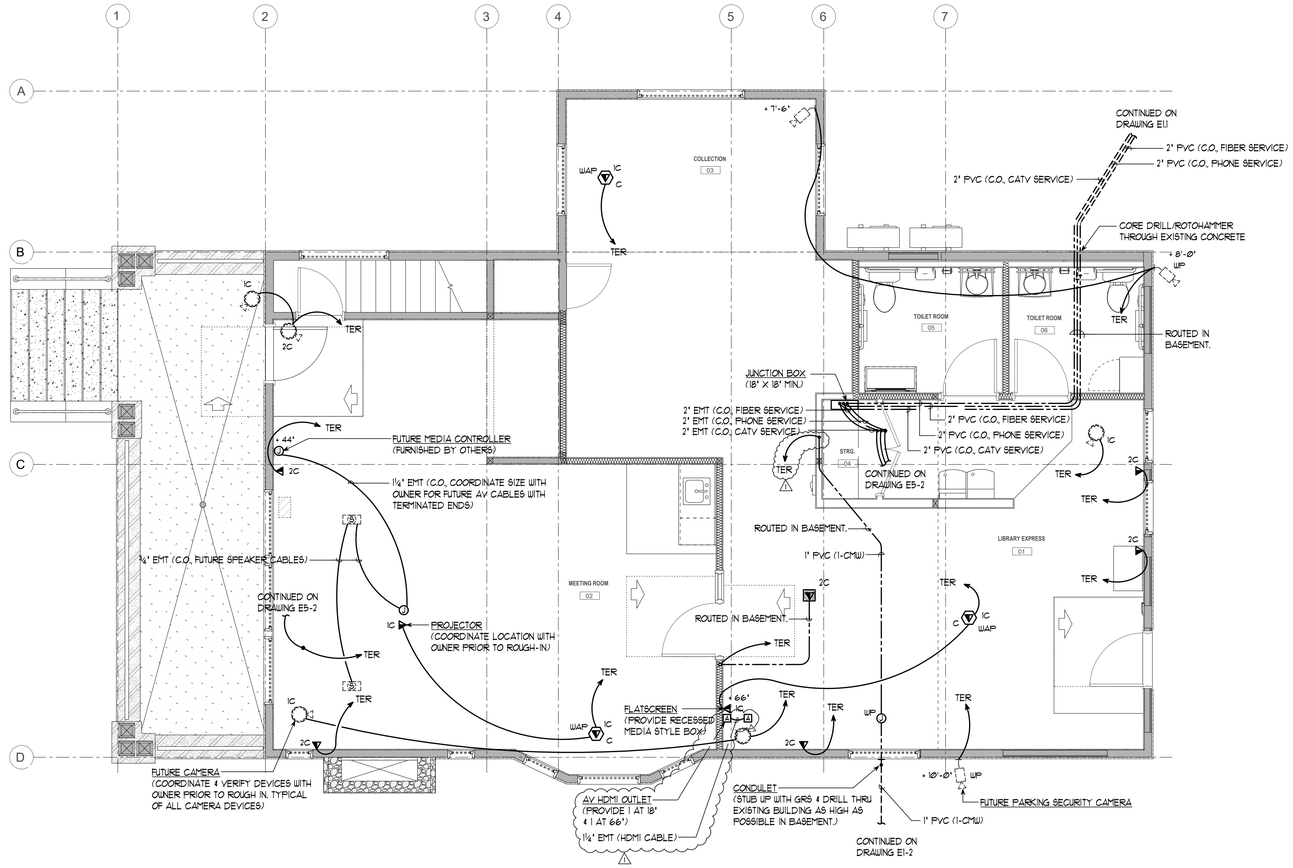

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1 / E5-1 ELECTRICAL - 1ST FLOOR TELECOMMUNICATIONS PLAN

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E5-1 R1

ELECTRICAL - 1ST FLOOR TELECOM PLAN

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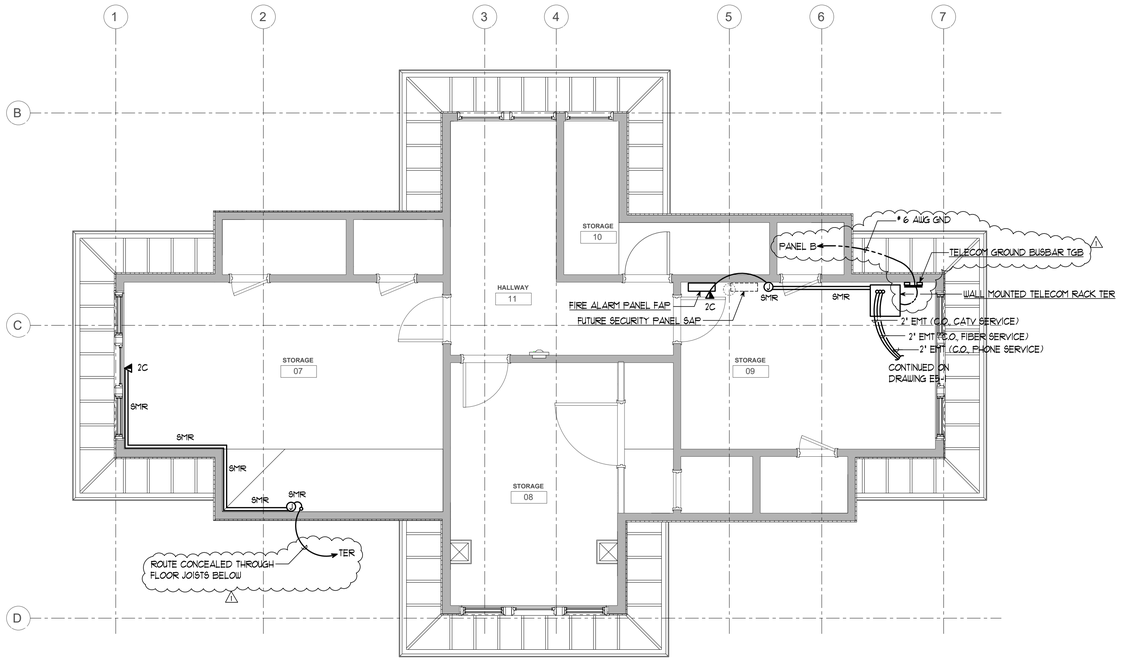

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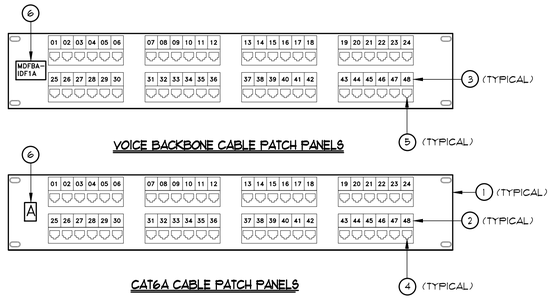


VOICE BACKBONE CABLE PATCH PANELS

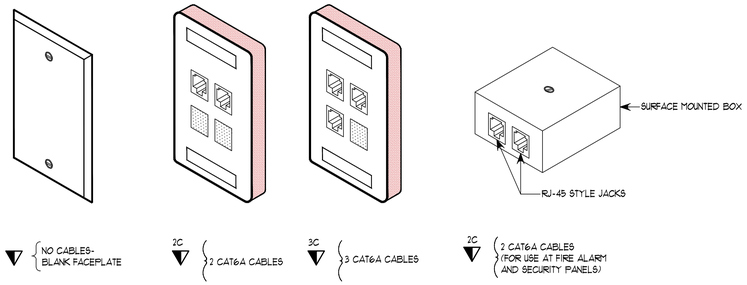
CAT6A CABLE PATCH PANELS

1. STEEL BACK PLATE, 2U HIGH, BLACK COLOR
2. LABEL, PAPER, NON-ADHESIVE, BLUE COLOR, PRINTED TEXT AS APPROVED BY OWNER. INSERTED INTO TRANSPARENT LABEL HOLDER.
3. LABEL, PAPER, NON-ADHESIVE, WHITE COLOR, PRINTED TEXT AS APPROVED BY OWNER. INSERTED INTO TRANSPARENT LABEL HOLDER.
4. 8-POSITION, 8 CONDUCTOR JACK (RJ-45). CAT6A APPLICATIONS, T568B, NON KEYED.
5. 8-POSITION, 2 CONDUCTOR JACK (RJ-11). VOICE APPLICATIONS.
6. LABEL, PHENOLIC PLASTIC, ADHESIVE, BLACK TEXT ON WHITE LABEL.

MODULAR PATCH PANEL COMPONENT LEGEND

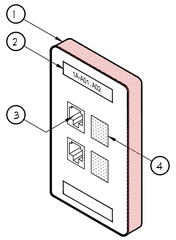
NOTES:

1. LABELING OF TERMINATION HARDWARE
   - A. TERMINATION OF HORIZONTAL F/UTP CABLE IN THE TELECOMM. ROOM SHALL BE ON 110 TO MODULAR PATCH PANELS, 48 PORT CAPACITY.
   - B. ALL HORIZONTAL F/UTP CABLES SHALL BE LABELED WITH CABLE ID NUMBERS ON A BLUE LABEL INSERT INSERTED IN A TRANSPARENT LABEL COVER AT THE PATCH PANEL MODULAR JACK.
   - C. LABELS FOR TERMINATION HARDWARE SHALL BE TYPE-WRITTEN.
   - D. ALL HORIZONTAL 4 PAIR CABLES SHALL BE LABELED IN ACCORDANCE WITH THE TIA/EIA-606-A LABELING STANDARD. SEE DETAIL, THIS DRAWING.
   - E. ALL JACKS SHALL BE LABELED AT THE OUTLET FACEPLATE AND THE PATCH PANEL.
3. CROSS CONNECT WIRE & WIRE TROUGHS
   - A. CABLE MANAGEMENT SECTIONS SHALL BE LOCATED HORIZONTALLY BETWEEN PATCH PANELS. CABLE MANAGEMENT SECTIONS SHALL BE 2U HIGH.



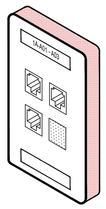
TYPICAL COMMUNICATIONS OUTLET FACEPLATE CONFIGURATIONS

NO SCALE



1. 6-PORT FACEPLATE, SINGLE GANG, WHITE COLOR
2. OUTLET LABEL, WHITE PAPER, NON-ADHESIVE, PRINTED TEXT AS APPROVED BY OWNER.
3. 8-POSITION, 8-CONDUCTOR JACK INSERT (RJ-45) T568B, NON-KEYED, WHITE COLOR. (TYPICAL)
4. BLANK INSERT, WHITE COLOR (TYPICAL)

COMMUNICATIONS OUTLET COMPONENT LEGEND



NOTES:

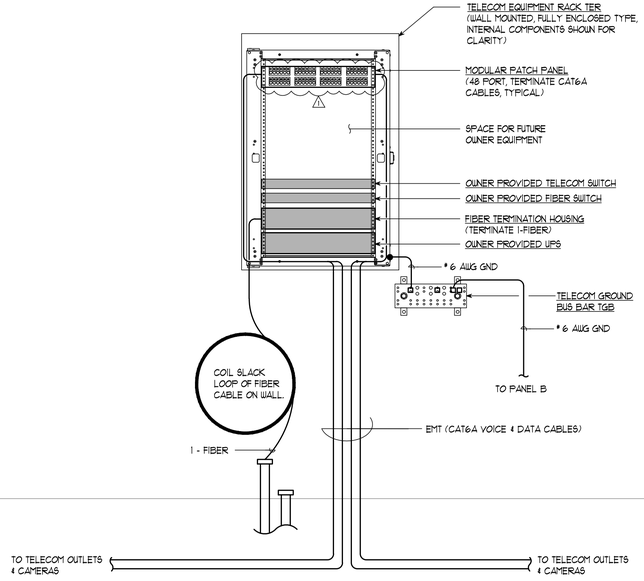
1. TERMINATE ALL CONDUCTORS OF ALL CABLES ON RECEPTACLES (JACK INSERTS).
2. CABLES FROM EACH RECEPTACLE (JACK INSERT) IN EACH OUTLET SHALL BE HOMERUN TO THE TELECOM ROOM ON THE SAME FLOOR, WITHOUT SPLICEES OR TAPS. CABLE LENGTH SHALL NOT EXCEED 300'. RE-ROUTE &/OR PROVIDE ADDITIONAL RACEWAYS AS REQUIRE IF 300' LIMITATION IS EXCEEDED.
3. OTHER OUTLET FACEPLATE CONFIGURATIONS SHALL BE SIMILAR WITH SIMILAR CABLING REQUIREMENTS.

FORMAT: XY - AØI

- X --- FLOOR NUMBER WHERE TELECOM ROOM IS LOCATED. (EXAMPLE: B = BASEMENT, 1 = FIRST FLOOR, 2 = SECOND FLOOR, ETC.)
- Y --- ALPHABETICAL DESIGNATION OF TELECOM ROOM. (EXAMPLE: A, B, C, ..ETC.)
- A --- ALPHABETICAL DESIGNATION OF PATCH PANEL.
- ØI --- NUMERICAL DESIGNATION OF PATCH PANEL PORT.

(EXAMPLE: 1A-A41 = CABLE TERMINATED ON PATCH PANEL A, PORT 41, IN IDF 1A ON THE BUILDING'S FIRST FLOOR)

COMMUNICATIONS OUTLET LABELING CONVENTION



ELECTRICAL TELECOM ELEVATION - TELECOM EQUIPMENT RACK TER

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ELECTRICAL - TELECOM DETAILS

PROJECT NUMBER: # 2359