

SEPA

Jefferson County Early Learning and Family Support Center

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CITY OF PORT TOWNSEND
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CONTENTS

3 copies (full size)

- Survey
- Civil Drawings
- Landscape Drawings
- Architectural Site Plan
- Exterior building elevations

1 copy (letter sized)

- All drawings listed above.
- SEPA Checklist/Application
- Geotech Report
- Storm Drainage Report
- Vicinity Map

SEPA ENVIRONMENTAL CHECKLIST

THE PURPOSE OF SEPA

The State Environmental Policy Act (SEPA) requires the City to consider the environmental impacts of a proposal before making decisions. The City will use this checklist to help determine whether the environmental impacts of your proposal are significant and decide whether an Environmental Impact Statement (EIS) is required from a Determination of Significance (DS), or a Determination of Non-Significance (DNS) may be issued. An EIS must be prepared for all proposals with probable significant adverse impacts on the environment. Frequently, however, the impacts of a proposal can be mitigated through certain conditions or voluntary measures agreed to by the applicant. Mitigation measures may include, for example, limiting construction hours to reduce noise, preserving significant trees or habitat, and a variety of other issues regarding the environment.

New development proposals may also place an added burden on public services. New residents and employees use public parks, require fire and police protection, and other general government services. These impacts are significant during the first few years after a proposal is submitted to the City, and before the tax the City receives generated by the project. City service providers must cover increasing expenses without compensating revenues. Impact mitigation under SEPA is designed to help reduce the strain on public services.

Also, capital costs associated with providing facilities for new residents and employees are not covered by these tax revenues. In a rapidly growing community, existing City taxpayers must make up unpaid short-term operational costs and capital expenses. Unless these impacts are mitigated, current City taxpayers would be put in the position of subsidizing new development and would not realize a full return on their tax dollars.

WHEN A CHECKLIST IS REQUIRED

The SEPA review process generally begins when someone submits a permit application to the City, for example, a building permit, land use application such as a conditional use or a rezone, grading permits, or any such project where the City is required to issue a permit or approval. This is considered an "action" under SEPA, in the Washington Administrative Code WAC 197-11-704.

EXEMPTIONS TO SEPA

To be exempt from SEPA review, the proposed project must be smaller than or equal to the following:

- ◇ The construction or location of any residential structures of twenty (20) dwelling units;
- ◇ For multifamily residential projects, up to sixty (60) dwelling units;
- ◇ The construction of an office, school, commercial, recreational, service, or storage building 12,000 square feet in size with forty (40) parking spaces;
- ◇ For agricultural structures, up to forty thousand square feet;
- ◇ Repair, remodel, and maintenance activities (unless associated with a non-exempt proposal);
- ◇ For parking facilities, up to forty (40) parking spaces;
- ◇ For landfills and excavations in WAC 197-11-800(1)(b)(v), up to one thousand cubic yards;
- ◇ The vacation of streets and roads;
- ◇ The granting of variances based on special circumstances.

CRITICAL AREAS

Pursuant to the Washington Growth Management Act (GMA), the City requires protection of critical areas within the city limits. These areas, along with protective buffers, include wetlands and streams, frequently flooded areas, aquifer recharge areas, fish and wildlife habitat, and geologically hazardous areas (steep slopes, soils with high erosion rates). The Critical Areas Ordinance, as codified in Chapter 19.05 of the Port Townsend Municipal Code, establishes protection standards that minimize development impacts.

If your property is in a mapped critical area, or meets the criteria for a critical area, City staff may conduct a site investigation or you may need to obtain the services of a professional, such as an engineering geologist or wetlands specialist to determine if the mapping is correct. If it is, you may be required to obtain a Critical Area permit. Critical areas maps are available on the third floor of City Hall, 250 Madison Street, in the Planning and Community Development Department. You can request a City staff person to print this map for you.

INSTRUCTIONS FOR APPLICANTS

The Environmental Checklist asks you to describe some basic information about your proposal. Please answer the questions descriptively, but briefly. Be as accurate as possible, and use the most precise information available to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. However, answers to some questions may require expertise or technical assistance from qualified persons. The cost of obtaining such information is the responsibility of the applicant.

If you do not know the answer, write, "do not know," or if it does not apply to your proposal, write "does not apply." *Complete answers to the questions now may avoid unnecessary delays later.*

Some questions ask about governmental regulations, such as zoning, shoreline, and land use designations. Answer these questions if you can. If you need help, City staff can assist you. The Checklist questions apply to all parts of your proposal, even if you plan to do it over a period of time, or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects.

THE PROCESS

A pre-application conference with City Planning and Community Development (PCD) staff is required prior to submitting a SEPA environmental checklist. Filing a checklist with thorough answers the first time may avoid unnecessary delays later.

Within 14 days of determining that a SEPA application is complete, PCD will provide the public and adjacent property owners with notice and an opportunity to comment on the pending threshold determination.

The PCD will provide the applicant with a copy of the notice of the pending threshold determination posted on one (or in some cases two) public notice boards, and one (1) copy of an affidavit of posting. The applicant posts the notice(s), placing the board(s) in conspicuous locations on or near the property, and maintains them in place until the determination is issued. The affidavit of posting must be signed, notarized, and returned to the PCD no later than seven (7) days after the notices are provided. Upon issuance of the determination, any conditions imposed must be posted on the signboards and remain there until the project has been finalized.

The PCD will arrange one (1) publication of the notice to appear in a newspaper of general circulation within the City. Any person will then have a period of 20 days (30 days if a shoreline permit is involved) from the date of publication to submit information and comments to the PCD relating to the project. All comments received will be provided to the applicant. In addition to having the property posted and publishing the notice, PCD staff may opt to hold a public meeting to review the checklist, schedule a public site visit or informal meeting with the proponent, adjacent property owners, or interested citizens, or use any other reasonable method deemed appropriate by the staff.

The planning staff member who is the responsible official will make the threshold determination and issue either a Determination of Non-Significance (DNS), a Mitigated Determination of Non-Significance (MDNS), or a Determination of Significance (DS). An applicant may request in writing early notice if a DS is likely. A DS may not be appealed.

If the responsible official finds that a proposal is likely to have some potential significant environmental impacts, the applicant may modify the proposal to reduce such impacts, so that an MDNS could be issued. An MDNS lists specific mitigation measures to be implemented by the applicant to reduce impacts. If the project is approved with specific mitigating conditions, the applicant must post the conditions and return a signed, notarized affidavit of posting, and maintain the posted conditions during construction. The conditions must be removed upon completion of the project.

No threshold determination is final until expiration of the 15-day administrative appeal period. If it is appealed, then the determination is final when the decision is made on the appeal. If no written comments have been received on a threshold determination, no appeal is available.

A written statement appealing the threshold determination of the responsible official must be filed with the Planning and Community Development Director within fifteen (15) calendar days of the date of publication of the threshold determination. If any person has already filed comments on the pending determination, submittal of a written appeal letter is required. If a person has not commented previously, both a comment letter and a separate appeal letter must be submitted within the 15-day administrative appeal comment period.

The fee to appeal the Director's decision is \$413.92 (2024 fee schedule). The fee is waived if a valid petition is signed by 200 Port Townsend citizens and is submitted to PCD within the 15-day appeal period. The appeal must clearly list the names and addresses of each signatory. In addition to the appeal fee, appellants are responsible for Hearing Examiner fees. A deposit of \$500.00 is charged upfront, if the actual cost is less or more, the difference will be refunded or billed.

Decisions on additional necessary permits for a proposal cannot take place until the environmental review process is completed. In addition, no site work, including clearing or grading, may commence prior to completion of the SEPA process. So, while a hearing before the Planning Commission or the Hearings Examiner may be held before the environmental review process is completed, decisions must await completion of SEPA review.

The SEPA review process can normally be accomplished within 90 days of the City receiving a complete application, unless the City requests additional technical studies. Please contact a City planner at 360.379.5095 if you have questions.

USE OF CHECKLIST FOR NON-PROJECT PROPOSALS:

For non-project proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements – that do not contribute meaningfully to the analysis of the proposal.

**SEPA Application
Submittal Requirements
CHECKLIST**

- Completed Checklist
- Application fee
 - Minor:** \$817.84 (plus \$375.00 for notice fees)

 - Major:** \$1625.68 (Plus \$475.00 for notice fees) (*i.e. Planned Unit Developments, Full Subdivisions, Commercial projects in excess of 10,000 square feet and any other major projects*).
- Additional Fees:** Additional fees may apply should companion applications be required.

- The latest list of tax parcels and their owners within 300 feet of the property, prepared by a Title Company, with said owner's names and addresses typed on mailing labels. The City will supply envelopes. For minor SEPA, include 1 set of mailing labels; for major SEPA, include 2 sets of mailing labels.
- A vicinity map of the area as shown by the Jefferson County Assessor's Office
- Three copies of a site plan** showing the dimensions and shape of:
 - Existing lots
 - All existing or proposed structures/improvements
 - Existing and Proposed building floor space (if applicable)
 - Conceptual building elevations (if applicable)
 - Adjacent streets, alleys, driveways and off-street parking
 - Utilities, parking, landscape areas, adjacent land uses
 - All easements, deeds, restrictions or other encumbrances restricting the use of the property, if applicable
 - Significant natural features such as creeks, wetlands, steep slopes, etc.
 - The location of any critical areas and/or buffers as described in PTMC 19.05, including all floodplains, lying within or adjacent to the proposed variance; Critical Areas special reports where required by (PTMC 19.05 - Critical Areas)
 - North Arrow and scale
- If the above site plan is larger than 8-1/2" x 11", provide one 8-1/2" x 11" copy
- A drainage plan. If there are existing structures on-site, show and calculate the total amount of impervious surfaces (*i.e. building roof areas, driveways*) in square feet and current method of stormwater management (*i.e. downspouts, drywells, etc.*)
- Attach any additional information (reports, studies, maps, illustrations, leases, permits, etc.) that may further describe the proposal or as required by the Planning and Community Development Department.

SEPA INFORMATION

A. Background:

1. Name of proposed project, if applicable:

Jefferson County Early Learning Facility and Family Support Center

2. Name of applicant:

Jefferson County Hospital District, YMCA of the Olympic Peninsula, Jefferson County

Name of Contact person: Amanda Christofferson Grants Administrator

3. Address and phone number of applicant and contact person:

Jefferson County Auditor's Office

Jefferson County | 1820 Jefferson St. | Port Townsend, WA 98368

Phone: 360-385-9232

Email Addresses:

amchristofferson@co.jefferson.wa.us

4. Date checklist prepared:

03-01-2024

5. Agency requesting checklist:

City of Port Townsend

6. Proposed timing or schedule (including phasing, if applicable):

06/2024 Construction Start.

06/2025 Construction Completed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

ASTM Phase I

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No there are no other pending applications.

10. List any government approvals or permits that will be needed for your proposal, if known. Building permit from City of Port Townsend

Permit for operation of a licensed childcare facility from Washington State Dept. of Children Youth and Family

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

a. Brief Description:

The project is to develop and construct a child care facility prepared for full licensing to accommodate 42 new child care slots including 8 infant spots. Additionally, the project will support meal preparation and delivery for more than 100 families, and facilitate family resource navigation for more than 250 families. The project will consist of five classrooms, a commercially-rated kitchen, office space, mother's room, "flex" room, multi-purpose room, and an outdoor playground.

b. Have any known wetlands or their buffers been identified on the property?

No Yes

If yes, attach wetland report.

c. Are there any steep slopes (greater than 15%) on the property? No Yes

Yes

If yes, attach geotechnical report.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

(Attach additional pages if necessary.) The project is located in Port Townsend, Washington. It includes a 1.16 acre area that is currently an athletic field on the high school campus of the Port Townsend School District Property identified by Jefferson County Parcel as # 001023006 within the 30N/1W/2. The area is bounded by Blaine and Harrison Streets. The land has been officially leased to the Olympic Peninsula YMCA in order to achieve the mutual goal of increasing opportunities for early learning in the community.

Property Legal Description: Assessor's Tax #: 001023006

Addition: _____, Block(s): _____,

Lot(s): _____

Or Other Legal Description: S2 T30 R1W TAX 81, 85, 108, 109

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>B. ENVIRONMENTAL ELEMENTS</p> <p>1. EARTH</p> <p>a. General description of the site (mark one): <input checked="" type="checkbox"/> Flat <input type="checkbox"/> Rolling <input type="checkbox"/> Hilly <input type="checkbox"/> Steep slopes <input type="checkbox"/> Mountainous <input type="checkbox"/> Other</p> <p>b. What is the steepest slope on the site (approximate percent of the slope)? The general area of this site is flat with the exception of a minor zone to the East which contains a slope approximately 30 to 33 degrees _____ at it's steepest point.</p> <p>c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. _____ The site is underlain by continental glacial till (Qgt) deposits. _____ The Hydrologic soil group is C. _____</p> <p>d. Are there surface indications or a history of unstable soils in the immediate vicinity? If so, describe. _____ No. _____</p> <p>e. Describe the purpose, type, total area, and approximate quantities of any filling, excavation, and grading proposed. Indicate source of fill. Site area: 53,501 sf. _____ Cut: 1,923 cy _____ Fill: 402 cy _____ Net: 1,521 cy of cut _____</p> <p>f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. Erosion control measures shall be placed by the contractor prior to construction to reduce the potential for erosion _____ _____</p>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>g. About what percent of the site would be covered with impervious surfaces after project construction (for example, asphalt or buildings)?</p>	
<p>Approximately 55% of our leased land area (leased land area is a portion of an existing parcel).</p>	
<p>h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: Proposed measures include straw wattles, sediment storage tank/pond, construction entrance, silt fence, catch basin inserts, plastic covering, and hydroseeding.</p>	
<p>2. AIR</p>	
<p>a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.</p>	
<p>None</p>	
<p>b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.</p>	
<p>No. This is a residential zone with Historic Commercial Zone within 1500 ft. No Light Industrial/ Heavy Industrial or Manufacturing zoning in the vicinity.</p>	
<p>c. Proposed measures to reduce or control emissions or other impacts to air, if any:</p> <p>N/A</p>	

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<p>3. WATER</p> <p>a. Surface Water:</p> <p>1) Is there any surface water body on or in the immediate vicinity of the site (including year-round or seasonal streams, salt waters, lakes, ponds, and wetlands)? If yes, describe the type and provide names. If appropriate, state what stream or river it flows into: <hr/> There are no surface water bodies in the immediate vicinity or on the project site. Refer to Jefferson County Internal GIS mapping <hr/> showing layers for FEMA Flood Zones, Wetland, and DNR Streams and Water Bodies Type 1-9 <hr/></p> <p>2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, describe the work and attach the available plans. <hr/> N/A <hr/> <hr/> <hr/></p> <p>3) Estimate the amount of fill and dredge material that would be placed in or removed from the surface water or wetlands and indicate the area of the site that would be affected. Identify the source of the fill material. <hr/> N/A <hr/> <hr/></p> <p>4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose and approximate quantities, if known. <hr/> No, this area is served by the City of Port Townsend for water and sewer service. <hr/> <hr/> <hr/></p>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>5) Does the proposal lie within a 100-year flood plain? If so, note the location on the site plan.</p> <p>No.</p> <hr/> <hr/> <hr/>	
<p>6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.</p> <p>No.</p> <hr/> <hr/> <hr/>	
<p>b. Ground Water:</p> <p>1) Will ground water be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to ground water? Give a general description, purpose, and approximate quantities, if known.</p> <p>No.</p> <hr/> <hr/> <hr/> <p>2) Describe waste material that would be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals ..., agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve:</p> <hr/> <p>This property is served by the City of Port Townsend Waste Water treatment facility.</p> <hr/> <hr/>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>c. Water runoff (including stormwater):</p> <p>1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. Stormwater runoff is anticipated. Stormwater will be routed on site to a stormwater detention pond and then pumped to existing stormwater infrastructure onsite that ultimately discharges to city infrastructure to the southwest.</p> <p>2) Could waste materials enter ground or surface waters? If so, generally describe. The contractor shall implement contamination protections to reduce the potential for waste materials to leave the site.</p> <p>3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. The project proposes to mimic existing drainage patterns to the maximum extent feasible.</p> <p>4) Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any. Stormwater detention pond, stormwater catch basins and routing on-site, planted surfacing.</p>	
<p>4. PLANTS</p> <p>a. Check the types of vegetation found on the site:</p> <p><u>Deciduous tree:</u> <input type="checkbox"/> Alder <input type="checkbox"/> Maple <input type="checkbox"/> Aspen</p> <p><input type="checkbox"/> Other _____</p> <p><u>Evergreen tree:</u> <input type="checkbox"/> Fir <input type="checkbox"/> Cedar <input type="checkbox"/> Pine</p> <p><input type="checkbox"/> Other _____</p> <p><input type="checkbox"/> Shrubs</p>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p><input checked="" type="checkbox"/> Grass</p> <p><input type="checkbox"/> Pasture</p> <p><input type="checkbox"/> Crop or Grain</p> <p><input type="checkbox"/> Orchards, vineyards or other permanent crops</p> <p><u>Wet Soil Plants:</u> <input type="checkbox"/> Cattail <input type="checkbox"/> Buttercup <input type="checkbox"/> Bulrush</p> <p><input type="checkbox"/> Skunk Cabbage <input type="checkbox"/> Other _____</p> <p><u>Water Plants:</u> <input type="checkbox"/> Water Lily <input type="checkbox"/> Eelgrass <input type="checkbox"/> Milfoil</p> <p><input type="checkbox"/> Other _____</p> <p><input type="checkbox"/> Other types of vegetation _____</p>	
<p>b. What kind and amount of vegetation would be removed or altered?</p> <p> The grass will be removed in the area of the building site.</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>c. List threatened or endangered species known to be on or near the site.</p> <p>_____</p> <p> None known.</p> <p>_____</p> <p>_____</p>	
<p>d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:</p> <p> Native vegetation will be used around the perimeter of the stormwater features and surrounding landscape enhancements.</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>e. List all noxious weeds and invasive species known to be on or near the site:</p> <p> Western hemlock is to the north of the site.</p> <p>_____</p> <p>_____</p> <p>_____</p>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."

EVALUATION FOR AGENCY USE ONLY

5. ANIMALS

a. Check any birds and animals that have been observed on or near the site or are known to be on or near the site:

Birds:

Hawk Heron Eagle Songbirds

Other: _____

Mammals: Deer Bear Elk Beaver

Other: _____

Fish: Bass Salmon Trout

Herring Shellfish

Other: _____

b. List any threatened or endangered species known to be on or near the site.

Utilizing the WDFW Priority Habitat and Species mapping tool no known data was provided.

c. Is the site part of a migration route? If so, explain.

Not known.

d. Proposed measures to preserve or enhance wildlife, if any:

Planting of native vegetation for berries and cover is meant to enhance bird and small animal habitat. Use of a raingarden will likewise enhance wildlife access to water.

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>e. List any invasive animal species known to be on or near the site.</p> <p>No known.</p> <hr/> <hr/> <hr/>	
<p>6. ENERGY AND NATURAL RESOURCES</p>	
<p>a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it would be used for heating, manufacturing, etc.</p> <p>All electric.</p> <hr/> <hr/> <hr/> <hr/>	
<p>b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.</p> <p>No.</p> <hr/> <hr/>	
<p>c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:</p> <p>See attached.</p> <hr/> <hr/>	
<p>7. ENVIRONMENTAL HEALTH</p>	
<p>a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.</p> <p>No.</p>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>1) Describe any known or possible contamination at the site from present or past uses. Based on Phase I ESA performed by certified engineers site visit, historical research and evaluation of potential off-site risks no contamination concerns were identified.</p>	
<p>2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.</p> <hr/> <p>None.</p>	
<p>3) Describe special emergency services that might be required.</p> <hr/> <p>None.</p>	
<p>4) Proposed measures to reduce or control environmental health hazards, if any:</p> <hr/> <p>None.</p>	
<p>b. NOISE</p>	
<p>1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?</p> <hr/> <p>The traffic speeds in the area are all 25pmh.</p>	
<p>2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.</p> <hr/> <p>Short</p>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>3) Proposed measures to reduce or control noise impacts, if any:</p> <p>Retention of existing vegetation to the East to provide a natural noise disruptor to the adjacent residences.</p> <hr/> <hr/> <hr/>	
<p>8. LAND AND SHORELINE USE</p>	
<p>a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.</p> <p>The current use is as a sports field for the Port Townsend School District (PTSD). Though it has been defunct for some time and</p> <hr/> <p>used only intermittently for that purpose. It neighbors a residential neighborhood.</p> <hr/>	
<p>b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agriculture or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource land has not been designated, how many acres of farmland or forest land tax status will be converted to non-farm or non-forest use?</p> <p>No.</p> <hr/> <hr/> <hr/>	
<p>1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversized equipment access, the application of pesticides, tilling, and harvesting? If so, describe.</p> <p>No. This is a residential zone in the Urban Growth Area of Incorporated Port Townsend.</p> <hr/> <hr/>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>c. Describe any structures on the site.</p>	
<p>One small shed exists currently and a baseball diamond backstop.</p>	
<p>d. Will any structures be demolished? If so, what?</p>	
<p>Both will be demolished.</p>	
<p>e. What is the current zoning classification of the site?</p>	
<p>The land is zoned for City Public Infrastructure.</p>	
<p>f. What is the current comprehensive plan designation of the site?</p>	
<p>Public Infrastructure.</p>	
<p>g. If applicable, what is the current Shoreline Master Program designation of the site?</p>	
<p>N/A</p>	
<p>h. Has any part of the site been classified as an "critical area" by the city or the county? If so, specify.</p>	
<p>No.</p>	
<p>i. Approximately how many people would reside or work in the completed project?</p>	
<p>100 people approximately.</p>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>j. Approximately how many people would the completed project displace?</p> <hr/> <p>None.</p> <hr/>	
<p>k. Proposed measures to avoid or reduce displacement impacts, if any:</p> <hr/> <p>N/A</p> <hr/>	
<p>l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:</p> <hr/> <p>The proposed project to build an Early Learning Facility is in keeping with the PTSD mission and land use.</p> <hr/>	
<p>m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:</p> <hr/> <p>N/A</p> <hr/>	
<p>9. HOUSING</p> <p>a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.</p> <hr/> <p>N/A</p> <hr/>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.</p> <hr/> <p>N/A</p> <hr/> <p>c. Proposed measures to reduce or control housing impacts, if any:</p> <p>N/A</p> <hr/>	
<p>10. AESTHETICS</p>	
<p>a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?</p> <p>22 feet.</p> <hr/> <hr/>	
<p>b. What views in the immediate vicinity would be altered or obstructed?</p> <hr/> <p>None. The proposed structure is only one-story and is distanced from other structures.</p> <hr/>	
<p>c. Proposed measures to reduce or control aesthetic impacts, if any:</p> <hr/> <p>By making the structure a modest one-story, it reduces the potential of visual impacts. There is also proposed landscaping surrounding the building to help it blend into its surroundings.</p> <hr/>	
<p>11. LIGHT AND GLARE</p>	
<p>a. What type of light or glare would the proposal produce? What time of the day would it mainly occur?</p> <hr/> <p>Indoor lighting would occur during daytime operations of the building. Exterior building and parking lot pole lights will be downward facing to reduce light pollution and remain on throughout the evening for security. The proposed light should not create glare or issues off-site.</p> <hr/>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>b. Could light or glare from the finished project be a safety hazard or interfere with views?</p> <hr/> <p>No. The proposed lighting will increase safety and will not interfere with views.</p> <hr/> <p>c. What existing off-site sources of light or glare may affect your proposal?</p> <hr/> <p>None.</p> <hr/> <p>d. Proposed measures to reduce or control light and glare impacts, if any:</p> <hr/> <p>Downward facing exterior lights and parking lot poles.</p> <hr/>	
<p>12. RECREATION</p>	
<p>a. What designated and informal recreational opportunities are in the immediate vicinity?</p> <p>The Port Townsend Highschool maintains sports fields on the property of all types; soccer, football, baseball, tennis, pickleball, and gymnasium for basketball and volleyball.</p> <hr/> <p>b. Would the proposed project displace any existing recreational uses? If so, describe.</p> <p>The proposed project does occur in an area with a sports field. The school district has an improved and utilized baseball diamond within 500 feet of the site and an improved and maintained softball field within approximately one mile.</p>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>c. Proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or applicant, if any:</p> <p>The site will have an improved playground for use by the age of children that it will serve.</p> <hr/> <hr/> <hr/>	
<p>13. HISTORICAL AND CULTURAL PRESERVATION</p>	
<p>a. Are there any buildings, structures, or sites located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.</p> <p>No buildings or structures are over 45 years old on the leased project site.</p> <hr/> <p>Immediately adjacent structures are older than 45 years old but are not listed on national registers. Also on this site is the Lincoln</p> <hr/> <p>School Building which is older than 45 years old and is registered with the National Register for Historic Places.</p>	
<p>b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.</p> <hr/> <p>No.</p> <hr/> <hr/>	
<p>c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archeological surveys, historic maps, GIS data, etc.</p> <p>Conducted consultation with the Jamestown S'Klallam Tribal Historic Preservation Office (THPO) and the State Department of</p> <hr/> <p>Archaeology and Historic Preservation (DAHP). Both concluded a determination of no cultural resource impacts on the site with the stipulation of an Inadvertent Discovery Plan is following for all ground disturbing activities.</p>	

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<p>d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.</p> <hr/> <p>Follow the requirements of the Inadvertent Discovery Protocol.</p> <hr/>	
<p>14. TRANSPORTATION</p>	
<p>a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.</p> <hr/>	
<p>This project is using an existing driveway entrance off of an existing improved road, Blaine Street.</p> <hr/>	
<p>b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?</p> <hr/>	
<p>Site is served by Jefferson Transit within 889 ft.</p> <hr/>	
<p>c. How many additional parking spaces would the completed project or non-project proposal have?</p> <hr/>	
<p>15</p> <hr/>	
<p>How many spaces would the project or proposal eliminate? _____</p>	
<p>None</p> <hr/>	
<p>d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).</p> <p>There will be an improved public 6 foot wide gravel pathway along the Blaine St. frontage.</p> <hr/>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<p>e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.</p> <p><u>This project is located over 4 miles distance from the county airport.</u> <u>No rail exists in Port Townsend. The project is half a mile from the</u> <u>Washington State Ferry terminal at Port Townsend.</u></p>	
<p>f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?</p> <p><u>Per the Traffic Impact Analysis provided by Transportation Solutions there are 214 weekday daily trips estimated with 107 in and 107 out.</u></p> <p><u>Peak volumes would be morning and late afternoon during drop-off and pick-up. Select trips from commercial trucks would occur for delivery of food/supplies to the commercial kitchen.</u></p>	
<p>g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.</p> <p><u>No. There are no forest or agricultural product uses at the site.</u></p>	
<p>h. Proposed measures to reduce or control transportation impacts, if any:</p> <p><u>This project enlisted the help of Jeff Hee, a senior transportation engineer from Transportation Solutions, who reported that the location of the</u> <u>proposed building does not impact sightlines at the site driveway.</u> <u>Overall, Mr. Hee stated that project impacts are not forecasted to impact the local area significantly or adversely.</u></p>	
<p>15. PUBLIC SERVICES</p>	
<p>a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.</p> <p><u>Analysis indicates that the population of young children in need of childcare already exists in the community. This will most likely not</u> <u>result in additional needs for services due to increased population.</u></p>	

<p>Please print in ink or type each answer. Please do not write in area designated "Evaluation."</p>	<p>EVALUATION FOR AGENCY USE ONLY</p>
<p>b. Proposed measures to reduce or control direct impacts on public services, if any:</p> <p>_____</p> <p>N/A</p> <p>_____</p> <p>_____</p>	
<p>16. UTILITIES</p> <p>a. Check which utilities are currently available at the site: <input checked="" type="checkbox"/> Electricity <input type="checkbox"/> Natural Gas <input checked="" type="checkbox"/> Water <input checked="" type="checkbox"/> Refuse Service <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Septic System <input checked="" type="checkbox"/> Sanitary Sewer <input type="checkbox"/> Other</p> <p>b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed. Jefferson County Public Utility District provides electric utility in the service area. City of Port Townsend provides water and sewer service to the project area. Both of which will require some improvement in order to achieve the new use. Murrays disposal provide refuse and recycle service.</p> <p>C. SIGNATURE</p> <p>The above answers are true and complete to the best of my knowledge. I understand the lead agency is relying on this information to make its decision.</p> <p>Signature: _____</p> <p>Name of signee: _____</p> <p>Position and agency/Organization: _____</p> <p>Date Submitted: _____</p>	

Please print in ink or type each answer. Please do not write in area designated "Evaluation."

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D. Supplemental sheet for non-project actions

(IT IS NOT NECESSARY to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, that would affect the item at a greater intensity or at a faster rate than if the proposal was not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Please print in ink or type each answer. Please do not write in area designated "Evaluation."

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3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Please print in ink or type each answer. Please do not write in area designated "Evaluation."	EVALUATION FOR AGENCY USE ONLY
<hr/> <p>Proposed measures to avoid or reduce shoreline and land use impacts are:</p> <hr/> <hr/> <p>6. How would the proposal be likely to increase demands on transportation or public services and utilities?</p> <hr/> <hr/> <p>Proposed measures to reduce or respond to such demand(s) are:</p> <hr/> <hr/> <p>7. Identify, if possible, whether the proposal may conflict with local, state or federal laws or requirements for the protection of the environment?</p> <hr/> <hr/>	

6. ENERGY AND NATURAL RESOURCES

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

- 1.VRF and dedicated outside air heat pumps for heating and cooling which is more efficient than heating with electric heat
- 2.VRF heat recovery which transfers heating or cooling between spaces
- 3.Heat pump domestic hot water heating which is more efficient than electric heating
- 4.Dedicated outside air handler system (DOAS) with heat wheel which captures exhaust air energy and transfers to the outside air thereby reducing the energy used by the DOAS
- 5.DOAS are demand controlled which means they only bring in the amount of air required for vary ventilation
- 6.All equipment will operate on schedules which will reduce the energy used in unoccupied times
- 7.The roof shades windows during the summer to reduce cooling energy use but allows winter summer sun to reduce heating loads
- 8.Excellent R-values in the exterior wall and roof which reduce cooling and heating loads



GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

**GEOTECHNICAL ENGINEERING INVESTIGATION
JEFFERSON COUNTY EARLY LEARNING CENTER
1500 VAN NESS STREET
PORT TOWNSEND, WASHINGTON**

**PROJECT NO. 102-23021
OCTOBER 5, 2023
REVISED JANUARY 31, 2024**

Prepared for:

**OLYMPIC PENINSULA YMCA
ATTN: MS. WENDY BART
675 NORTH 5TH AVENUE, SUITE 3A
SEQUIM WASHINGTON 98382**

Prepared by:

**KRAZAN & ASSOCIATES, INC.
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GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

October 5, 2023
Revised January 31, 2024

KA Project No. 102-23021

Olympic Peninsula YMCA
675 North 5th Avenue, Suite 3A
Sequim, Washington 98382

Attn: Ms. Wendy Bart
Email: wendy@olympicpeninsulaymca.org
Tel: (360) 504-0526

Reference: Geotechnical Engineering Services
Jefferson County Early Learning Center
1500 Van Ness Street
Port Townsend, Washington

Dear Ms. Bart,

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.



Vijay Chaudhary, P.E.
Project Engineer

AG:EA:VC:SEW

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October 5, 2023
Revised January 31, 2024

KA Project No. 102-23021

**GEOTECHNICAL ENGINEERING INVESTIGATION
JEFFERSON COUNTY EARLY LEARNING CENTER
1500 VAN NESS STREET
PORT TOWNSEND, WASHINGTON**

INTRODUCTION.

This report presents the results of our geotechnical engineering investigation for the Proposed Jefferson County Early Learning Center project located at 1500 Van Ness Street in Port Townsend, Washington, as shown on the Vicinity Map in Figure 1. Discussions regarding site conditions are presented in this report, together with conclusions and recommendations pertaining to site preparation, excavations, structural fill, utility trench backfill, foundations, pavement design, stormwater infiltration, drainage, and erosion control.

For our use in preparing this report, we have reviewed the plan sheet A100 titled “Jefferson County Early Learning Center”, prepared by Present Future Architects, dated May 25, 2023, a topographic survey, prepared by Van Aller Surveying, dated July 27, 2023.

A site plan showing approximate locations of the explorations is presented following the text of this report in Figure 2. A description of the field investigation and laboratory testing as well as the exploration logs are presented in Appendix A. Appendix B contains a guide to aid in the development of earthwork specifications. Pavement design guidelines are presented in Appendix C. The recommendations in the main text of the report have precedence over the more general specifications in the appendices

PURPOSE AND SCOPE.

This investigation was conducted to evaluate the subsurface soil and groundwater conditions at the subject property, to develop geotechnical engineering recommendations for use in the design of specific construction elements, and to provide criteria for site preparation and earthwork construction.

Our scope of services was performed in general accordance with our proposal for this project, dated August 2, 2023 (Proposal Number G23028WAP) and included the following:

- An exploration of the subsurface soil and groundwater conditions by advancing four (4) soil borings to a maximum depth of 31.5 feet below existing ground surface (bgs) using a subcontracted drill rig;

- An exploration of the subsurface soil and groundwater conditions by excavating two (2) test pits to a maximum depth of 7.5 feet bgs using a subcontracted excavator and operator;
- Provide a site plan showing the soil boring and test pit locations;
- Provide comprehensive boring and test pit logs including soil stratification and classification, and groundwater levels where applicable;
- Perform one (1) Large-Scale Pilot Infiltration Test (PIT) and provide opinions and recommendations regarding stormwater infiltration feasibility in accordance with Volume V, Chapter 5 of the 2019 Department of Ecology (DOE) Stormwater Management Manual for Western Washington (SWMMWW);
- Provide foundation recommendations for the proposed structures including foundation type, allowable bearing pressure, anticipated settlements (both total and differential), coefficient of horizontal friction, and frost penetration depth;
- Provide recommendations for seismic design considerations including site coefficient and ground acceleration based on the 2018 IBC;
- Provide recommendations for retaining wall design including lateral earth pressures (active and passive);
- Provide recommendations for structural fill materials, placement, and compaction;
- Provide recommendations regarding the suitability of on-site soils as structural fill;
- Discuss potential geological hazards and provide mitigation recommendations as applicable;
- Provide recommendations for temporary excavations;
- Provide recommendations for site drainage and erosion control;
- Provide recommendations for pavement design.

Environmental services, such as chemical analysis of soil and groundwater for possible environmental contaminants, are not included in our scope of services for this project.

PROPOSED DEVELOPMENT

We understand that the site development will include design and construction of one commercial buildings with an associated parking lot and driveway. We understand that development will also consist of design

and construction of associated utilities, bioswale, and landscape areas. We understand that onsite stormwater management is being considered.

SITE DESCRIPTION AND SURFACE CONDITIONS

The site is situated within the southeastern portion of a developed assessor parcel 001023006. The parcel covers an area of approximately 6.52 acres. The site is bordered by Harrison Street to the East, Blaine Street to the south, a paved access road to the west, ancillary school structures to the north. The site can be accessed via the paved road to the west.

The parcel is currently developed with school buildings, shed/ storage buildings, tennis courts, a gazebo, sidewalks, and paved parking and landscaped areas. The site is currently vacant field and appears to be previously graded. The site is generally flat at an elevation of approximately 192 feet with a steep, east-descending slope in the northeastern portion of the site. The steep slope is about 30 to 33 degrees (57 to 66 percent), with elevations ranging from approximately 190 feet to 165 feet. The slope along the eastern portion of the site is heavily vegetated with brush, brambles, and a few young to middle-aged trees. The remainder of the site is vegetated with grasses. There were two small concrete pads near the top of the slope in the northeastern portion of the site. We did not observe visual signs of shallow soil movement or soil creep along the slope, such as minor sloughing and curved tree trunks. We did not observe signs of significant erosion or accumulation of surface water during our site visit.

GEOLOGIC SETTING

The Geologic Map of Jefferson County Washington, (WA DNR Open File Report 2005-3, December 2005) indicates that the site vicinity is underlain by continental glacial till (Qgt) deposits. Glacial till is a compact deposit of clay, silt, sand, gravel, cobbles and boulders deposited at the base of the continental glacier. The soils exposed in our explorations were generally consistent with the mapped geology.

FIELD INVESTIGATION

Exploratory soil borings and test pits were completed to evaluate the subsurface soil and groundwater conditions at the site. The approximate locations of the explorations are shown on the Site Plan in Figure 2.

Soil Borings: Four (4) exploratory soil borings, designated B-1 through B-4 were completed on August 28, 2023 with a subcontracted drill rig. The soil borings were advanced to depths of approximately 9.0 to 31.5 feet bgs.

Test Pits: Test pits TP-1 and TP-2 was completed on August 28, 2023 with a subcontracted excavator and operator. The test pits were excavated to depths of about 6.0 to 7.5 feet bgs.

Large-Scale Pilot Infiltration Test (PIT): We performed one (1) Large-Scale PIT in accordance with the DOE 2019 SWMMWW, Volume V, Chapter 5. The PIT was performed at roughly 2 feet bgs in TP-1. The

area exposed for the PIT was at least 100 square feet. The testing included a pre-soak period, followed by determination of a steady-state infiltration rate and then a falling head infiltration rate testing. After the PIT was completed, the test pit was over-excavated to approximately 5.5 feet below the test elevation to document whether any restrictive layers or groundwater seepage were present.

A geologist from Krazan and Associates was present during the exploration, examined the soil and geologic conditions encountered, obtained samples of the different soil types, and maintained logs of the explorations. Representative samples of the subsurface soils encountered in the geotechnical explorations were collected and sealed in plastic bags. The soils encountered in the exploration were visually classified in general accordance with the Unified Soil Classification System (USCS). These samples were transported to our laboratory for further examination and testing.

SOIL PROFILE AND SUBSURFACE CONDITIONS

This section of the report is intended to provide a general description of the subsurface conditions. Detailed descriptions of the soils exposed in each of the explorations are presented in the exploration logs in Appendix A.

Undocumented Fill: Soil boring B-1, encountered moist, loose to medium dense brown to grayish brown silty sand with gravel to about 11.5 feet bgs, which was interpreted as undocumented fill.

Native Glacial Soils: Our explorations of the site generally encountered/exposed moist, medium dense to very dense, grayish brown to gray silty sand with gravel, brown to light brown sand with silt and gravel, and gray sand extending to the explored depths of 31.5 feet bgs. We interpreted these soils to be native glacial deposits. Cobbles and boulders were also encountered/exposed within this stratum.

Groundwater Observations: Groundwater seepage was not encountered during our explorations.

GEOLOGIC HAZARDS

Erosion Concern/Hazard

The Natural Resources Conservation Services (NRCS) map for the Jefferson County Area, Washington (WA635), classifies the site area as following:

- Townsend gravelly sandy loam (0 to 15 percent slopes), Hydrologic soil group C;

Hydrologic soil group C soils have moderate erosion potential when disturbed. These soils may erode rapidly if water is allowed to concentrate on steep slopes.

Based on our review of the City of Port Townsend Municipal Code, the existing slopes in the northeastern portion of the site would be considered erosion hazard area due to the steepness. During our site visit, we

did not observe signs of significant erosion along the slopes. Based on our explorations and visual site reconnaissance, it is our opinion that the proposed development will not adversely impact the erosion potential, provided that our recommendations are followed for both design and construction of the project. It has been our experience that soil erosion due to wind can be minimized by limiting the amount of stripped soil areas exposed during construction activities, frequently wetting the surface soils during construction, and with proper landscaping of the site following completion of construction. Typically, erosion of exposed soils will be most noticeable during periods of rainfall. The potential for erosion may be mitigated by the use of temporary erosion control measures, such as silt fences, hay bales, straw wattles, mulching, control ditches or diversion trenching, and contour furrowing. The walls of excavations should be covered with plastic sheeting, or other erosion control surfacing during periods of rainfall. Erosion control measures should be in place before the onset of wet weather. To minimize erosion concerns, the Erosion and Sediment Control section of this report should be followed. Stormwater runoff should not be allowed to flow over or concentrate on the steep slopes in the northeast portion of the site.

Landslide Hazard

We have reviewed the Washington State Department of Natural Resources (WADNR), Department of Energy (DOE), and Jefferson County published and interactive maps. The WADNR does not show any landslides mapped near the site vicinity. The DOE Coastal Zone Atlas map extends to the southern-half of the site and shows stable slopes. However, the steep slope along the northeastern portion of the site is not within the extent of the map. The Jefferson County Public Land Records online portal does not include any mapped landslide hazards on the project site.

We have reviewed the topographic map, prepared by Van Aller Surveying, dated July 27, 2023. Our review of the topographic map and surficial site reconnaissance indicate that there are east-descending steep slopes in the northeastern portion of the site. The slopes are inclined at about 19 to 33 degrees (35 to 66 percent), and the height ranges from 4 feet to 30 feet. The site slopes meet the City of Port Townsend *critical slopes* criteria, which is defined as any slope of 40 percent or steeper that exceeds a vertical height of 10 feet over a 25-foot horizontal run. As the referenced slope extends horizontally to the south, the slope becomes less than 40 percent or less than 10 feet in vertical height and is no longer considered a critical slope per the City of Port Townsend criteria. Please note that the extent of the critical slope depicted in Figure 2 is approximate. At the time of the site visit, the steep slope was heavily vegetated with brush, brambles, and a few young to middle-aged trees. During our site visit we did not observe signs of recent slide scarps, tension cracks, or slumps within the site that would indicate current deep-seated instability on the steep slopes within the property. Signs of shallow soil movement and soil creep, such as curved tree trunks, were not observed on the slopes of the property. However, it should be noted that soil creep is the gradual, imperceptible downslope movement of surficial soils under the effect of gravity, and is typical on steep slopes.

Our explorations generally exposed/encountered medium dense to very dense native glacial soils, which is interpreted to form the core of the site slopes and are considered to have good shear strength.

The final grading plan was not available at the time this report was prepared. Based on our communication with the design team and review of the preliminary civil plan sheets, prepared by Atwell, dated August 24, 2023, we understand that the grading will be minimal. Based on our explorations and our review of the available data, and provided that the recommendations of this report is followed for design and construction, it is our opinion that the proposed onsite and offsite development will not adversely impact the site slopes and associated buffers. In our opinion, a minimum of a 10-foot buffer from the top of the slope, and a 15-foot building setback will be adequate for this project.

This buffer should not to be disturbed or modified through placement of any fill or removal of the existing vegetation. No material of any kind should be placed permanently on the buffer or slope or be allowed to reach the slope, such as excavation spoils, lawn clippings and other yard waste, trash, and soil stockpiles. Replacement of vegetation in the undisturbed buffer area should be performed in accordance with the City of Port Townsend code. Under no circumstances should water be allowed to concentrate on the steep slopes. Any sloping areas disturbed during construction should be planted with vegetation as soon as practical to reduce the potential for erosion.

Seismic Hazard

The 2018 International Building Code (IBC), Section 1613.2.2, refers to Chapter 20 of ASCE 7-16 for seismic Site Class Definitions. It is our opinion that the overall soil profile corresponds to Site Class C as defined by Table 20.3-1 "Site Class Definitions," according to the ASCE 7-16 Standard. Site Class C applies to a "very dense soil and soft rock" profile. The seismic site class is based on a soil profile extending to a depth of 100 feet. The soil explorations on this site extended to a maximum depth of 31.5 feet and this seismic site class designation is based on the assumption that very dense conditions continue below the depth explored.

We referred to the Applied Technology Council (ATC) website and 2018 IBC to obtain values for S_s , S_{MS} , S_{DS} , S_I , S_{M1} , S_{D1} , F_a , and F_v . The ATC website utilizes the most updated published data on seismic conditions from the United States Geological Survey. The seismic design parameters for this site are presented in the following table:

Seismic Design Parameters
(Reference: 2018 IBC Section 1613.2.2, ASCE 7-16, and ATC)

Seismic Item	Value
Site Coefficient F_a	1.200
S_s	1.350
S_{MS}	1.620
S_{DS}	1.080
Site Coefficient F_v	1.500
S_1	0.493
S_{M1}	0.739
S_{D1}	0.493

Additional seismic considerations include liquefaction potential and amplification of ground motions by soft soil deposits. The liquefaction potential is highest for loose sand with a high groundwater table. The native soils primarily consisting of medium dense to very dense granular soils interpreted to underlie the site are considered to have a low potential for liquefaction and amplification of ground motion.

The Liquefaction Susceptibility Map of Jefferson County, Washington, by Stephen Palmer, et al. (WADNR, September 2004) indicates that the site is mapped in an area of very low liquefaction susceptibility. Based on our explorations and review of the above-mentioned map, it is our opinion that the site has a low liquefaction hazard, and the proposed development should not increase the liquefaction hazard provided that our recommendations are followed for both design and construction.

CONCLUSIONS AND RECOMMENDATIONS

General

It is our opinion from a geotechnical standpoint that the site is compatible with the planned development, provided that the geotechnical engineering recommendations presented in this report are included in the project design and implemented during construction. We recommended that Krazan review the final development design plans.

Soil Conditions: Our explorations were advanced in the proposed development areas. With the exception of B-1, competent native glacial soils were exposed/encountered near surface in our explorations, and extended to the maximum explored depths of 6.0 to 31.5 feet bgs. Competent native glacial soils were encountered at about 11.5 feet bgs in B-1.

Most of the soils exposed/encountered at this site are considered moisture-sensitive and will be easily disturbed and difficult to compact when wet. We recommend that construction take place during extended

periods of dry weather in the summer months, if possible. If construction is to take place during wet weather, additional expenses and delays should be expected due to the wet conditions. Additional expenses could include the need for placing a blanket of rock spalls to protect exposed subgrades and construction traffic areas. The on-site soils may be suitable for use as structural fill material, provided the moisture content is near optimum and the soil could be suitably compacted to specifications. *This will depend on the moisture content of the soils at the time of construction.* Krazan and Associates should be retained to determine if the on-site soils can be used as structural fill material at the time of construction.

Foundations: Based on our explorations, conventional spread footings supported on medium dense or firmer native soil, or on structural fill extending to medium dense or firmer native soil, should provide adequate support for the proposed structures. Detailed geotechnical engineering recommendations for foundation design are presented in this report.

Stormwater Drainage: Proper site grading and drainage should help maintain current stability conditions. A comprehensive drainage plan will be an important part of a successful development project at this site. Surface water runoff should not be allowed to develop concentrated flow over the steep slopes on this property during or after construction. Proper grading and functional drainage systems are important for maintaining the currently stable condition of the site slopes. We understand that a bioswale in the southwest portion of the site is being considered for stormwater management. Further discussion of stormwater management and infiltration rate is provided in the Stormwater Infiltration section of this report.

Site Preparation

In general, site clearing should include removal of any vegetation and associated root systems; wood; abandoned utilities; structures including foundations, rubble; and rubbish. After stripping of organic topsoil is completed, the building pad and pavement areas should be proof-rolled with a loaded tandem-axle dump truck and be visually inspected to identify any loose/soft areas.

Building Foundation Subgrade Preparation: In the building footprint, any loose/soft soils should be excavated to expose the underlying firm native soils. The resulting excavations should be filled to the planned bottom of the structure's subgrade elevations with suitable soils as per the **Structural Fill** section of this report. *Based on our soil explorations, we interpret the medium dense or firmer native load bearing soils at this site to be at about 1.0 to 2.0 feet bgs.*

Exterior Flatworks and Pavement subgrade preparation: Undocumented fill or loose/soft soils in the pavement areas should be removed to *at least 1-foot* below the planned subgrade elevation. We recommend that a high-strength woven geotextile separation fabric then be placed over the entire over excavated grade, such as Miraffi 600X or equivalent. After the fabric is placed, the area should be filled to the planned subgrade elevation with suitable soils as recommended in the **Structural Fill** section of this report. In the exterior flatwork (sidewalk) areas, any loose/soft soil should be removed to *at least 6-inches* below the planned subgrade. The geotextile separation fabric will not be needed for sidewalk areas. *Deeper*

excavation may be required, if yielding soil conditions and trash or debris are exposed during over-excavation.

During wet weather conditions, which typically occur from October through May, subgrade stability problems and grading difficulties may develop due to excess moisture, disturbance of moisture sensitive soils and/or the presence of perched groundwater. Earthwork construction during extended periods of wet weather could create the need to remove wet disturbed soils if they cannot be suitably compacted due to elevated moisture contents. Most of the soils exposed/encountered at this site are considered moisture-sensitive. If over-excavation is necessary, it should be confirmed through continuous monitoring and testing by a qualified geotechnical engineer or geologist. Soils that have become unstable may require drying to near their optimal moisture content before compaction is feasible. Selective drying may be accomplished by scarifying or windrowing surficial material during extended periods of dry, warm weather (typically during the summer months). If the soils cannot be dried back to a workable moisture condition, remedial measures may be required. Preparation of the site for wet weather conditions may consist of the placement of a layer of aggregate base for the protection of exposed soils during construction.

It should be understood that even if Best Management Practices (BMPs) for soil protection are implemented for the wet season, there is a significant chance that additional soil mitigation work will be needed.

Any buried structures encountered during construction should be completely removed and backfilled with structural fill. Excavations, depressions, or soft and pliant areas extending below the planned subgrade elevations should be excavated to expose medium dense or firmer soil, and be backfilled with structural fill. In general, any septic tanks, underground storage tanks, debris pits, cesspools, or similar structures and deleterious materials should be completely removed. Any concrete footings encountered in the planned foundation area should be removed to depth of at least 3 feet below proposed footing elevations or as recommended by the geotechnical engineer. The resulting excavations should be backfilled with structural fill.

All fill on the sloping areas should be placed as structural fill. Where fills greater than 8 feet are to be constructed on original ground that slopes at inclinations steeper than 6:1 (horizontal to vertical), benches should be cut into the existing slope as the filling operations proceed. Each bench should consist of a level terrace, a minimum of 4 to 8 feet wide (based on the width of the equipment utilized), with the rise to the next bench held to 4 feet or less. Where fills of comparable height will be constructed on ground that slopes at an inclination steeper than 4:1 (horizontal to vertical), a keyway should be provided along the toe of the fill slope in addition to the benches. Each keyway should consist of a level trench at least 8 feet wide and at least 2 feet deep, with side slopes not exceeding 1:1 (horizontal to vertical), cut into the existing slope.

Permanent fill slopes should be no steeper than 2 to 1 (horizontal to vertical). Fill materials should not be placed in any section of the slope until the subgrade for that section has been suitably prepared and evaluated by a representative of the geotechnical engineer. Brush, roots, sod or any other organic, perishable or unsuitable material should not be placed in the fill slope.

Site grading near the crowns of the reconstructed slopes should be accomplished, such that, excessive sheet run-off is prevented. The completed slopes should be seeded or otherwise vegetated to protect from future erosion. Well vegetated slopes at the recommended configuration should be reasonably protected from typical erosional effects. However, vegetation on the slopes may not provide protection from unusual flow conditions, such as flood events or concentrations of stormwater runoff occurring on the slopes.

A representative of our firm should be available on request during all grading operations to observe, test and evaluate earthwork construction. These testing and observation processes are an integral part of our service, as acceptance of earthwork construction is dependent upon compaction and stability of the material. The geotechnical engineer may reject any material that does not meet compaction and stability requirements. Further recommendations, contained in this report, are predicated upon the assumption that earthwork construction will conform to the recommendations set forth in this section and in the Structural Fill section of this report.

Structural Fill

Fill placed beneath foundations or other settlement-sensitive structures should be placed as structural fill. Structural fill, by definition, is placed in accordance with prescribed methods and standards, and is monitored by an experienced geotechnical professional. Field monitoring procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction. A representative of the geotechnical engineer should evaluate the subgrade prior to structural fill placement.

BMP's should be followed when considering the suitability of the existing materials for use as structural fill. The on-site soils including the undocumented fill may be suitable for reuse as structural fill, provided the soil is free of organic material and debris, and it is within ± 2 percent of the optimum moisture content. Laboratory testing of some of the on-site soils indicated percentage of silt and clay (passing no. 200 sieve) to be greater than 5. It should be noted that the on-site soils with silt and clay content greater than 5 percent will be difficult to compact during the wet weather. Cobbles and boulders were noted at the time of our exploration. *Cobbles and boulders should be removed from the soil prior to use as structural fill.* If the on-site soils are stockpiled for later use as structural fill, the stockpiles should be covered to protect the soil from wet weather conditions. We recommend that a representative of Krazan & Associates be on site during the excavation work to determine which soils are suitable for placement as structural fill.

Imported, all weather granular structural fill material should consist of well-graded gravel or a sand and gravel mixture with a maximum grain size of 3 inches and less than 5 percent fines (material passing the U.S. Standard No. 200 Sieve). Structural fill can also consist crushed rock, rock spalls and controlled density fill (CDF). All structural fill material should be submitted for approval to the geotechnical engineer at least 48 hours prior to delivery to the site.

Structural fill soils should be placed in horizontal lifts not exceeding 8 inches in thickness prior to compaction, moisture-conditioned as necessary, (moisture content of soil shall not vary by more than ± 2 percent of optimum moisture) and the material should be compacted to at least 95 percent of the maximum dry density based on ASTM D1557 Test Method. In-place density tests should be performed on all structural fill to document proper moisture content and adequate compaction. Additional lifts should not be placed if the previous lift did not meet the compaction requirements or if soil conditions are not considered stable.

Temporary Excavations

The on-site soils have variable cohesion strengths, therefore the safe angles to which these materials may be cut for temporary excavations is limited, as the soils may be prone to caving and slope failures in temporary excavations deeper than 4 feet. Temporary excavations in the existing materials should be sloped no steeper than 1H:1V where room permits. Flatter inclinations may be necessary where caving conditions, and groundwater seepage are encountered.

All temporary cuts should be in accordance with Washington Administrative Code (WAC) Part N, Excavation, Trenching, and Shoring. The temporary slope cuts should be visually inspected daily by a qualified person during construction work activities and the results of the inspections should be included in daily reports. The contractor is responsible for maintaining the stability of the temporary cut slopes and minimizing slope erosion during construction. The temporary cut slopes should be covered with plastic sheeting to help minimize erosion during wet weather and the slopes should be closely monitored until the permanent retaining systems are complete. Materials should not be stored and equipment operated within 10 feet of the top of any temporary cut slope. A Krazan & Associates geologist or geotechnical engineer should observe the temporary cut slopes, at least periodically, during the excavation work. The reason for this is that all soil conditions may not be fully delineated by the limited sampling of the site from the geotechnical explorations. In the case of temporary slope cuts, the existing soil conditions may not be fully revealed until the excavation work exposes the soil. Typically, as excavation work progresses the maximum inclination of the temporary slope will need to be evaluated by the geotechnical engineer so that supplemental recommendations can be made. Soil and groundwater conditions can be highly variable. Scheduling for soil work will need to be adjustable, to deal with unanticipated conditions, so that the project can proceed smoothly and required deadlines can be met. If any variations or undesirable conditions are encountered during construction, Krazan & Associates should be notified so that supplemental recommendations can be made.

Shallow Foundations

General: The proposed structures may be supported on a conventional spread foundation system bearing on the medium dense or firmer native soils or on structural fill including granular soils, rock spalls or CDF extending to the medium dense or firmer native soils. Based on our soil explorations, we interpreted the

medium dense or firmer native load bearing soils at this site to be approximately 1.0 to 2.0 feet bgs in the proposed building area.

Soil Bearing: Footings supported as mentioned-above, may be designed using an allowable soil bearing pressure of **3,000 pounds per square foot (psf)** for dead plus live loads. This value may be increased by 1/3 for short duration loads such as wind or seismic loading. A representative of Krazan and Associates should evaluate the foundation bearing soil and observe structural fill placement, where utilized.

For frost protection and bearing capacity considerations, exterior footings should have a minimum embedment depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footing widths should be based on the anticipated loads and allowable soil bearing pressure. Footings should have a minimum width of at least 12 inches regardless of load. Water should not be allowed to accumulate in footing trenches. All loose or disturbed soils should be removed from the foundation excavations prior to placing concrete.

Structural Fill in Footing Areas: Structural fill placed for foundation support should follow these recommendations. If structural fill consisting of granular soils or rock spalls are used, then the foundation excavations would need to be widened on both sides of the footing a distance equal to one-half of the depth of the over-excavation below the bottom of the footing. Structural fill consisting of granular soils should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. To reduce the volume of extra excavation needed for the footing trenches and to simplify structural fill placement, it may be practical to place CDF to fill the deeper footing trenches to the planned footing subgrade elevations. If CDF is used, the trench may be excavated only slightly wider (6 inches wider on each side) than the footing.

Potential Foundation Settlement: For foundations constructed as recommended, the total settlement is not expected to exceed 1-inch. Differential settlement should be less than 1/2-inch. Most settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated. It should be noted that the risk of liquefaction is considered low, given the composition and density of the native glacial soils.

Design Parameters – Lateral Resistance: Resistance to lateral displacement can be computed using an allowable friction factor of 0.40 acting between the bases of foundations and the supporting subgrade soil. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 300 pounds per cubic foot (pcf) acting against the appropriate vertical footing faces (neglecting the upper 12 inches). The allowable friction factor and allowable equivalent fluid passive pressure values include a factor of safety of 1.5. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance.

Foundation Drainage: Seasonal rainfall, water run-off, and the normal practice of watering trees and landscaping areas around the proposed structures, should not be permitted to flood and/or saturate

foundation subgrade soils. To reduce the buildup of water within the footing areas, continuous footing drains (with cleanouts) should be provided at the bases of the footings. The footing drains should consist of a minimum 4-inch diameter rigid perforated PVC pipe, sloped to drain, with perforations placed near the bottom and enveloped in all directions by washed rock and wrapped with filter fabric to limit the migration of silt and clay into the drain.

Floor Slabs and Exterior Flatwork

The floor slab and exterior flatwork subgrade should be prepared in accordance with the recommendations presented in the **Site Preparation** section of this report, and may be designed using a modulus of subgrade reaction value of $k = 200$ pounds per cubic inch (pci).

In areas where it is desired to reduce floor dampness, such as areas covered with moisture sensitive floor coverings, we recommend that concrete slab-on-grade floors be underlain by a water vapor retardant system. The system should consist of a vapor retardant sheeting underlain by a capillary break consisting of a minimum of 4-inches of compacted clean (less than 5 percent passing the U.S. Standard No. 200 Sieve), open-graded coarse rock of $\frac{3}{4}$ -inch maximum size. The vapor retardant sheeting should be protected from puncture damage. In addition, ventilation of the structure may be prudent to reduce the accumulation of interior moisture.

The exterior flatwork should be placed separately in order to act independently of the walls and foundation system.

Lateral Earth Pressures and Retaining Walls

We have developed criteria for the design of retaining or below grade walls. Our design parameters are based on retention of the native soils or structural fill. The parameters are also based on level, well-drained wall backfill conditions. Walls may be designed as “restrained” retaining walls based on “at-rest” earth pressures, plus any surcharge on top of the walls as described below, if the walls are braced to restrain movement and/or movement is not acceptable. Unrestrained walls may be designed based on “active” earth pressure, if the walls are not part of the buildings and some movement of the retaining walls is acceptable. Acceptable lateral movement equal to at least 0.2 percent of the wall height would warrant the use of “active” earth pressure values for design. The following table, titled **Wall Design Criteria**, presents the recommended soil related design parameters for retaining walls with well-drained level backfill.

Wall Design Criteria	
“At-rest” Conditions (Lateral Earth Pressure)	55 pcf (Equivalent Fluid Density) (Triangular Distribution)
“Active” Conditions (Lateral Earth Pressure)	35 pcf (Equivalent Fluid Density) (Triangular Distribution)
Seismic Increase for “Active” Conditions (Lateral Earth Pressure)	11 pcf x H (Uniform Distribution) Where H is the height of the wall in feet
Passive Earth Pressure on Low Side of Wall (includes factor of safety of 1.5)	Neglect upper 1-foot, then 300 pcf (Equivalent Fluid Density)
Soil-Footing Coefficient of Sliding Friction (includes factor of safety of 1.5)	0.40

If vehicular loads are expected to act behind the wall within a horizontal distance of less than or equal to one-half of the wall height, then a live load surcharge should be applied for the design. In this case, we recommend the addition of vehicle surcharges of 70 psf and 100 psf to the active and at-rest earth pressures, respectively.

The stated lateral earth pressures **do not** include the effects of hydrostatic pressure generated by water accumulation behind the retaining walls or loads imposed by construction equipment, foundations or roadways adjacent to the wall (surcharge loads). To minimize the lateral earth pressure and reduce the buildup of water pressure against the walls, continuous footing drains (with cleanouts) should be provided at the bases of the walls. The footing drains should consist of a minimum 4-inch diameter rigid PVC perforated pipe, sloped to drain, with perforations placed near the bottom. The drainpipe should be enveloped by 6 inches of washed gravel in all directions wrapped in filter fabric to prevent the migration of silt and clay into the drain.

The wall fills adjacent to and extending a lateral distance of at least 2 feet behind the walls should consist of free-draining granular material. All free-draining backfill should contain less than 3 percent fines (passing the U.S. Standard No. 200 Sieve) based upon the fraction passing the U.S. Standard No. 4 Sieve with at least 30 percent of the material being retained on the U.S. Standard No. 4 Sieve. **Alternatively**, a drainage composite may be used. It should be realized that the primary purpose of the free-draining material is the reduction of hydrostatic pressure. Some potential for the moisture to contact the back face of the wall may exist, even with treatment, which may require that more extensive waterproofing be specified for walls, which require interior moisture sensitive finishes.

We recommend that the wall fill be compacted to at least 95 percent of the maximum dry density based on ASTM D1557 Test Method. In-place density tests should be performed to verify adequate compaction. Soil compactors place transient surcharges on the backfill. Consequently, only light hand operated equipment is recommended for fill compaction within 3 feet of walls so that excessive stress is not imposed on the walls.

Erosion and Sediment Control

Erosion and sediment control (ESC) is used to minimize the transportation of sediment to wetlands, streams, lakes, drainage systems, and adjacent properties. Erosion and sediment control measures should be taken and these measures should be in general accordance with local regulations. At a minimum, the following basic recommendations should be incorporated into the design of the erosion and sediment control features of the site:

- 1) Phase the soil, foundation, utility, and other work, requiring excavation or the disturbance of the site soils, to take place during the dry season (generally May through September). However, provided precautions are taken using Best Management Practices (BMPs), grading activities can be undertaken during the wet season (generally October through April). It should be noted that this typically increases the overall project cost.
- 2) All site work should be completed and stabilized as quickly as possible.
- 3) Additional perimeter erosion and sediment control features may be required to reduce the possibility of sediment entering the surface water. This may include additional silt fences, silt fences with a lower Apparent Opening Size (AOS), construction of a berm, or other filtration systems.
- 4) Any runoff generated by dewatering discharge should be treated through construction of a sediment trap if there is sufficient space. If space is limited other filtration methods will need to be incorporated.
- 5) Surface water runoff should not be allowed to develop concentrated flow over the steep slopes on this property during or after construction.

Groundwater Influence on Structures and Earthwork Construction

Groundwater seepage was not encountered in our explorations. It should be recognized that groundwater elevations may fluctuate with time. The groundwater level will be dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, groundwater levels at the time of the field investigation may be different from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

If groundwater seepage is encountered during construction, we should observe the conditions to determine if dewatering will be needed. Design of temporary dewatering systems to remove groundwater should be the responsibility of the contractor. If earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated. These soils may “pump,” and the materials may not respond to densification techniques. Typical remedial measures include: disking and aerating the soil during dry weather; mixing the soil with drier materials; removing and replacing the soil with an approved fill material. A qualified geotechnical engineering firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Drainage and Landscape

Special attention to the drainage and irrigation adjacent to the buildings is recommended. Grading should establish drainage away from the structures and this drainage pattern should be maintained. Water should not be allowed to collect adjacent to the structures. Excessive irrigation within landscaped areas adjacent to the structure should not be allowed to occur.

The ground surface should slope away from building pads and pavement areas, toward appropriate drop inlets or other surface drainage devices. It is recommended that adjacent exterior grades be sloped a minimum of 2 percent for a minimum distance of 5 feet away from structures. Roof drains should be tightlined away from foundations. Roof drains should not be connected to the footing drains.

Pavement areas should be inclined at a minimum of 1 percent and drainage gradients should be maintained to carry all surface water to collection facilities, and suitable outlets. These grades should be maintained for the life of the project.

Utility Trench Backfill

We recommend that utility trench backfill be placed in general accordance with typical recommendations for structural fill placement. A firm and unyielding subgrade should allow for the proper placement of subsurface utilities. This could include the placement of geotextile and quarry rock in the bottom of utility trenches prior to placement of pipe bedding, utilities and trench backfill.

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards, by a contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

All utility trench backfill for this project should follow the recommendation as per the Structural Fill section of this report. Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. The

upper 5 feet of utility trench backfill placed in pavement areas should be compacted to at least 95 percent of the maximum dry density based on ASTM Test Method D1557. Below 5 feet, utility trench backfill in pavement areas should be compacted to at least 90 percent of the maximum dry density based on ASTM Test Method D1557.

Pipe bedding should be in accordance with the pipe manufacturer's recommendations. The contractor is responsible for removing all water-sensitive soils from the trenches regardless of the backfill location and compaction requirements. The contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Stormwater Infiltration

A Large-Scale PIT was performed in accordance with the DOE 2019 SWMMWW, Volume V, Chapter 5. The PIT was performed in TP-1 at a depth of about 2 feet bgs. The exposed soils at the test depth consisted of moist, gray silty sand with gravel and extended to the maximum explored depth of about 7.5 feet bgs, where refusal was encountered. The entire stratum was interpreted as native glacial till soils. The measured steady-state infiltration rate was 0.19 inches per hour. A total correction factor of 0.41 should be applied to the measured steady-state infiltration rate when evaluating the size of the stormwater management system.

Based on our explorations, and the Large-Scale PIT result, the on-site native glacial soils are not considered suitable for stormwater infiltration at this site.

Pavement Design

The pavement subgrade should be prepared in accordance with the recommendations presented in the **Site Preparation** section of this report. It should be noted that subgrade soils that have relatively high silt contents may be highly sensitive to moisture conditions. The subgrade strength and performance characteristics of a silty subgrade material may be dramatically reduced if it becomes wet. Therefore, we recommend that the pavement subgrade not be exposed for long periods, especially during wet weather.

Traffic loads were not provided, however, based on our knowledge of the proposed project, we expect the traffic to range from light duty (passenger automobiles) to heavy duty (firetrucks). The following tables show the minimum recommended pavement sections for both light duty and heavy-duty traffic loads.

**ASPHALTIC CONCRETE (FLEXIBLE) PAVEMENT
LIGHT DUTY**

Asphaltic Concrete	Aggregate Base*
3.0 in.	6.0 in.

HEAVY DUTY

Asphaltic Concrete	Aggregate Base*
4.0 in.	6.0 in.

**PORTLAND CEMENT CONCRETE (RIGID) PAVEMENT
LIGHT DUTY**

Min. PCC Depth	Aggregate Base*
6.0 in.	6.0 in.

HEAVY DUTY

Min. PCC Depth	Aggregate Base*
8.0 in.	6.0 in.

* 95% compaction based on ASTM Test Method D1557

The pavement specification in Appendix C provides additional recommendations. The asphaltic concrete depth in the flexible pavement tables should be a surface course type asphalt, such as Washington Department of Transportation (WSDOT) ½ inch HMA. The rigid pavement design is based on a Portland Cement Concrete (PCC) mix that has a 28-day compressive strength of 4,000 pounds per square inch (psi) with a fiber mesh. The design is also based on a concrete flexural strength or modulus of rupture of 575 psi.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions, including foundation bearing soils, are consistent with those exposed during our exploratory field work. This activity is an integral part of our services as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of our recommendations has been incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor. Furthermore, Krazan & Associates is not responsible for the contractor's procedures, methods, scheduling, or management of the work site.

LIMITATIONS

This report has been prepared for the exclusive use of the Olympic Peninsula YMCA and their assigns, for the specific application to the subject site. Geotechnical engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences improves. Although your site was analyzed using the most appropriate current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to improvements in the field of geotechnical engineering, physical changes in the site either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the time of completion of the soils report may require the soils report to be professionally reviewed. In light of this, the owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that three years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction are characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original geotechnical investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. Our report, design conclusions, and interpretations should not be construed as a warranty of the subsurface conditions. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report.

The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those encountered during our field investigation. The findings and conclusions of this report can be affected by the passage of time, seasonal weather conditions, manmade influences such as construction on or adjacent to the site, and natural events such as earthquakes, slope instability, flooding, or groundwater fluctuations. If any variations or undesirable conditions are encountered during construction, the geotechnical engineer should be notified so that supplemental recommendations can be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The geotechnical engineer should be notified of any changes so that the recommendations can be reviewed and re-evaluated.

Misinterpretations of this report by other design team members can result in project delays and cost overruns. These risks can be reduced by having Krazan & Associates, Inc. involved in the design team's meetings and discussions prior to and following submission of the geotechnical report. Krazan & Associates, Inc. should also be retained to review pertinent elements of the design team's plans and specifications. To reduce the risk of contractors misinterpreting the recommendations of this report, Krazan & Associates should participate in pre-bid and preconstruction meetings, and provide construction observations and testing during the site work.

This report is a geotechnical engineering investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our geotechnical engineering services did not include any environmental site assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater or atmosphere, or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessments.

The geotechnical information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical developments. We emphasize that this report is valid for this project as outlined above, and should not be used for any other site. Our report is prepared for the exclusive use of our client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (360) 598-2126.

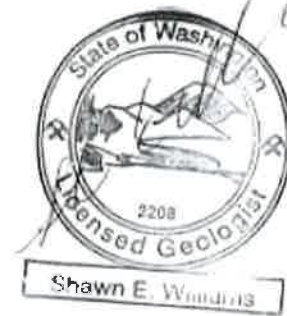
Respectfully submitted,

KRAZAN & ASSOCIATES, INC.



01/31/24

Vijay Chaudhary, P.E.
Project Engineer

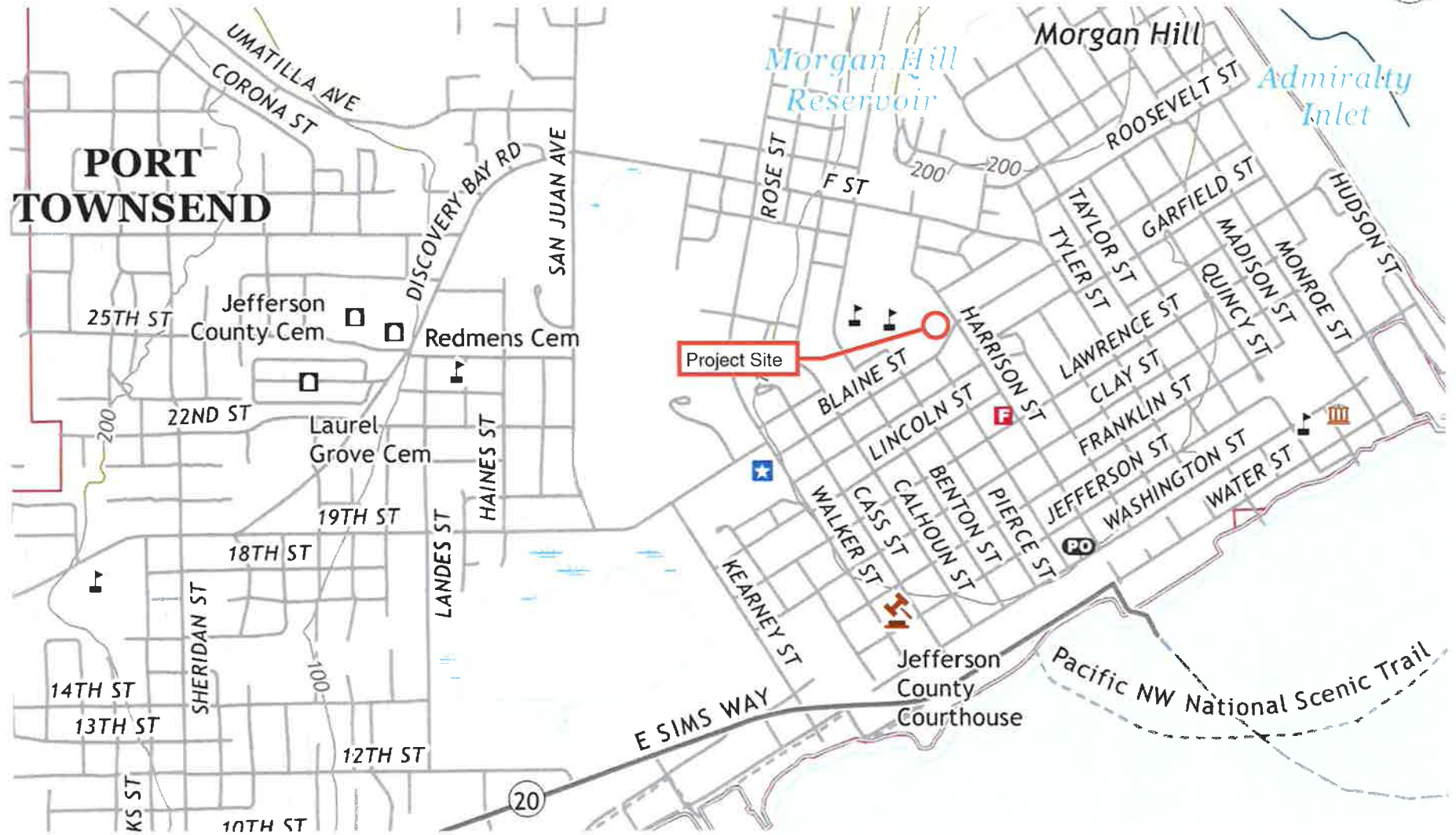


01/31/24

Shawn Williams, L.E.G.
Engineering Geologist

AG:EA:VC:SEW

Vicinity Map



Jefferson County Early Learning Center

Date: August 2023

Project Number: 102-23021

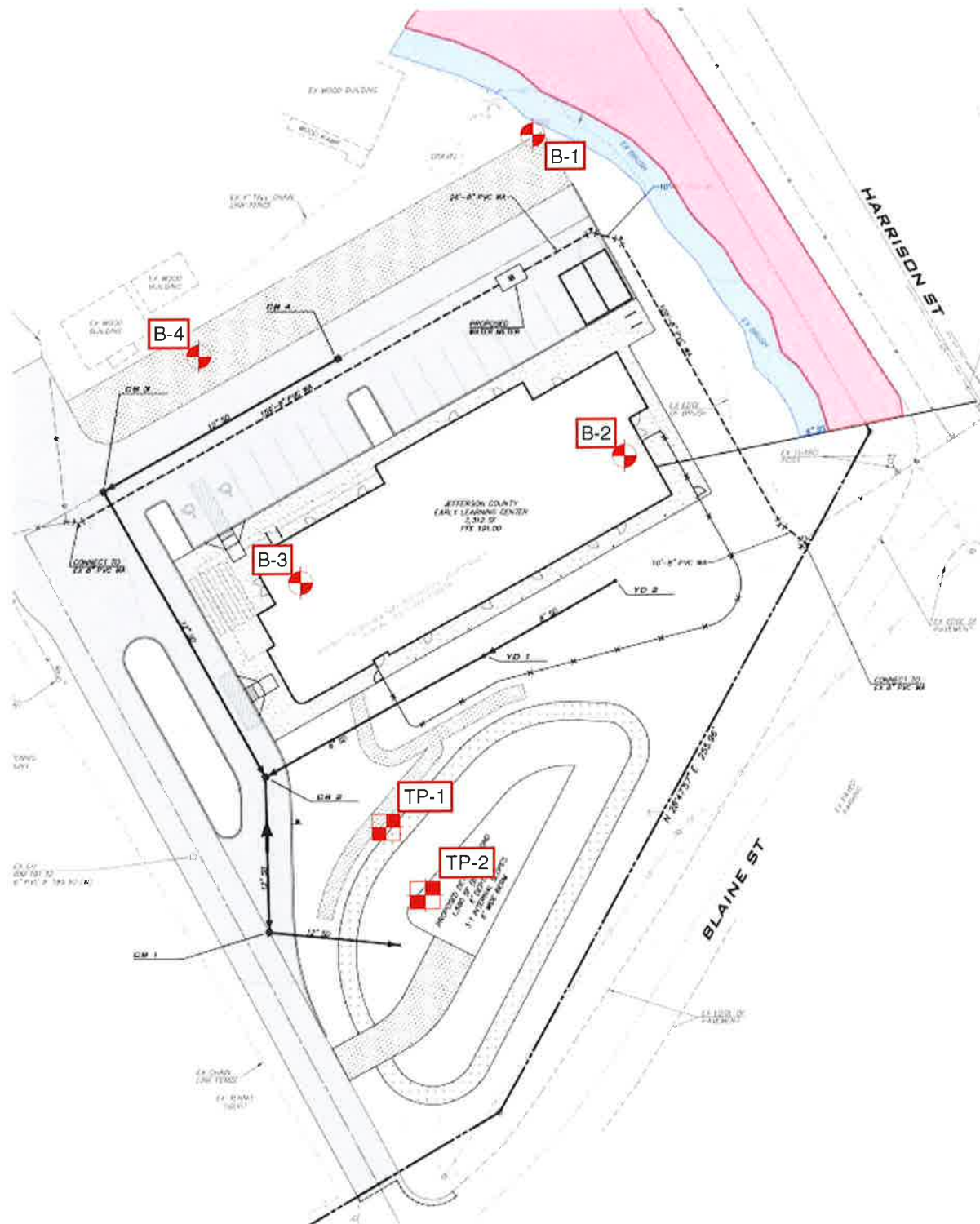
Drawn By: AG

Figure: 1





Not To Scale

Reference: USGS topographic map titled "Port Townsend South Quadrangle, Washington, Jefferson County, 7.5 Minute Series". dated 2020.

Site Plan



LEGEND

-  Approximate Landslide and Erosion Hazard Area
-  Approximate 10-foot Undisturbed Buffer Area
-  **TP-1** Test Pit Number and Approximate Location
-  **B-1** Boring Number and Approximate Location

Reference: Plan Sheet UP-01, created by Atwell Group, dated August 24, 2023.



Jefferson County Early Learning Center

Date: November 2023 | Project Number: 102-23021

Drawn By: AG | Figure: 2 | Not To Scale

APPENDIX A

FIELD INVESTIGATION AND LABORATORY TESTING

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploration program. Four (4) soil borings and two (2) test pits were conducted and sampled to evaluate the subsurface soil and groundwater conditions at the project site. The soil borings, designated B-1, B-2, B-3, and B-4 were drilled on August 28, 2023 using a subcontracted drill rig. The soil borings were advanced to depths between 9.0 feet and 31.5 feet bgs. The test pits, designated TP-1 and TP-2 were excavated on August 28, 2023 using an excavator subcontractor. The test pits were excavated to depths of about 6.0 and 7.5 feet bgs. The approximate boring and test pit locations are shown on the Site Plan (Figure 2). The depths shown on the attached boring and test pit logs are from the existing ground surface at the time of our exploration.

Soil boring samples were obtained by using the Standard Penetration Test (SPT) as described in ASTM Test Method D1586. The Standard Penetration Test and sampling method consists of driving a standard 2-inch outside-diameter, split barrel sampler into the subsoil with a 140-pound hammer free falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12-inches of an 18-inch sample interval is defined as the Standard Penetration Resistance, or N-value. The blow count is presented graphically on the boring log in this appendix. The resistance, or “N” value, provides a measure of the relative density of granular soils or of the relative consistency of cohesive soils.

Additionally, we performed one (1) Large-Scale PIT in accordance with the DOE 2019 SWMMWW, Volume V, Chapter 5. The PIT was performed at roughly 2 feet bgs in the TP-1. The area exposed for the PIT was at least 100 square feet. The testing included a pre-soak period, followed by determination of a steady-state infiltration rate and then a falling head infiltration rate testing. After the PIT was completed, the test pit was over-excavated to approximately 5.5 feet below the test elevation to document whether any restrictive layers or groundwater seepage were present.

A field geologist from Krazan and Associates was present during the explorations, continuously examined and visually classified the soils in general accordance with the Unified Soil Classification System (USCS), and maintained logs of the explorations, which are presented in this appendix. Representative samples of the soils encountered in the geotechnical explorations were collected and transported to our laboratory for further examination and testing.

Laboratory Testing

The laboratory testing program was developed primarily to determine the index properties of the soils. Test results were used for soil classification and as criteria for determining the engineering suitability of the surface and subsurface materials encountered. Sieve analysis and natural moisture content tests were performed on selected samples. The laboratory test results are included in this appendix.

Soil Classification

USCS Soil Classification				
Major Division			Group Description	
Coarse-Grained Soils < 50% passes #200 sieve	Gravel and Gravelly Soils < 50% coarse fraction passes #4 sieve	Gravel (with little or no fines)	GW	Well-Graded Gravel
			GP	Poorly Graded Gravel
		Gravel (with > 12% fines)	GM	Silty Gravel
			GC	Clayey Gravel
	Sand and Sandy Soils > 50% coarse fraction passes #4 sieve	Sand (with little or no fines)	SW	Well-Graded Sand
			SP	Poorly Graded Sand
		Sand (with > 12% fines)	SM	Silty Sand
			SC	Clayey Sand
Fine-Grained Soils > 50% passes #200 sieve	Silt and Clay Liquid Limit < 50		ML	Silt
			CL	Lean Clay
			OL	Organic Silt and Clay (Low Plasticity)
	Silt and Clay Liquid Limit > 50		MH	Inorganic Silt
			CH	Inorganic Clay
			OH	Organic Clay and Silt (Med. to High Plasticity)
Highly Organic Soils			PT	Peat

Relative Density with Respect to SPT N-Value			
Coarse-Grained Soils		Fine-Grained Soils	
Density	N-Value (Blows/Ft)	Density	N-Value (Blows/Ft)
Very Loose	0 - 4	Very Soft	0 - 1
Loose	5 - 10	Soft	2 - 4
Medium Dense	11 - 30	Medium Stiff	5 - 8
Dense	31 - 50	Stiff	9 - 15
Very Dense	> 50	Very Stiff	16 - 30
		Hard	> 30



Proposed Jefferson County Early Learning Center

Date: Sep 2023

References: USCS

Drawn By: AG

Project Number: 102-23021

Krazan & Associates, Inc.

LOG OF BORING No. B-1

Date Drilled: 8/28/23

Project: Jefferson County Early Learning Center

Notes:

Location: Port Townsend, WA

Ground Elevation: ~190 ft.

Logged By: AG

Hammer Type: Manual Automatic Other

Water Level: Not encountered.

Drilling Method: HSA

Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample No. /Type	1st 6"	2nd 6"	3rd 6"	N Value	N VALUE GRAPH (Last 12")						
								10	20	30	40	50		
0	Ground Surface													
0-2	Brown to grayish brown, silty sand with gravel (undocumented fill) (moist, loose to medium dense) -Becomes grayish brown and medium dense.	[Hatched Area]	S1/GB	-	-	-	-							
2-3			S2/SS	19	15	12	27							
3-6			S3/SS	7	9	13	22							
6-11			S4/SS	7	7	7	14							
11-15	Light brown, sand with silt and gravel (SP-SM) (moist, medium dense to dense)													
15-16	-Gravel no longer observed.													
16-20			S5/SS	22	11	19	30							
20-25	-Becomes dense.													
25-26	Gray, sand (SP) (moist, very dense)		S7/SS	23	50/6"		50							
26-31			S8/SS	50/6"			50							
31-32	End of Exploratory Boring													

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings-	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	D C - Driving Casing	

Krazan & Associates, Inc.

LOG OF BORING No. B-2

Date Drilled: 8/28/23

Project: Jefferson County Early Learning Center

Notes:

Location: Port Townsend, WA

Ground Elevation: ~190 ft.

Logged By: AG

Hammer Type: Manual Automatic Other

Water Level: Not encountered.

Drilling Method: HSA

Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample No. /Type	1st 6"	2nd 6"	3rd 6"	N Value	N VALUE GRAPH (Last 12")						
								10	20	30	40	50		
0	Ground Surface													
1	Grayish brown to gray, silty sand with gravel and cobbles (SM) (moist, very dense) -Becomes gray.		S1/GB											
2			S2/SS	50/6"				50						
3			S3/SS	50/6"				50						
4														
5														
6														
10	Gray, sand (SP) (moist, very dense) -0.3' silty sand lens was encountered.		S4/SS	23	25	50/5"	50							
11														
12														
13														
15														
16					S5/SS	50/6"			50					
20	End of Exploratory Boring		S6/SS	28	50/6"		50							
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														

LEGEND

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings-
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
D C - Driving Casing

RW - Rotary Wash
RC - Rock Core

Krazan & Associates, Inc.	LOG OF BORING No. B-3
--------------------------------------	------------------------------

Date Drilled: 8/28/23	Project: Jefferson County Early Learning Center	Notes:	
Location: Port Townsend, WA	Ground Elevation: ~190 ft.		Logged By: AG
Hammer Type: Manual <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Other <input type="checkbox"/>			
Water Level: Not encountered.	Drilling Method: HSA		

Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample No. /Type	1st 6"	2nd 6"	3rd 6"	N Value	N VALUE GRAPH (Last 12")				
								10	20	30	40	50
0	Ground Surface											
1	Gray, silty sand with gravel (SM) (moist, very dense)											
2												
3			S1/SS	50/6"			50					
4												
5												
6			S2/SS	50/6"			50					
7												
8												
9			S3/SS	50/6"			50					
10	End of Exploratory Boring											
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												

LEGEND

<p style="text-align: center;">SAMPLER TYPE</p> <p>SS - Split Spoon NQ - Rock Core, 1-7/8"</p> <p>ST - Shelby Tube CU - Cuttings-</p> <p>AWG - Rock Core, 1-1/8" CT - Continuous Tube</p>	<p style="text-align: center;">DRILLING METHOD</p> <p>HSA - Hollow Stem Auger RW - Rotary Wash</p> <p>CFA - Continuous Flight Augers RC - Rock Core</p> <p>D C - Driving Casing</p>
--	---

Krazan & Associates, Inc.

LOG OF BORING No. B-4

Date Drilled: 8/28/23

Project: Jefferson County Early Learning Center

Notes:

Location: Port Townsend, WA

Ground Elevation: ~190 ft.

Logged By: AG

Hammer Type: Manual Automatic Other

Water Level: Not encountered.

Drilling Method: HSA

Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample No. /Type	1st 6"	2nd 6"	3rd 6"	N Value	N VALUE GRAPH (Last 12")						
								10	20	30	40	50		
0	Ground Surface													
1	Gray, silty sand with gravel (SM) (moist, very dense)		S1/GB	-	-	-	-							
2														
3			S2/SS	19	50/6"	-	50							
4														
5	End of Exploratory Boring		S3/SS	18	50/6"	-	50							
6														
7														
8			S4/SS	50/3"	-	-	50							
9														
10														
11														
12														
13														
14														
15														
16														
17														
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19														
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21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings-	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	D C - Driving Casing	

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-1

PROJECT: JCELC
 PROJECT NO.: 102-23021
 CONTRACTOR: Bull's Eye Excavation
 SAMPLE METHOD: Grab

DATE: 8/28/23
 PAGE: 1 of 1
 SURFACE ELEV.: ~191 ft.
 LOCATION: Port Townsend, WA

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits							
						10	20	30	40	50	60	70	80
1			Brown to gray, silty sand with gravel and cobbles (SM) (moist, very dense)	S1	□ □ G								
2			-Becomes gray at 1.5 ft. -15" boulder noted at 2.0 ft.	S2	□ □ G								
3													
4													
5				S3	□ □ G								
6													
7				S4	□ □ G								
8			-Refusal at 7.5 ft.										
			End of Exploratory Test Pit										

Water Level Initial: ∇ Final: ∇

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered. Pilot Infiltration Test performed at 2.0 ft.

Logged By: EA

KRAZAN AND ASSOCIATES, INC.

LOG OF EXPLORATORY TEST PIT TP-2

PROJECT: JCELC
 PROJECT NO.: 102-23021
 CONTRACTOR: Bull's Eye Excavation
 SAMPLE METHOD: Grab

DATE: 8/28/23
 PAGE: 1 of 1
 SURFACE ELEV.: ~191 ft.
 LOCATION: Port Townsend, WA

DEPTH (ft)	USC SYMBOL	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE No.	SAMPLE TYPE	Moisture Content and Atterberg Limits	
						10	20 30 40 50 60 70 80
1			Brown to gray, silty sand with gravel and cobbles (SM) (moist, very dense)				
1.5			-Becomes gray at 1.5 ft.				
2				S1	G		
3							
4							
5				S2	G		
5.5							
6			-Refusal at 6.0 ft.	S3	G		
6			End of Exploratory Test Pit				
7							
8							

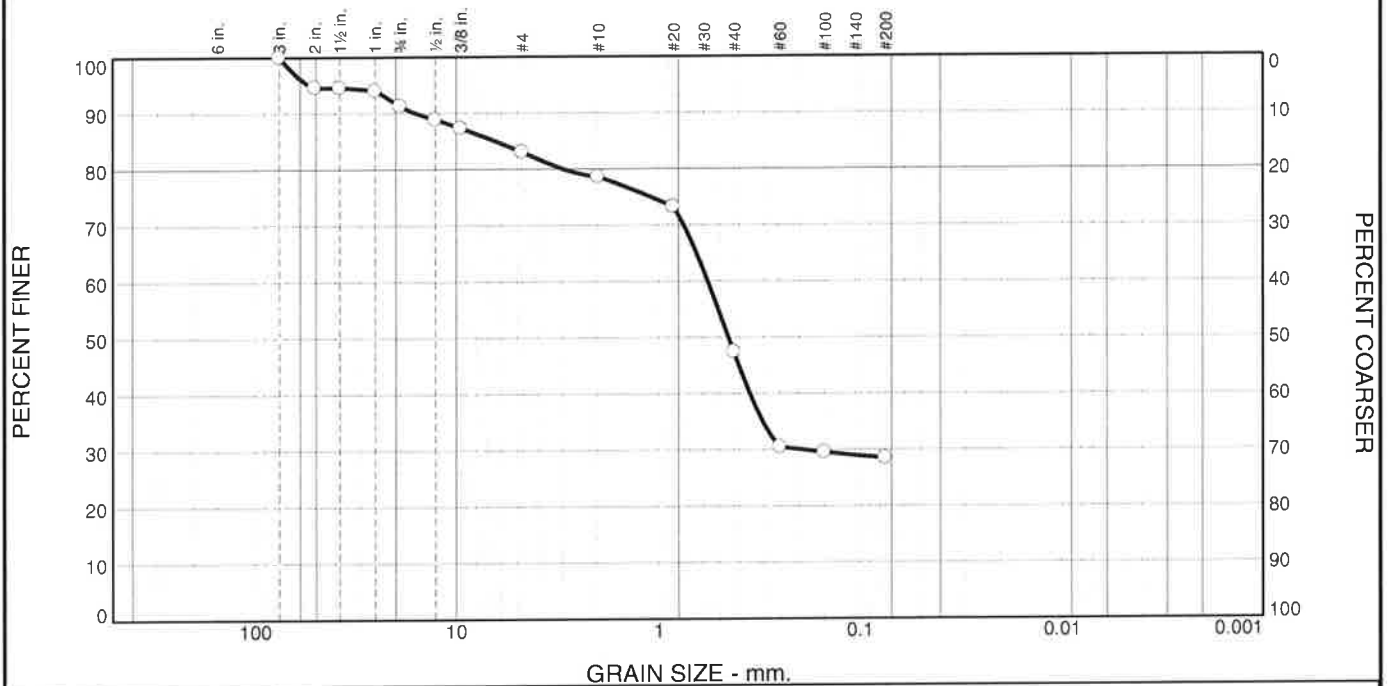
Water Level Initial: ▼ Final: ▼

Water Observations: Groundwater seepage was not encountered.

Notes: Caving was not encountered.

Logged By: EA

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	9	8	4	32	19	28	

Test Results (ASTM D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100		
2	95		
1.5	95		
1	94		
.75	91		
.5	89		
.375	87		
#4	83		
#10	79		
#20	73		
#40	47		
#60	31		
#100	30		
#200	28		

* (no specification provided)

Material Description

Gray Silty Sand with Gravel

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D₉₀= 15.9353 D₈₅= 6.4387 D₆₀= 0.5721
D₅₀= 0.4514 D₃₀= 0.1930 D₁₅=
D₁₀= C_u= C_c=

Remarks

Sample Location: TP1 - S2
Moisture Content: 3.4%

Date Received: 8/29/23 Date Tested: 8/30/23

Tested By: AC

Checked By: Aaron Clyde

Title: Laboratory Manager

Source of Sample: TP-1 Depth: 2.0' Date Sampled: 8/28/23
Sample Number: 1049

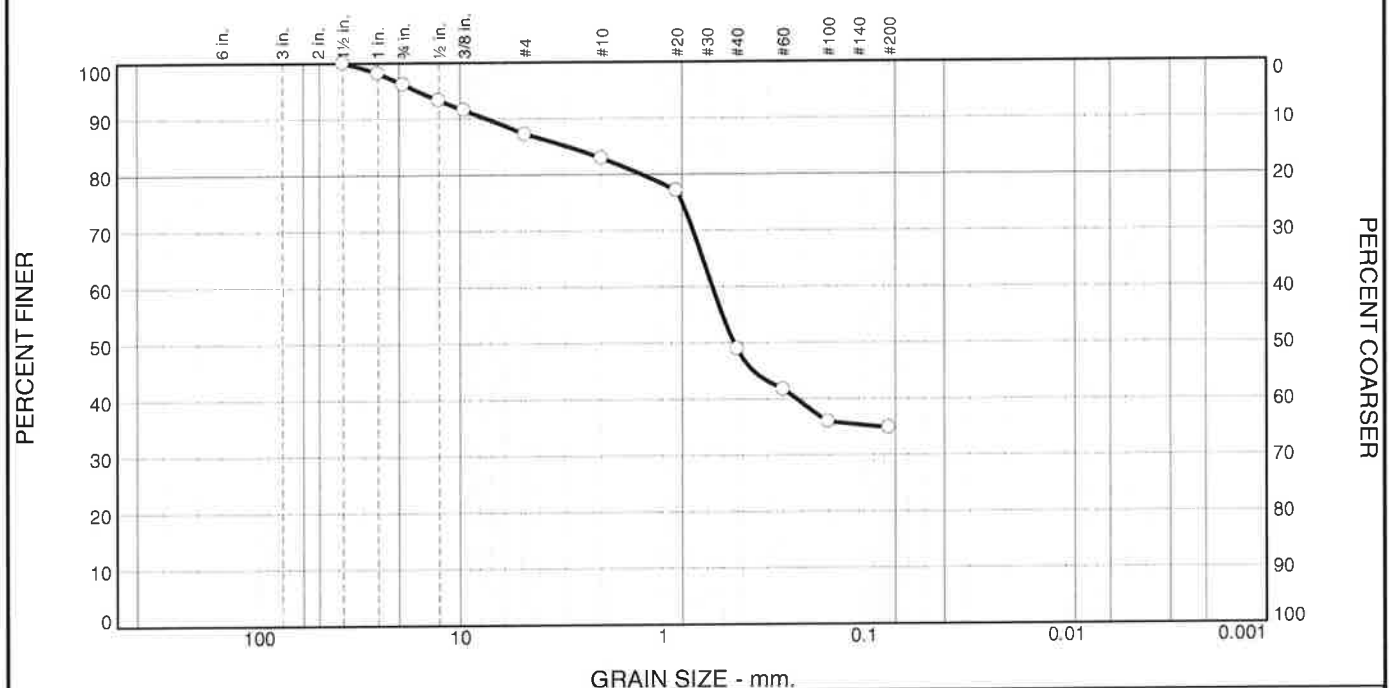


Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	4	9	4	34	14	35	

Test Results (ASTM D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100		
1	98		
.75	96		
.5	93		
.375	92		
#4	87		
#10	83		
#20	77		
#40	49		
#60	42		
#100	36		
#200	35		

Material Description

Gray Silty Sand

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D₉₀= 7.3633 D₈₅= 2.9312 D₆₀= 0.5650
D₅₀= 0.4407 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Sample Location: TP1 - S4
Moisture Content: 6.4%

Date Received: 8/29/23 Date Tested: 8/30/23

Tested By: JP

Checked By: Aaron Clyde

Title: Laboratory Manager

* (no specification provided)

Source of Sample: TP-1 Depth: 7.5' Date Sampled: 8/28/23
Sample Number: 1048

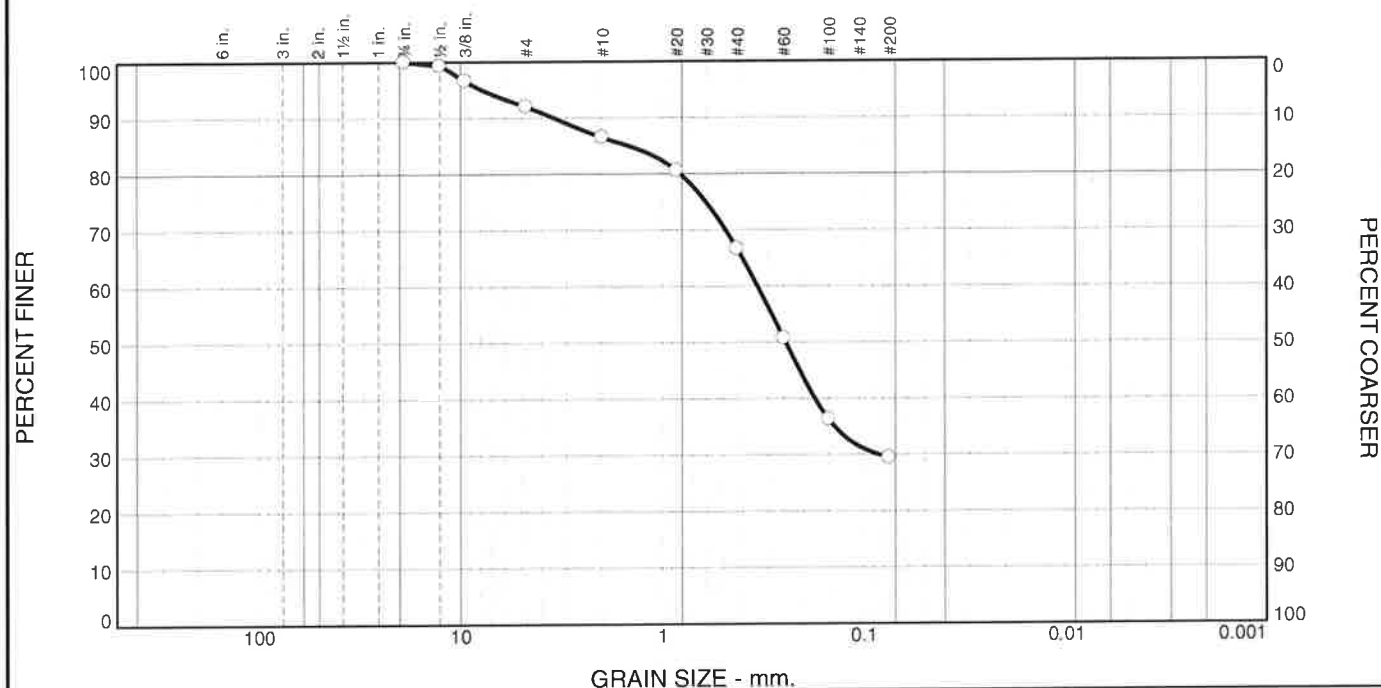


Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	8	5	20	38	29	

Test Results (ASTM D6913 & ASTM D2216)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100		
.5	99		
.375	97		
#4	92		
#10	87		
#20	81		
#40	67		
#60	51		
#100	36		
#200	29		

* (no specification provided)

Material Description

Grayish Brown Silty Sand

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D₉₀= 3.4682 D₈₅= 1.4782 D₆₀= 0.3368
D₅₀= 0.2446 D₃₀= 0.0847 D₁₅=
D₁₀= C_u= C_c=

Remarks

Sample Location: B1-S3
Moisture Content: 3.5%

Date Received: 8/29/23 Date Tested: 8/30/23

Tested By: AC

Checked By: Aaron Clyde

Title: Laboratory Manager

Source of Sample: B-1 Depth: 5.0' Date Sampled: 8/28/23
Sample Number: 1050

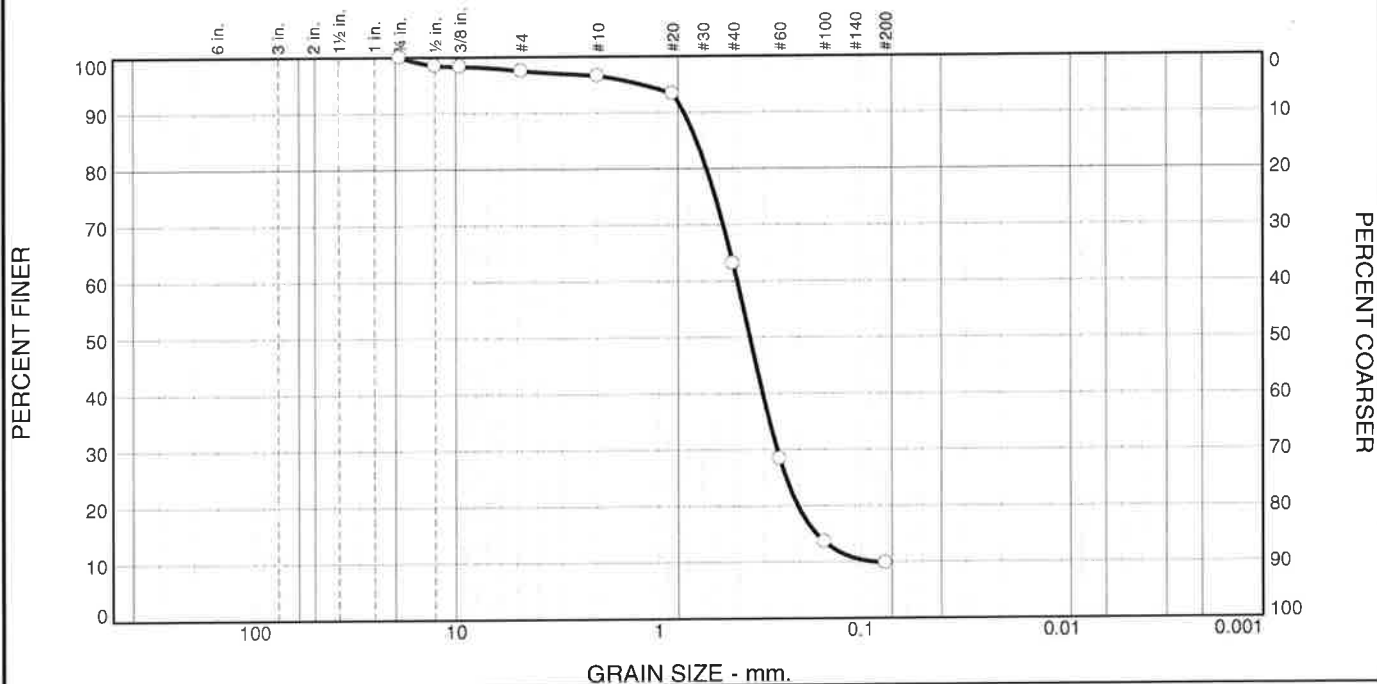


Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	3	0	34	53	10	10

Test Results (ASTM D6913 & ASTM D2216)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.75	100		
.5	99		
.375	98		
#4	97		
#10	97		
#20	93		
#40	63		
#60	28		
#100	14		
#200	9.8		

Material Description

Light Brown Poorly Graded Sand w/ Silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI=

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-3

Coefficients

D₉₀= 0.7456 D₈₅= 0.6456 D₆₀= 0.4054
D₅₀= 0.3510 D₃₀= 0.2578 D₁₅= 0.1644
D₁₀= 0.0856 C_u= 4.74 C_c= 1.91

Remarks

Sample Location: B1-S5
Moisture Content: 4.7%

Date Received: 8/30/23 Date Tested: 8/30/23

Tested By: AC

Checked By: Aaron Clyde

Title: Laboratory Manager

* (no specification provided)

Source of Sample: B-1 Depth: 15.0' Date Sampled: 8/28/23
Sample Number: 1051

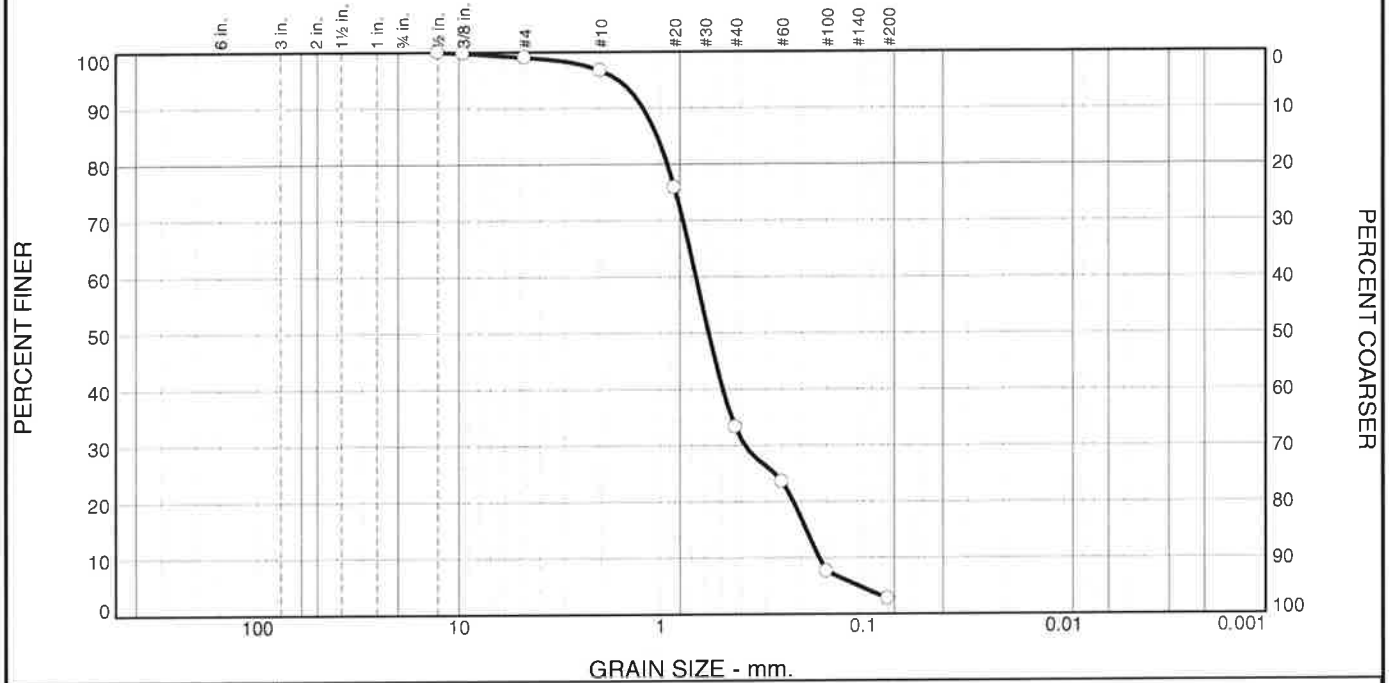


Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	1	2	64	30	3	3

Test Results (ASTM D6913 & ASTM D2216)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.5	100		
.375	100		
#4	99		
#10	97		
#20	76		
#40	33		
#60	24		
#100	8		
#200	2.7		

* (no specification provided)

Material Description

Gray Poorly Graded Sand

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-1-b

Coefficients

D₉₀= 1.2200 D₈₅= 1.0376 D₆₀= 0.6649
D₅₀= 0.5754 D₃₀= 0.3811 D₁₅= 0.1892
D₁₀= 0.1632 C_u= 4.08 C_c= 1.34

Remarks

Sample location: B2-S6
Moisture Content: 7.5%

Date Received: 8/30/23 Date Tested: 8/30/23

Tested By: AC

Checked By: Aaron Clyde

Title: Laboratory Manager

Source of Sample: B-2 Depth: 20.0' Date Sampled: 8/28/23
Sample Number: 1052

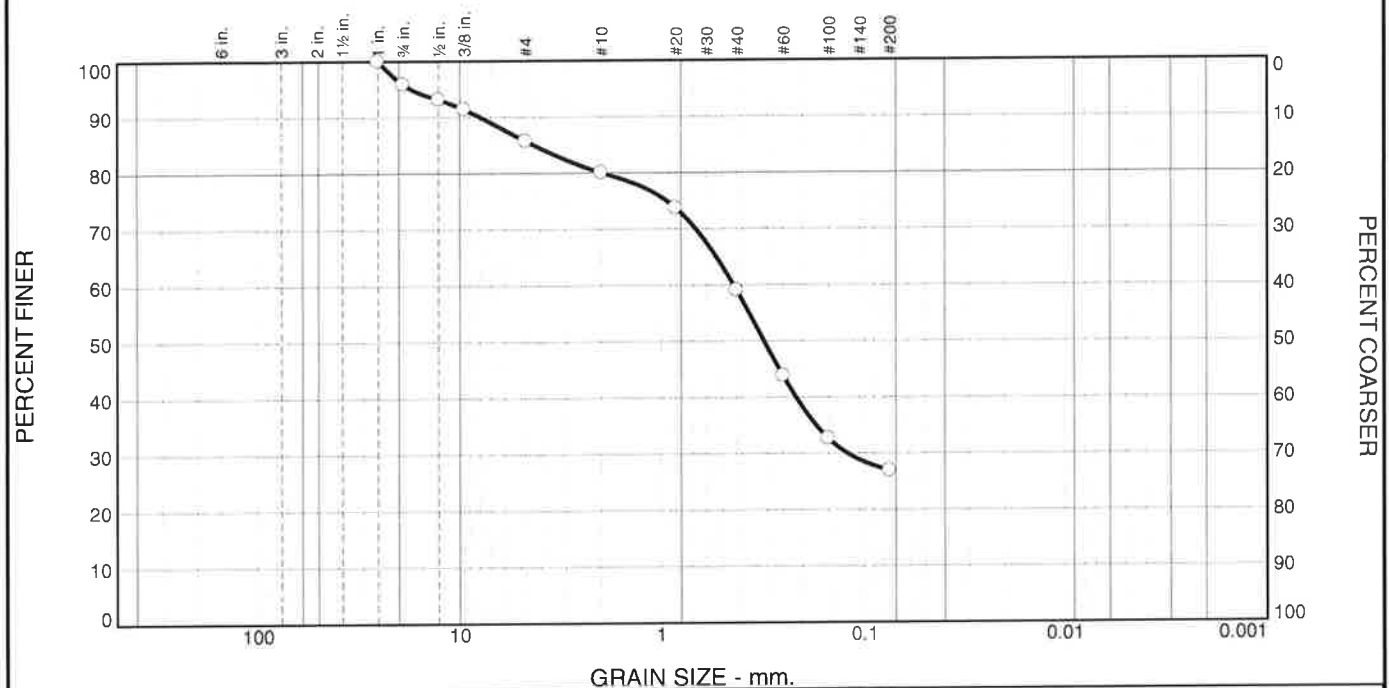


Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	4	10	6	21	32	27	

Test Results (ASTM D 6913 & ASTM D 2216)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100		
.75	96		
.5	93		
.375	91		
#4	86		
#10	80		
#20	74		
#40	59		
#60	44		
#100	33		
#200	27		

Material Description

Gray Silty Sand

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI=

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D₉₀= 7.9287 D₈₅= 4.3373 D₆₀= 0.4396
D₅₀= 0.3104 D₃₀= 0.1211 D₁₅=
D₁₀= C_u= C_c=

Remarks

Sample Location: B3-S2
Moisture Content: 5.5%

Date Received: 8/30/23 Date Tested: 9/5/23

Tested By: AC

Checked By: Aaron Clyde

Title: Laboratory Manager

* (no specification provided)

Source of Sample: B-3 Depth: 5.0' Date Sampled: 8/28/23
Sample Number: 1053



Client: Olympic Peninsula YMCA
Project: Jefferson County Early Learning Center

Project No: 10223021

Figure

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Geotechnical Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified to by the project Civil Engineer. Both the Geotechnical Engineer and Civil Engineer are the Owner's representatives. If the contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Geotechnical Engineer and Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Geotechnical Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner of the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 95 percent of maximum dry density as determined by ASTM Test Method D1557 as specified in the technical portion of the Geotechnical Engineering Report. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Geotechnical Engineer.

SOIL AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report. The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the contract for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including Court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Geotechnical Engineer to be deleterious. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree root removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill or tree root excavation should not be permitted until all exposed surfaces have been inspected and the Geotechnical Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Subgrade should be prepared as described in our site preparation section of this report.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Geotechnical Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Geotechnical Engineer. All materials utilized for constructing site fills shall be free from vegetable or other deleterious matter as determined by the Geotechnical Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Geotechnical Engineer.

Both cut and fill shall be surface compacted to the satisfaction of the Geotechnical Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Geotechnical Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS – The term “pavement” shall include asphalt concrete surfacing, untreated aggregate base, and aggregate subbase. The term “subgrade” is that portion of the area on which surfacing, base, or subbase is to be placed.

2. SCOPE OF WORK – This portion of the work shall include all labor, materials, tools and equipment necessary for and reasonable incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically noted as “Work Not Included.”

3. PREPARATION OF THE SUBGRADE – The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans and as per the pavement design section of this report. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum compaction of 95 percent of maximum dry density as determined by test method ASTM D1557. The finished subgrades shall be tested and approved by the Geotechnical Engineer prior to the placement of additional pavement of additional pavement courses.

4. AGGREGATE BASE – The aggregate base shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base should conform to WSDOT Standard Specification for Crushed Surfacing Base Course or Top Course (Item 9-03.9(3)). The base material shall be compacted to a minimum compaction of 95 percent as determined by ASTM D1557. Each layer of subbase shall be tested and approved by the Geotechnical Engineer prior to the placement of successive layers.

5. ASPHALTIC CONCRETE SURFACING – Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades, and dimensions shown on the plans. The drying, proportioning, and mixing of the materials shall conform to WSDOT Specifications.

The prime coat, spreading and compacting equipment, and spreading and compacting the mixture shall conform to WSDOT Specifications, with the exception that no surface course shall be placed when the atmospheric temperature is below 50 degrees F. The surfacing shall be rolled with combination steel-wheel and pneumatic rollers, as described in WSDOT Specifications. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

6. TACK COAT – The tack (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of WSDOT Specifications.

**JEFFERSON COUNTY EARLY LEARNING CENTER
STORM DRAINAGE REPORT
1500 Van Ness St., Port Townsend, WA 98368
Job No. BL23-157**

Prepared for:
Olympic Peninsula YMCA
675 N 5th Ave, Suite 3A
Sequim, WA 98382
(360) 504-0526

Prepared by:
Matt Roberts, EIT

Reviewed by:
Kimberly McNabb, PE



Atwell, LLC
25 CENTRAL WAY, SUITE 400
KIRKLAND, WA 98033

February 29, 2024

02/29/2024

1.0 PROJECT OVERVIEW

Project Name: Jefferson County Early Learning Center
 Project Address: 1500 Van Ness St.
 Port Townsend, WA 98383

Parcel #: 001023006
 Project Engineer: Atwell, LLC
 25 Central Way, Suite 400
 (425) 216-4051

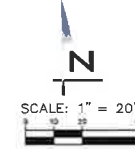
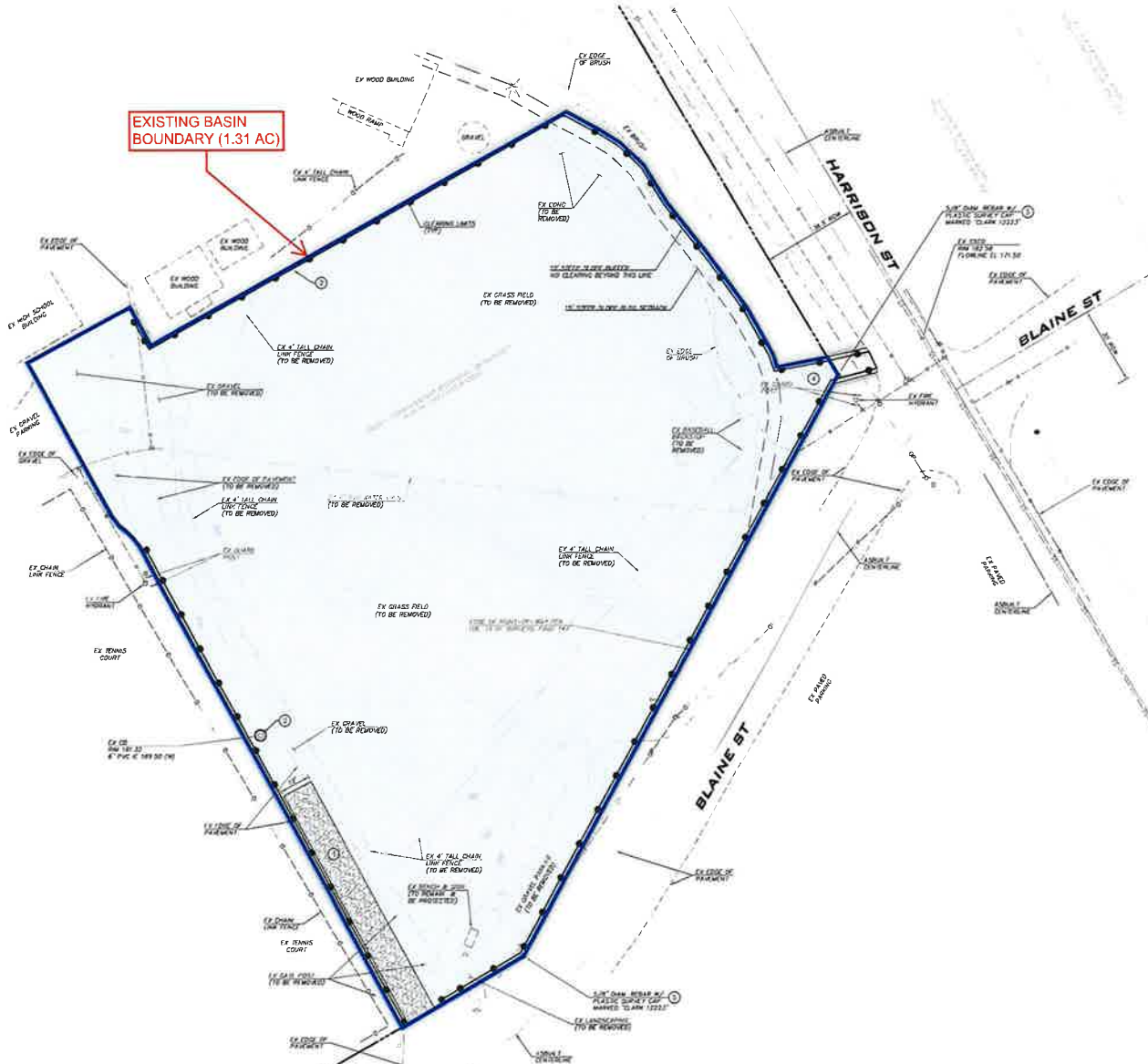
Project Applicant: Olympic Peninsula YMCA
 675 N 5th Ave Suite 3A
 Sequim, WA 98382

1.1 STORMWATER PROJECT SUMMARY TABLE

Component	Value	Notes
Project Site Area	57,064 sf	
Existing Impervious Area	5,254 sf	
Existing Impervious Coverage	9%	
New Impervious Area	51,810 sf	
Replaced Impervious Area	5,254 sf	New driveway
New Plus Replaced Impervious Area	57,064 sf	
Proposed Impervious Area	57,064 sf	
Proposed Frontage Improvements	6,670 sf	
Converted pervious: Native vegetation converted to lawn or landscape	0 sf	N/A
Converted pervious: Native vegetation converted to pasture	0 sf	N/A
Total Area of Land Disturbing Activity	57,064 sf	

SEC 2, TWP 30N, RBE 1W, W.M.
EXISTING CONDITIONS EXHIBIT

TO BE UPDATED



- KEY NOTES
- 1 DRIVEL CONSTRUCTION ENTRANCE PER CITY DETAIL EC-6
 - 2 FILTER FABRIC FENCE PER CITY DETAIL EC-7
 - 3 FILTER FABRIC INLET FENCE PER CITY DETAIL EC-3
 - 4 ON STEEP SLOPES FOR UTILITY TRENCHING, PLACE LITE MAT OVER ROUGHENED SURFACE AND SEED AND MULCH WITH STRAW COVER.
 - 5 PROTECT OR REFERENCE AND REPLACE PER STATE AND LOCAL REQUIREMENTS

EXISTING UTILITY NOTE

EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITY LINES ARE SHOWN, OR THAT THE LOCATION, SIZE AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL UNCOVER ALL INDICATED PIPING WHERE CROSSING, INTERFERENCES, OR CONNECTIONS OCCUR PRIOR TO TRENCHING OR EXCAVATION FOR ANY PIPES OR STRUCTURES. TO DETERMINE ACTUAL LOCATIONS, SIZE AND MATERIAL THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROVISION FOR PROTECTION OF SAID FACILITIES. THE CONTRACTOR SHALL NOTIFY ONE CALL AT 8-1-1 (WASHINGTON1.COM) AND ARRANGE FOR FIELD LOCATION OF EXISTING FACILITIES BEFORE CONSTRUCTION.



ATWELL
ENGINEERS ARCHITECTS
1000 N. 10TH ST.
PORTLAND, OR 97227
503.251.1000
WWW.ATWELL.COM

SCALE: AS NOTED
PROJECT MANAGER:
ROBERTY MOHARR, PE
PROJECT ENGINEER:
BRADY BOYTS, PE
DESIGNER:
NADIA KHOURDIA
ISSUE DATE:
02/21/2024

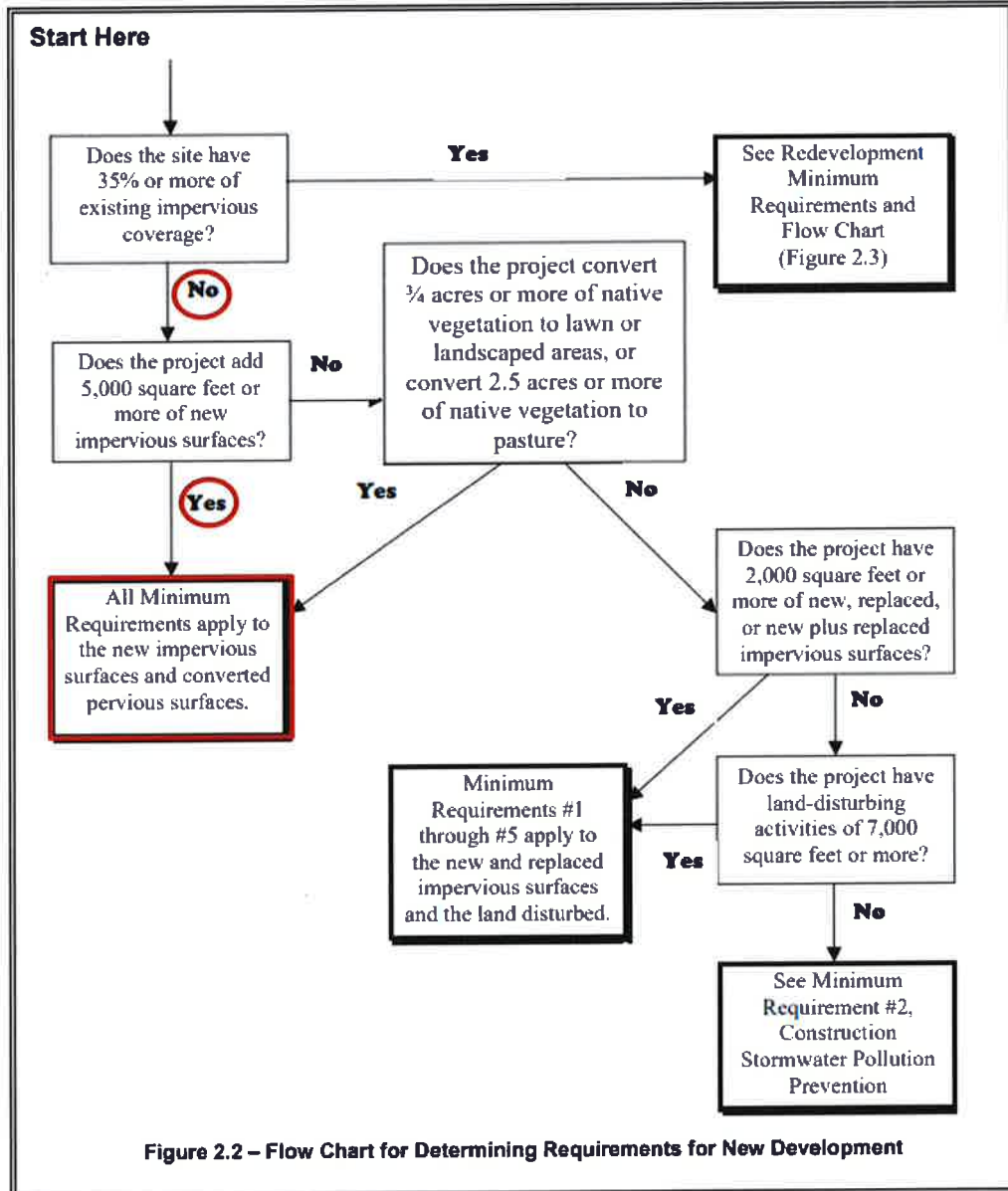
REVISION	NO.	DATE	BY

TESC & DEMO PLAN
JCELC
CIVIL PLANS
02/22/2024
CITY OF PORT TOWNSEND WASHINGTON



JOHN HENDERSON
23-157
BRADY BOYTS
TP-01

02/21/2024 ATWELL #W



2.0 MINIMUM REQUIREMENTS

Per Figure 2.2 of the Department of Ecology Stormwater Management Manual for Western Washington (2005 DOE Manual), the New Development project triggers minimum requirements #1-#10, as depicted in the preceding flow chart. Compliance with the minimum requirements are listed below.

Minimum Requirement #1: Preparation of Stormwater Site Plans: Construction Plans (under separate cover) and the Storm Drainage Report herein have been prepared for the subject property to satisfy minimum requirement #1.

Minimum Requirement #2: Construction Stormwater Pollution Prevention: Refer to site plan for proposed erosion control measures per the 2005 Department of Ecology Manual standards under separate cover.

Minimum Requirement #3: Source Control of Pollution: The project will implement TESC measures such as silt fence and inlet protection to minimize sediment laden stormwater that may discharge from the site during construction. The proposed trash collection area will have a solid walled enclosure built around the waste bins, and stormwater runoff will be directed to the proposed on-site drainage network. The project proposes a Contech Concrete Catch Basin Storm Filter insert for each catch basin to treat stormwater runoff in accordance with the enhanced water quality treatment requirements prior to discharging to the proposed detention pond. To ensure proper functionality of the proposed storm drainage improvements, proper maintenance is required. Please reference Appendix C: Maintenance Plan for details on the operations and maintenance of the proposed improvements.

Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls: The developed drainage will be designed to match existing site discharge locations. Runoff generated on the lot will be routed to an existing catch basin located within the driveway of the site which will be connected to the existing storm drainage system along Pierce St.

Minimum Requirement #5: On-Site Stormwater Management: BMP T5.13 Post-Construction Soil Quality and Depth (Section 5.3.1 in Volume V, 2005 DOE Manual) will be applied to all disturbed pervious areas. Runoff generated on the lot will enter catch basins or yard drains and be routed to a detention pond located in the southeastern portion of the site.

Minimum Requirement #6: Runoff Treatment: The project proposes more than 5,000 square feet of new plus replaced Pollution-Generating Hard Surface (PGHS), thus runoff treatment is required. According to Figure 4.1 in Volume I of the 2005 DOE Manual, Basic

3.1 OFF-SITE ANALYSIS REPORT

Existing On-site Description

The project site is currently developed with school buildings, shed/storage buildings, tennis courts, sidewalks, and paved parking and landscaped areas. The site is currently a vacant field within the parcel and appears to have been previously graded. Due to most of the project site being flat, stormwater infiltrates and sheet flows towards the right of way. The northeastern portion of the site contains a steep east-descending slope, where runoff flows down onto Harrison St, where it eventually reaches a catch basin 200 feet downstream. An existing catch basin on-site discharges stormwaters west past the tennis courts and into publicly own drainage ditches.

Existing Downstream Description

The site is ultimately tributary to Kah Tai Lagoon. The northeastern portion of the site flows down a steep slope onto Harrison St. Also, on-site runoff enters an existing catch basin that conveys the runoff west through the private system, before entering the stormwater network located along Blaine St. Runoff is conveyed southeast until reaching Lawrence St. before being redirected southwest before out falling into Kah Tai Lagoon.

Proposed Downstream Description

The proposed downstream drainage path will reflect the existing downstream drainage path. Runoff from the proposed development will be collected via a proposed drainage system that discharges to a detention pond. Any runoff that does not infiltrate will be released via an overflow system at a controlled flow rate to the existing conveyance system located in the proposed drive aisle.

3.2 SOILS/INFILTRATION RATES

The stormwater detention pond design was based on the Geotechnical Report by Krazan & Associates, dated October 5th, 2023. The infiltration rate was 0.0779 in/hr. after applying the total correction factor. Please see the Geotechnical Engineering Study (provided by others) for more information.

3.3 CRITICAL AREAS AND FLOODPLAIN

As part of the Geotechnical Engineering Study, Krazan & Associates reviewed critical area mapping and National Resources Conservation Services (NCRS) map for Jefferson County. Based on the Geotechnical Engineer's review the subject property contains the following geologic hazards:

- The existing slopes in the northeastern portion of the site are considered an erosion hazard due to the steepness. (NCRS Mapping)
- Per the geotechnical report, there is no landslide hazard area. The proposed onsite and offsite development will not adversely impact the site slopes and

ATWELL, LLC

4.0 ON-SITE STORMWATER MANAGEMENT

An *Existing Conditions Exhibit* and a *Developed Conditions Exhibit* showing the existing and proposed lot coverage are provided at the end of this section.

4.1 HYDROLOGIC ANALYSIS

The existing and developed drainage basins were modeled using WWHM, which is recognized as an approved model in the SWMMWW. The project was modeled using a 15-minute timestep. Per the Geotechnical Engineering Study by Krazan & Associates dated October 5th, 2023, on-site soils consist of dense glacial tills. Due to glacial till subsurface classification provided by the Geotechnical Engineer, the model has been developed utilizing Hydrologic Soils Group (HSG) C for the flow control analysis of drainage basin. Stormwater elements proposed as part of the development have been designed in accordance with the SWMMWW and the Design Manual.

EXISTING CONDITION

Impervious

On-site Driveway	0.12	AC
Total Impervious	0.12	AC

Pervious

On-site Lawn	1.19	AC
Total Forest (Soil Group C - Till)	1.19	AC

TOTAL EXISTING CONDITIONS	1.31	AC
----------------------------------	-------------	-----------

4.3 FLOW CONTROL ANALYSIS & DESIGN

A detention pond with an overflow structure has been designed using WWHM. The overflow structure has been designed to meet the 100-year 24-hour release requirement as per the 2005 DOE SWMMWW. The detention pond also meets the flow control requirements triggered by the project site. The project proposes to capture and convey stormwater runoff from the site to the proposed detention pond to satisfy the flow control requirements.

The detention pond and overflow structure are proposed to maintain flow durations below the durations produced by the pre-developed forested conditions for 50% of the 2-year flow through the full 50-year flow. Stormwater that enters the detention pond will discharge through an outlet to a flow control catch basin. The flow control catch basin will discharge to a pump structure. The stormwater shall then be pumped up to a receiving catch basin that will gravity flow to the existing catch basin on site that discharges flows off-site towards the tennis courts. The receiving catch basin will also act as an emergency overflow and will gravity flow the overflows to the existing catch basin.

4.4 DETENTION POND DESIGN

WWHM (Western Washington Hydrology Model) used the stormwater detention pond for the project site. The pond has a total depth of 5.5 ft, with an overflow riser at 5 ft. As well, three orifices were used in the model for the riser structure.

4.5 WATER QUALITY ANALYSIS

The project proposes greater than 5,000 square feet of Pollution Generating Impervious Surface (PGIS) tributary to Analysis Point 2. Therefore, per Figure 4.1 of Volume I of the DOE SWMMWW, basic water quality treatment is required. The project proposes a Contech concrete catch basin storm filter that is approved by the Washington Department of Ecology.

The water quality storm filters will be installed in each catch basin and are therefore required to treat the full 2-year peak flow rate prior to conveyance into the on-site detention system. See the table below that shows the corresponding flow rate tributary to each catch basin, as well as the corresponding screenshot from WWHM that was used to determine the tributary flows. To adequately determine how many cartridges are required for each storm filter, the off-line BMP flow rate given by WWHM was used. Additionally, please see the Contech Sizing PDF located in the Appendix for more information regarding the Contech concrete catch basin storm filters.

Water Quality							
Run Analysis	<table border="1"> <thead> <tr> <th colspan="2">On-Line BMP</th> </tr> </thead> <tbody> <tr> <td>24 hour Volume (ac-ft)</td> <td>0.0125</td> </tr> <tr> <td>Standard Flow Rate (cfs)</td> <td>0.0178</td> </tr> </tbody> </table>	On-Line BMP		24 hour Volume (ac-ft)	0.0125	Standard Flow Rate (cfs)	0.0178
	On-Line BMP						
24 hour Volume (ac-ft)	0.0125						
Standard Flow Rate (cfs)	0.0178						
<table border="1"> <thead> <tr> <th colspan="2">Off-Line BMP</th> </tr> </thead> <tbody> <tr> <td>Standard Flow Rate (cfs)</td> <td>0.0097</td> </tr> </tbody> </table>	Off-Line BMP		Standard Flow Rate (cfs)	0.0097			
Off-Line BMP							
Standard Flow Rate (cfs)	0.0097						

4.6 WATER QUALITY CONTROL

In the developed condition, runoff from pollution generating impervious surfaces on-site will pass through a storm filter located in each catch basin before entering the proposed detention pond. Maintenance activities for stormwater facilities are provided in the Operations and Maintenance Manual developed for this project. See the Appendix for more information.

4.7 CONVEYANCE DESIGN

Overflow from the proposed detention pond will outfall via an 8-inch diameter storm line which shall connect to an existing 6-inch diameter storm pipe located near the western side of the drive aisle in the project site. To ensure adequate capacity was provided for the proposed 8-inch diameter outfall line, the 100-year mitigated flow rate discharging through the outfall pipe, which was calculated via WWHM to be 0.045 CFS, was analyzed. An 8-inch pipe installed at a minimum 0.34% slope has capacity to convey 0.76 CFS. Therefore, an 8-inch diameter pipe running at 0.34% slope has adequate capacity to convey the 100-year storm event. Also, to assure adequate capacity when discharging into the existing 6-inch system another conveyance capacity is shown below. A 2% slope for the existing 6-inch pipe is assumed until the official slope of the pipe is verified.

mitigated storm event, therefore, the proposed stormwater conveyance system is sized to convey runoff from the detention pond.

Manning's Equation; 6" Pipe @ 2.00% = 0.86 cfs

$$Q = 1.486/n * A * R^{2/3} * S^{1/2}$$

n = roughness coefficient = **0.012**

A = cross sectional area of pipe = $\pi (D/2)^2 = \pi (0.66 \text{ ft}/2)^2 = \mathbf{0.196 \text{ ft}^2}$

R = wetted perimeter of pipe

$$R^{2/3} = (D/4)^{2/3} = (0.66/4)^{2/3} = \mathbf{0.25}$$

S = slope

$$S^{1/2} = (0.02 \text{ ft/ft})^{1/2} = \mathbf{0.14}$$

$$Q = (1.486/0.012) * 0.349 * 0.303 * 0.07 = \mathbf{0.86 \text{ CFS}}$$

The capacity of an 6" pipe at a 2.0% slope has the capacity to convey the 100-year mitigated storm event.

Material Delivery, Storage, and Containment (BMP C153), and a Concrete Washout Area (BMP C154) shall be provided to control construction related pollutants. If pH levels are inadequate for discharge, Treating and Disposing of High pH Water (BMP C252) shall be implemented to protect downstream stormwater systems.

ELEMENT 10: CONTROL DE-WATERING

Runoff generated from dewatering shall be treated by collecting and discharging the water into the dewatering pit and subsequently the filter tank or proposed detention facility, once built.

ELEMENT 11: MAINTAIN BMP'S

Inspections of temporary and permanent erosion and sediment control BMPs shall be performed to provide maintenance to assure continued performance of the BMPs. Proposed stormwater BMPs on-site shall be inspected and maintained prior to final stabilization by the Certified Erosion and Sediment Control Lead (BMP C160).

ELEMENT 12: MANAGE THE PROJECT

Project phasing, inspections, and maintenance shall occur throughout the construction process. A SWPPP (provided by others) shall be maintained and updated throughout the construction process to prevent and mitigate stormwater collection issues that arise during the construction process.

ELEMENT 13: PROTECT LID BMPS

Due to existing soil characteristics, LID BMPs are not proposed as part of the development.

APPENDIX A

WWHM Report

General Model Information

WWHM2012 Project Name: 2024-02-13 Infiltration pond

Site Name: JCELC

Site Address:

City:

Report Date: 2/14/2024

Gage: Port Angeles

Data Start: 1948/10/01

Data End: 2009/09/30

Timestep: 15 Minute

Precip Scale: 0.800

Version Date: 2023/01/27

Version: 4.2.19

POC Thresholds

Low Flow Threshold for POC1: 50 Percent of the 2 Year

High Flow Threshold for POC1: 50 Year

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Pasture, Flat	0.41
Pervious Total	0.41
Impervious Land Use	acre
ROADS FLAT	0.41
ROOF TOPS FLAT	0.49
Impervious Total	0.9
Basin Total	1.31

Mitigated Routing

Trapezoidal Pond 1

Bottom Length: 55.00 ft.
 Bottom Width: 19.50 ft.
 Depth: 5.5 ft.
 Volume at riser head: 0.2869 acre-feet.
 Infiltration On
 Infiltration rate: 0.0779
 Infiltration safety factor: 1
 Wetted surface area On
 Total Volume Infiltrated (ac-ft.): 39.861
 Total Volume Through Riser (ac-ft.): 29.145
 Total Volume Through Facility (ac-ft.): 69.006
 Percent Infiltrated: 57.76
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Side slope 1: 3 To 1
 Side slope 2: 3 To 1
 Side slope 3: 3 To 1
 Side slope 4: 3 To 1
 Discharge Structure
 Riser Height: 5 ft.
 Riser Diameter: 12 in.
 Notch Type: Rectangular
 Notch Width: 0.100 ft.
 Notch Height: 0.100 ft.
 Orifice 1 Diameter: 0.288 in. Elevation:0 ft.
 Orifice 2 Diameter: 0.500 in. Elevation:3.2 ft.
 Orifice 3 Diameter: 0.610 in. Elevation:3.7 ft.
 Element Flows To:
 Outlet 1 Outlet 2

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.024	0.000	0.000	0.000
0.0611	0.025	0.001	0.000	0.002
0.1222	0.025	0.003	0.000	0.002
0.1833	0.026	0.004	0.001	0.002
0.2444	0.027	0.006	0.001	0.002
0.3056	0.027	0.008	0.001	0.002
0.3667	0.028	0.009	0.001	0.002
0.4278	0.029	0.011	0.001	0.002
0.4889	0.029	0.013	0.001	0.002
0.5500	0.030	0.015	0.001	0.002
0.6111	0.031	0.017	0.001	0.002
0.6722	0.031	0.019	0.001	0.002
0.7333	0.032	0.020	0.001	0.002
0.7944	0.033	0.022	0.002	0.002
0.8556	0.034	0.025	0.002	0.002
0.9167	0.034	0.027	0.002	0.002
0.9778	0.035	0.029	0.002	0.002
1.0389	0.036	0.031	0.002	0.002
1.1000	0.036	0.033	0.002	0.002
1.1611	0.037	0.035	0.002	0.003

4.7667	0.092	0.263	0.023	0.007
4.8278	0.093	0.269	0.024	0.007
4.8889	0.094	0.275	0.024	0.007
4.9500	0.095	0.281	0.029	0.007
5.0111	0.096	0.286	0.048	0.007
5.0722	0.097	0.292	0.242	0.007
5.1333	0.099	0.298	0.546	0.007
5.1944	0.100	0.304	0.910	0.007
5.2556	0.101	0.311	1.289	0.008
5.3167	0.102	0.317	1.637	0.008
5.3778	0.103	0.323	1.918	0.008
5.4389	0.104	0.330	2.113	0.008
5.5000	0.106	0.336	2.243	0.008
5.5611	0.107	0.343	2.399	0.008

1959	0.015	0.018
1960	0.022	0.004
1961	0.028	0.016
1962	0.002	0.003
1963	0.006	0.004
1964	0.007	0.004
1965	0.003	0.004
1966	0.003	0.003
1967	0.027	0.012
1968	0.005	0.003
1969	0.002	0.003
1970	0.001	0.003
1971	0.027	0.003
1972	0.031	0.008
1973	0.004	0.012
1974	0.003	0.012
1975	0.005	0.004
1976	0.007	0.009
1977	0.001	0.004
1978	0.001	0.003
1979	0.001	0.005
1980	0.014	0.021
1981	0.011	0.022
1982	0.021	0.004
1983	0.020	0.009
1984	0.004	0.003
1985	0.022	0.019
1986	0.046	0.022
1987	0.017	0.008
1988	0.006	0.017
1989	0.006	0.003
1990	0.011	0.004
1991	0.022	0.019
1992	0.025	0.015
1993	0.001	0.003
1994	0.000	0.003
1995	0.002	0.004
1996	0.012	0.004
1997	0.013	0.017
1998	0.001	0.003
1999	0.048	0.023
2000	0.014	0.004
2001	0.003	0.003
2002	0.018	0.008
2003	0.013	0.006
2004	0.021	0.023
2005	0.008	0.004
2006	0.024	0.007
2007	0.023	0.012
2008	0.004	0.013
2009	0.006	0.007

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0480	0.0408
2	0.0457	0.0231
3	0.0307	0.0231

Duration Flows
The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0039	25196	24020	95	Pass
0.0045	21517	15595	72	Pass
0.0050	18521	14805	79	Pass
0.0056	16112	13721	85	Pass
0.0062	14147	12489	88	Pass
0.0068	12371	10831	87	Pass
0.0073	10863	9137	84	Pass
0.0079	9571	7503	78	Pass
0.0085	8391	6136	73	Pass
0.0091	7349	4902	66	Pass
0.0096	6429	4671	72	Pass
0.0102	5670	4440	78	Pass
0.0108	4990	4233	84	Pass
0.0114	4451	3976	89	Pass
0.0120	3980	3745	94	Pass
0.0125	3572	3551	99	Pass
0.0131	3193	3315	103	Pass
0.0137	2862	3080	107	Pass
0.0143	2579	2860	110	Pass
0.0148	2366	2588	109	Pass
0.0154	2158	2299	106	Pass
0.0160	1976	2013	101	Pass
0.0166	1779	1804	101	Pass
0.0171	1595	1613	101	Pass
0.0177	1445	1410	97	Pass
0.0183	1319	1205	91	Pass
0.0189	1202	1015	84	Pass
0.0195	1085	803	74	Pass
0.0200	964	668	69	Pass
0.0206	879	554	63	Pass
0.0212	793	461	58	Pass
0.0218	695	362	52	Pass
0.0223	642	267	41	Pass
0.0229	586	205	34	Pass
0.0235	543	154	28	Pass
0.0241	501	138	27	Pass
0.0246	460	68	14	Pass
0.0252	421	41	9	Pass
0.0258	390	35	8	Pass
0.0264	358	32	8	Pass
0.0269	326	29	8	Pass
0.0275	309	25	8	Pass
0.0281	294	23	7	Pass
0.0287	271	20	7	Pass
0.0293	252	18	7	Pass
0.0298	240	18	7	Pass
0.0304	231	16	6	Pass
0.0310	221	16	7	Pass
0.0316	214	15	7	Pass
0.0321	209	15	7	Pass
0.0327	202	15	7	Pass
0.0333	187	13	6	Pass
0.0339	173	13	7	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Model Default Modifications

Total of 0 changes have been made.

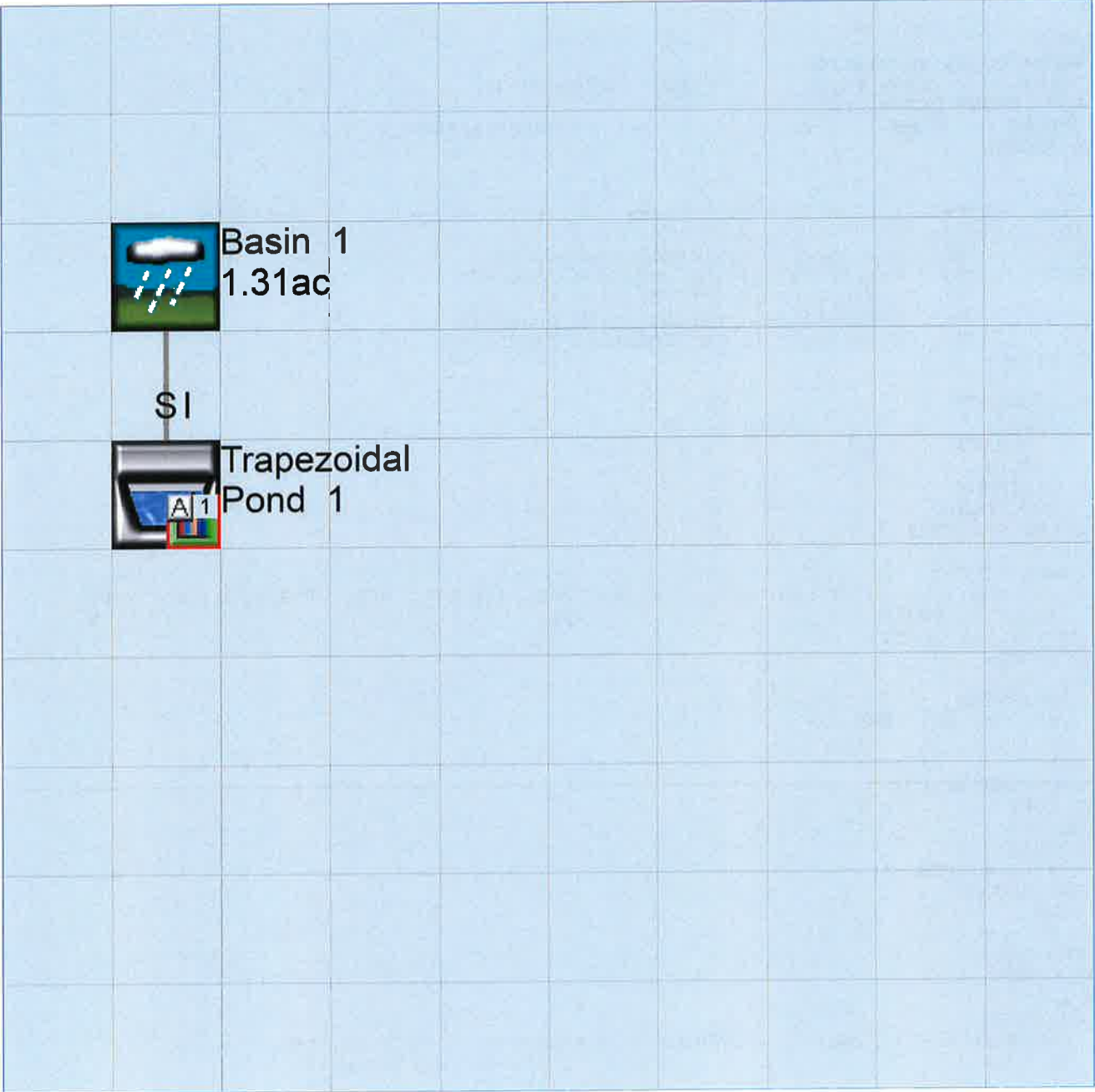
PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Mitigated Schematic



```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
11 0 0 0 0 0 0 0 0 0 0 0 0
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
11 0 4.5 0.08 400 0.1 0.5 0.996
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
11 0 0 2 2 0 0 0
END PWAT-PARM3
PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
11 0.2 0.5 0.35 6 0.5 0.7
END PWAT-PARM4

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
11 0 0 0 0 2.5 1 0
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***

END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
END PRINT-INFO

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
END IWAT-PARM1

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC
END IWAT-PARM2

IWAT-PARM3
<PLS > IWATER input info: Part 3 ***
# - # ***PETMAX PETMIN
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # *** RETS SURS
END IWAT-STATE1

```



```

WDM      1 EVAP      ENGL      0.76          PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP      ENGL      0.76          IMPLND   1 999 EXTNL  PETINP

```

END EXT SOURCES

EXT TARGETS

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>      #      <Name> # #<-factor->strg <Name>      # <Name>      tem strg strg***
COPY  501 OUTPUT MEAN   1 1      48.4      WDM    501 FLOW      ENGL      REPL

```

END EXT TARGETS

MASS-LINK

```

<Volume> <-Grp> <-Member-><--Mult--> <Target> <-Grp> <-Member->***
<Name>      #      <Name> # #<-factor-> <Name> <Name> # #***
MASS-LINK 12
PERLND PWATER SURO 0.083333 COPY INPUT MEAN
END MASS-LINK 12

```

```

MASS-LINK 13
PERLND PWATER IFWO 0.083333 COPY INPUT MEAN
END MASS-LINK 13

```

END MASS-LINK

END RUN

```

# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
13 0 0 4 0 0 0 0 0 0 0 0 0 0 0 1 9
END PRINT-INFO

```

```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
13 0 0 0 0 0 0 0 0 0 0 0
END PWAT-PARM1

```

```

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
13 0 4.5 0.06 400 0.05 0.5 0.996
END PWAT-PARM2

```

```

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPPFR BASETP AGWETP
13 0 0 2 2 0 0 0
END PWAT-PARM3

```

```

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
13 0.15 0.4 0.3 6 0.5 0.4
END PWAT-PARM4

```

```

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
13 0 0 0 0 2.5 1 0
END PWAT-STATE1

```

END PERLND

IMPLND

```

GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***
1 ROADS/FLAT 1 1 1 27 0
4 ROOF TOPS/FLAT 1 1 1 27 0
END GEN-INFO
*** Section IWATER***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
1 0 0 1 0 0 0
4 0 0 1 0 0 0
END ACTIVITY

```

```

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
1 0 0 4 0 0 4 1 9
4 0 0 4 0 0 0 1 9
END PRINT-INFO

```

```

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
1 0 0 0 0 0
4 0 0 0 0 0
END IWAT-PARM1

```

```

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC

```

```

RCHRES   Flags for each HYDR Section
# - # VC A1 A2 A3 ODFVFG for each *** ODGTFG for each   FUNCT for each
      FG FG FG FG possible exit *** possible exit   possible exit
      * * * * * * * * * * * * * * * * * * * * * * * *
1       0 1 0 0   4 5 0 0 0   0 0 0 0 0   2 2 2 2 2
END HYDR-PARM1

```

```

HYDR-PARM2
# - # FTABNO      LEN      DELTH      STCOR      KS      DB50      ***
<-----><-----><-----><-----><-----><-----><----->
1       1      0.01      0.0      0.0      0.5      0.0
END HYDR-PARM2

```

```

HYDR-INIT
RCHRES   Initial conditions for each HYDR section
# - # *** VOL      Initial value of COLIND      Initial value of OUTDGT
      *** ac-ft      for each possible exit      for each possible exit
<-----><-----><-----><-----><-----><-----><-----><-----><-----><-----><----->
1       0      4.0 5.0 0.0 0.0 0.0 *** 0.0 0.0 0.0 0.0 0.0
END HYDR-INIT
END RCHRES

```

```

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES

```

```

FTABLE      1
91          5

```

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time (Minutes)
0.000000	0.024621	0.000000	0.000000	0.000000		
0.061111	0.025251	0.001524	0.000556	0.001983		
0.122222	0.025888	0.003086	0.000787	0.002033		
0.183333	0.026530	0.004688	0.000964	0.002084		
0.244444	0.027179	0.006329	0.001113	0.002135		
0.305556	0.027834	0.008010	0.001244	0.002186		
0.366667	0.028495	0.009731	0.001363	0.002238		
0.427778	0.029162	0.011493	0.001472	0.002291		
0.488889	0.029836	0.013296	0.001574	0.002344		
0.550000	0.030515	0.015140	0.001669	0.002397		
0.611111	0.031201	0.017026	0.001760	0.002451		
0.672222	0.031893	0.018953	0.001845	0.002505		
0.733333	0.032591	0.020924	0.001928	0.002560		
0.794444	0.033295	0.022937	0.002006	0.002615		
0.855556	0.034006	0.024993	0.002082	0.002671		
0.916667	0.034722	0.027093	0.002155	0.002727		
0.977778	0.035445	0.029237	0.002226	0.002784		
1.038889	0.036174	0.031426	0.002294	0.002841		
1.100000	0.036909	0.033659	0.002361	0.002899		
1.161111	0.037650	0.035937	0.002425	0.002957		
1.222222	0.038398	0.038261	0.002488	0.003016		
1.283333	0.039152	0.040630	0.002550	0.003075		
1.344444	0.039911	0.043046	0.002610	0.003135		
1.405556	0.040677	0.045509	0.002669	0.003195		
1.466667	0.041449	0.048018	0.002726	0.003256		
1.527778	0.042228	0.050575	0.002782	0.003317		
1.588889	0.043012	0.053179	0.002837	0.003379		
1.650000	0.043803	0.055832	0.002891	0.003441		
1.711111	0.044600	0.058533	0.002944	0.003503		
1.772222	0.045403	0.061283	0.002996	0.003566		
1.833333	0.046212	0.064083	0.003048	0.003630		
1.894444	0.047027	0.066932	0.003098	0.003694		
1.955556	0.047849	0.069831	0.003148	0.003759		
2.016667	0.048677	0.072780	0.003196	0.003824		
2.077778	0.049511	0.075780	0.003244	0.003889		
2.138889	0.050351	0.078832	0.003292	0.003955		
2.200000	0.051197	0.081934	0.003339	0.004021		
2.261111	0.052049	0.085089	0.003385	0.004088		
2.322222	0.052908	0.088296	0.003430	0.004156		
2.383333	0.053773	0.091556	0.003475	0.004224		
2.444444	0.054644	0.094869	0.003519	0.004292		
2.505556	0.055521	0.098235	0.003563	0.004361		

COPY 501 OUTPUT MEAN 1 1 48.4 WDM 801 FLOW ENGL REPL
END EXT TARGETS

MASS-LINK
<Volume> <-Grp> <-Member-><--Mult--> <Target> <-Grp> <-Member->***
<Name> <Name> # #<-factor-> <Name> <Name> # #***
MASS-LINK 2
PERLND PWATER SURO 0.083333 RCHRES INFLOW IVOL
END MASS-LINK 2

MASS-LINK 3
PERLND PWATER IFWO 0.083333 RCHRES INFLOW IVOL
END MASS-LINK 3

MASS-LINK 5
IMPLND IWATER SURO 0.083333 RCHRES INFLOW IVOL
END MASS-LINK 5

MASS-LINK 12
PERLND PWATER SURO 0.083333 COPY INPUT MEAN
END MASS-LINK 12

MASS-LINK 13
PERLND PWATER IFWO 0.083333 COPY INPUT MEAN
END MASS-LINK 13

MASS-LINK 15
IMPLND IWATER SURO 0.083333 COPY INPUT MEAN
END MASS-LINK 15

MASS-LINK 17
RCHRES OFLOW OVOL 1 COPY INPUT MEAN
END MASS-LINK 17

END MASS-LINK

END RUN

Mitigated HSPF Message File

APPENDIX B

Operations and Maintenance Plans

Table V-A.1: Maintenance Standards - Detention Ponds (continued)

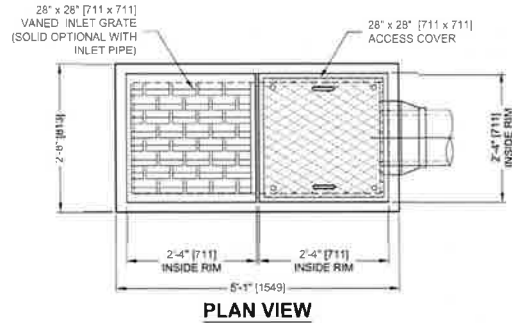
Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
	Liner (if Applicable)	Liner is visible and has more than three 1/4-inch holes in it.	Liner repaired or replaced, Liner is fully covered.
Ponds Berms (Dikes)	Settlements	Any part of berm which has settled 4 inches lower than the design elevation If settlement is apparent, measure berm to determine amount of settlement Settling can be an indication of more severe problems with the berm or outlet works. A licensed engineer in the state of Washington should be consulted to determine the source of the settlement.	Dike is built back to the design elevation.
	Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.)	Piping eliminated. Erosion potential resolved.
Emergency Overflow/Spillway and Berms over 4 feet in height	Tree Growth	Tree growth on emergency spillways creates blockage problems and may cause failure of the berm due to uncontrolled overtopping. Tree growth on berms over 4 feet in height may lead to piping through the berm which could lead to failure of the berm.	Trees should be removed. If root system is small (base less than 4 inches) the root system may be left in place. Otherwise the roots should be removed and the berm restored. A licensed engineer in the state of Washington should be consulted for proper berm/spillway restoration.
	Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.)	Piping eliminated. Erosion potential resolved.
Emergency Overflow/Spillway	Emergency Overflow/Spillway	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway. (Rip-rap on inside slopes need not be replaced.)	Rocks and pad depth are restored to design standards.
	Erosion	See "Side Slopes of Pond"	

Table V-A.2: Maintenance Standards - Infiltration

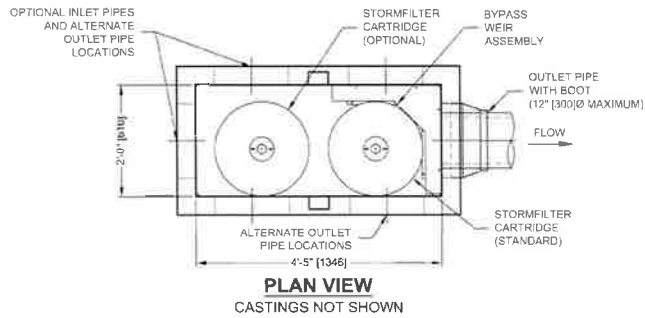
Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	Trash & Debris	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Poisonous/Noxious Vegetation	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Contaminants and Pollution	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Rodent Holes	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
Storage Area	Sediment	Water ponding in infiltration pond after rainfall ceases and appropriate time allowed for infiltration. Treatment basins should infiltrate Water Quality Design Storm Volume within 48 hours, and empty within 24 hours after cessation of most rain events.	Sediment is removed and/or facility is cleaned so that infiltration system works according to design.

Table V-A.5: Maintenance Standards - Catch Basins

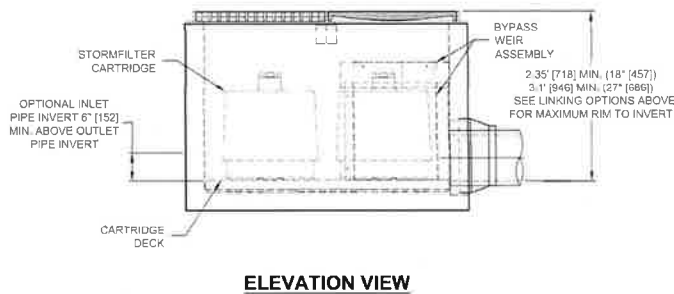
Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No Trash or debris located immediately in front of catch basin or on grate opening. No trash or debris in the catch basin. Inlet and outlet pipes free of trash or debris. No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch. (Intent is to make sure no material is running into basin). Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Top slab is free of holes and cracks. Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound. Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Basin replaced or repaired to design standards. Pipe is regouted and secure at basin wall.
	Settlement/ Mis-alignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening. Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation blocking opening to basin. No vegetation or root growth present.
	Contamination and Pollution	See Table V-A.1: Maintenance Standards - Detention Ponds	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Cover/grate is in place, meets design standards, and is secured
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place, meets the design standards, and is installed and aligned with the flow path.



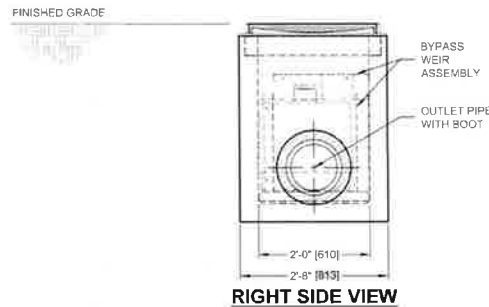
PLAN VIEW



PLAN VIEW
CASTINGS NOT SHOWN



ELEVATION VIEW



RIGHT SIDE VIEW

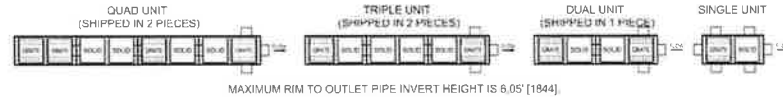
STORMFILTER DESIGN NOTES

- CONCRETE CATCHBASIN STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCAL APPROVALS
- PEAK CONVEYANCE CAPACITY IS 1.3 CFS
- CONCRETE CATCHBASIN STORMFILTER IS AVAILABLE WITH UP TO TWO (2), 18" [457] OR 27" [686] TALL CARTRIDGES
- UP TO 4 INDIVIDUAL UNITS MAY BE LINKED FOR AN ULTIMATE CAPACITY OF EIGHT (8) CARTRIDGES

CARTRIDGE SIZE (in. [mm])	27 [686]	18 [457]
RECOMMENDED HYDRAULIC DROP (ft. [mm])	3.05 [930]	2.3 [701]
SPECIFIC FLOW RATE (gpm/ft ² [L/s/m ²])	2 [1.06]	1.67 [1.13]*
CARTRIDGE FLOW RATE (gpm [L/s])	22.5 [1.4]	19.79 [1.19]

* 1.67 gpm/ft² [1.13 L/s/m²] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

LINKING OPTIONS SHOWN BELOW. FLEXIBLE INLET PIPE, GRATED AND SOLID COVER PLACEMENT. CONTACT YOUR CONTECH REPRESENTATIVE FOR MORE INFORMATION



GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. ALTERNATE DIMENSIONS ARE MILLIMETERS [mm] UNLESS NOTED OTHERWISE.
4. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
5. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES [178]. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM [L/S]) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF [m²]).
8. STRUCTURE SHALL MEET AASHTO H-20 LOAD RATING, ASSUMING EARTH COVER OF 0'-0" [0] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
3. CONTRACTOR TO PROVIDE AND INSTALL PIPES. MATCH PIPE INVERTS SHOWN ON PROJECT SPECIFIC DRAWINGS.
4. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	CB2	CB5	CB6
WATER QUALITY FLOW RATE (cfs [L/s])	0.0087	0.0186	0.0097
PEAK FLOW RATE (cfs [L/s])	0.065	0.140	0.073
RETURN PERIOD OF PEAK FLOW (yrs)	25	18	25
CARTRIDGE SIZE (27, 18)	18	18	18
CARTRIDGE FLOW RATE	12.53	12.53	12.53
MEDIA TYPE (PERLITE, ZPG, PSORB)	PHOSB	PHOSB	PHOSB
NUMBER OF CARTRIDGES REQUIRED	1	1	1
RIM ELEVATION	191.57	190.56	190.91
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			N/A
INLET PIPE 2			N/A
OUTLET PIPE	6" 189.22	6" 188.21	6" 188.56

NOTES/SPECIAL REQUIREMENTS:



CONTECH
ENGINEERED SOLUTIONS LLC
www.contechES.com
11815 NE Glensk Winding Drive, Portland, OR 97220
800-548-4667 800-240-3393 800-561-4271 FAX

CONCRETE CATCHBASIN
STORMFILTER
STANDARD DETAIL

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. Inspection

- Inspection of the vault interior to determine the need for maintenance.

2. Maintenance

- Cartridge replacement
- Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.

In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..



Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

- A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.
 - a. Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.
- B. Remove the used cartridges (up to 250 lbs. each) from the vault.



Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

- C. Set the used cartridge aside or load onto the hauling truck.
- D. Continue steps a through c until all cartridges have been removed.

Method 2:

- A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.
- B. Unscrew the cartridge cap.
- C. Remove the cartridge hood and float.
- D. At location under structure access, tip the cartridge on its side.
- E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.
- F. Set the empty, used cartridge aside or load onto the hauling truck.
- G. Continue steps a through e until all cartridges have been removed.

Inspection Report

Date: _____ Personnel: _____

Location: _____ System Size: _____ Months in Service: _____

System Type: Vault Cast-In-Place Linear Catch Basin Manhole Other: _____

Sediment Thickness in Forebay: _____ Date: _____

Sediment Depth on Vault Floor: _____

Sediment Depth on Cartridge Top(s): _____

Structural Damage: _____

Estimated Flow from Drainage Pipes (if available): _____

Cartridges Submerged: Yes No Depth of Standing Water: _____

StormFilter Maintenance Activities (check off if done and give description)

Trash and Debris Removal: _____

Minor Structural Repairs: _____

Drainage Area Report _____

Excessive Oil Loading: Yes No Source: _____

Sediment Accumulation on Pavement: Yes No Source: _____

Erosion of Landscaped Areas: Yes No Source: _____

Items Needing Further Work: _____

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

Review the condition reports from the previous inspection visits.



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800-338-1122

www.ContechES.com

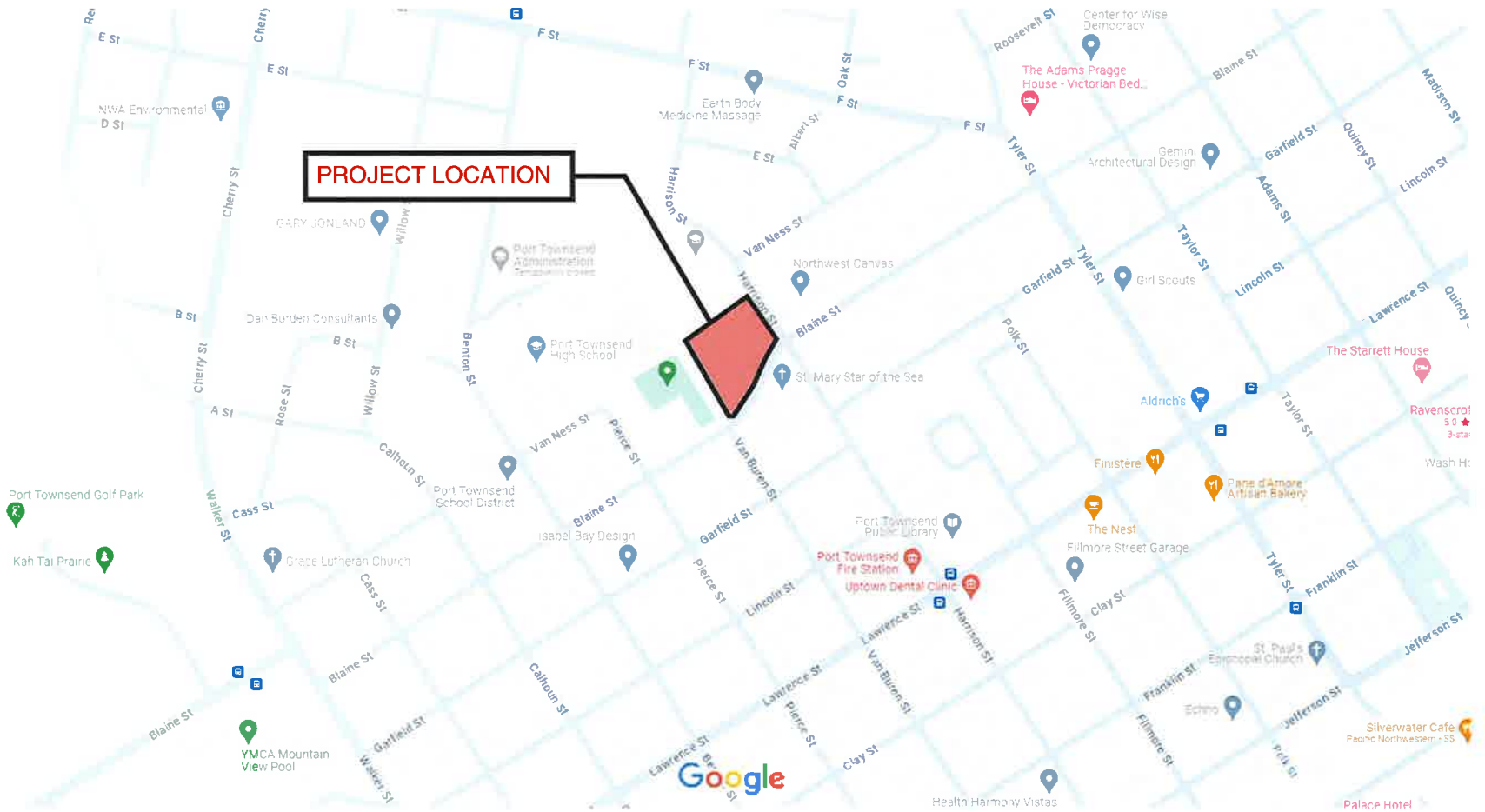
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Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater and earth stabilization products. For information on other Contech division offerings, visit www.ContechES.com or call 800.338.1122.

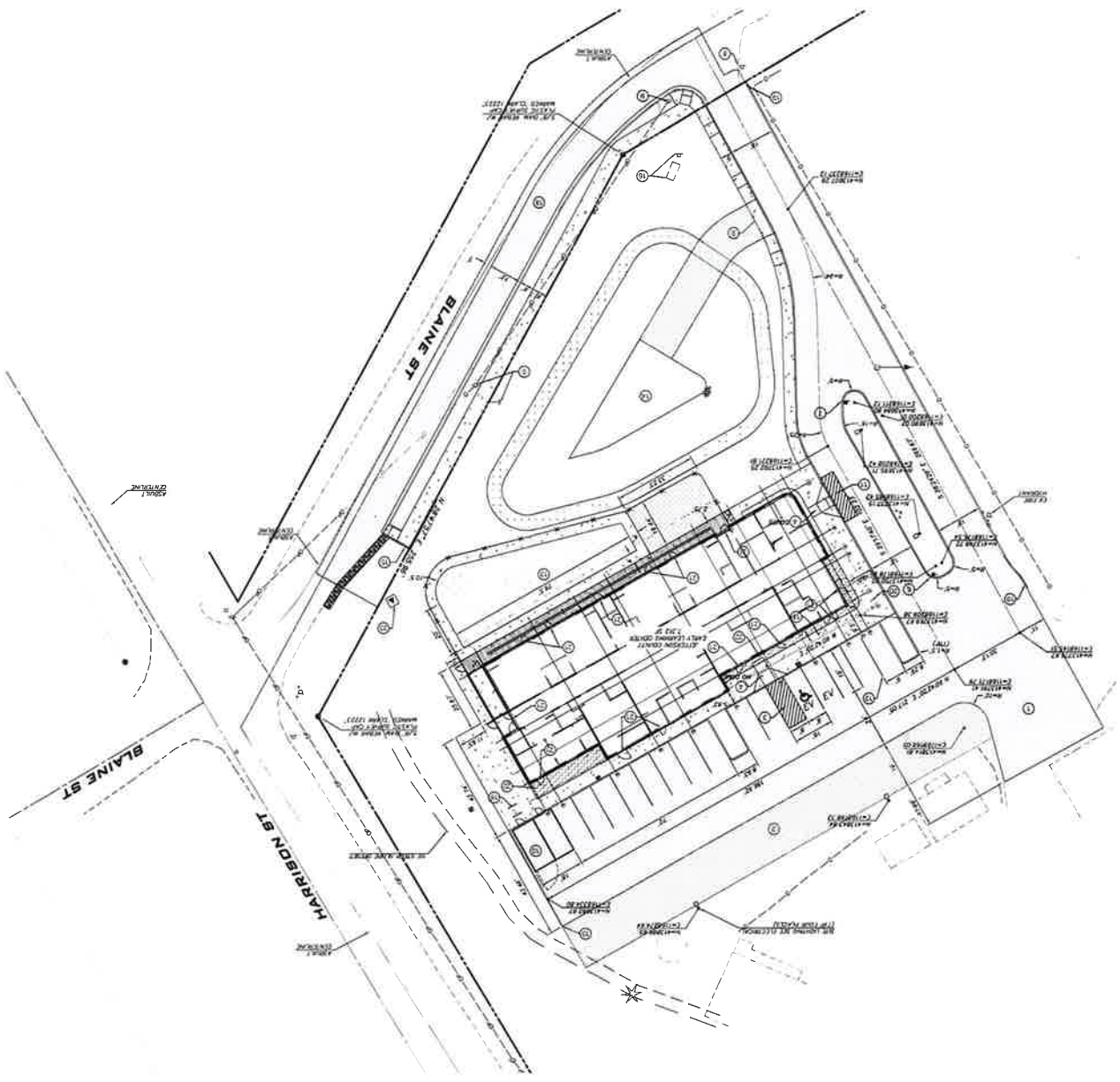
Support

- Drawings and specifications are available at www.conteches.com.
- Site-specific design support is available from our engineers.

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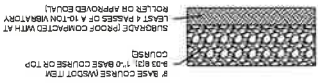


SEC 2, TWP 30N, RBE 1W, W.M.

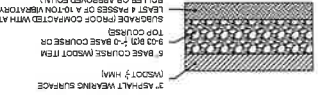


EXISTING UTILITY NOTE
 EXISTING UTILITIES ARE SHOWN IN THE APPROPRIATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THAT THE LOCATION, SIZE AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL INVESTIGATE ALL UTILITIES BEFORE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE CITY AT 8-1-1 (WASHINGTON COUNTY) AND PROVIDE PROTECTION OF SAID UTILITIES. THE CONTRACTOR SHALL MAKE THE UTILITY LOCATION, SIZE AND MATERIAL. THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROTECTION FOR ANY AND ALL UTILITIES TO REMAIN. BEFORE ANY CONSTRUCTION OR STRUCTURING IS BEING DONE, THE CONTRACTOR SHALL INVESTIGATE ALL UTILITIES OCCURRING IN THE PROJECT AREA. THE CONTRACTOR SHALL INVESTIGATE ALL UTILITIES OCCURRING IN THE PROJECT AREA. THE CONTRACTOR SHALL INVESTIGATE ALL UTILITIES OCCURRING IN THE PROJECT AREA.

GRAVEL PAVING SECTION DETAIL
 SCALE: 1" = 20'

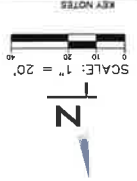


ASPHALT PAVING SECTION DETAIL
 SCALE: 1" = 20'



NOTE: PAVING SECTION DETAIL BY THE CONTRACTOR. ENGINEERING INVESTIGATION FROM HANSEN & ASSOCIATES INC., DATED JANUARY 11, 2024.

- 1) ASPHALT PAVING SEE DETAIL THIS SHEET
- 2) GRAVEL PAVING SEE DETAIL THIS SHEET
- 3) ACCESSIBLE STRIPING AND SIGNING SEE DETAIL SHEET 11
- 4) CURB RAMP SEE DETAILS 11
- 5) DRIVEWAY APRON, SEE DETAILS 11
- 6) DO NOT ENTER SIGN 10
- 7) ONE WAY SIGN 10
- 8) EXISTING STOP SIGN TO REMAIN
- 9) POWER POLES AND GUY WIRES TO REMAIN
- 10) TRASH ENCLOSURE AND REFRIG. SEE ARCHITECTURAL
- 11) YELLOW LOADING ZONE STRIPING
- 12) WHITE PARKING TRAFFIC PAVED PAINT
- 13) OUTDOOR PLAY AREA SEE LANDSCAPE PLANS
- 14) STORMWATER POND, SEE GRADING AND LANDSCAPE PLANS
- 15) DESIGN BUILD RESTONE (OR EQUAL) W/RE RETAINING/LANDSCAPE WALL
- 16) EXISTING SIGN AND BENCH TO REMAIN
- 17) BLANK STREET IMPROVEMENTS SEE 0-BEET 0
- 18) BIKE PARKING SEE ARCHITECTURAL
- 19) CURB EXPANSION SEE DETAILS
- 20) SEE ARCHITECTURAL FOR SIDEWALK DETAILING AT EXISTOR COLUMNS AND STRUCTURE FOR LOCATION
- 21) EXISTING DOORS (TYP) SEE STRUCTURAL FOR DETAILING OF SIDEWALK AT DOOR CORNERS
- 22) PAINTED CONCRETE (TYP) SEE ARCHITECTURAL FOR PAINT COLOR
- 23) TRANSFORMER SEE UTILITY AND ELECTRICAL PLANS



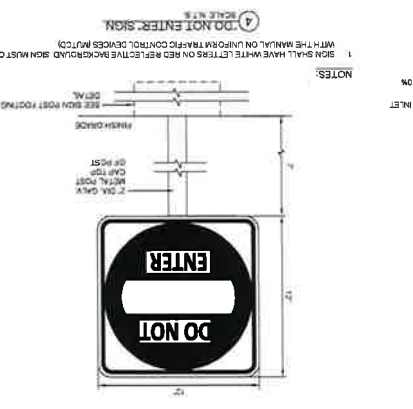
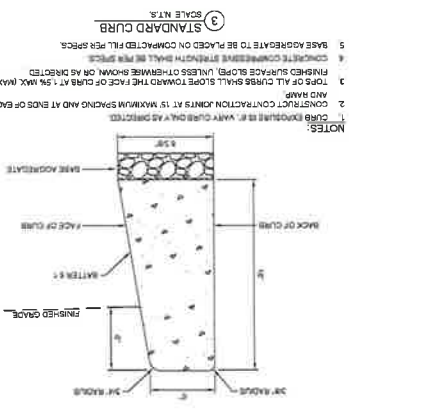
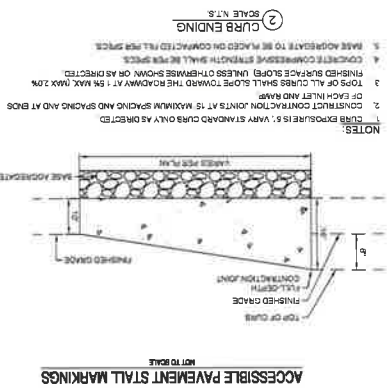
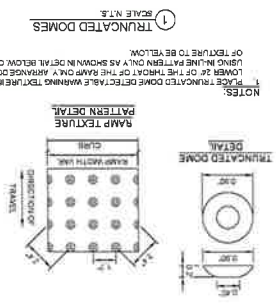
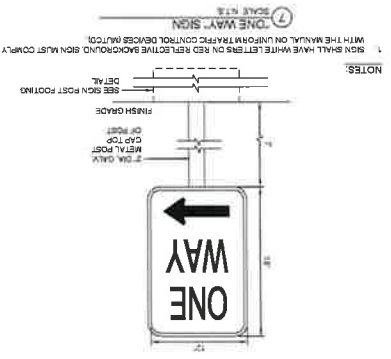
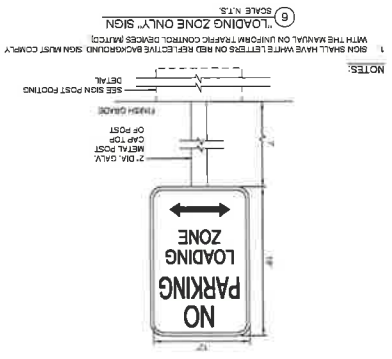
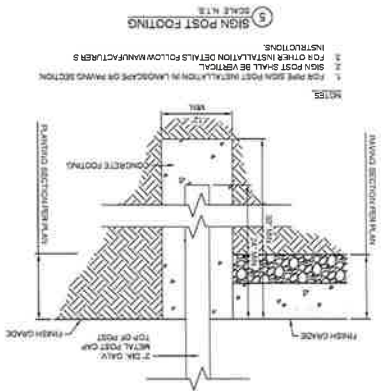
SHEET 15 OF 15
 HC-01
 23-157
 DATE: 02/26/2024



HORIZONTAL CONTROL PLAN
JCELC
CIVIL PLANS
 02/26/2024
 CITY OF PORT TOWNSEND
 WASHINGTON

NO	DATE	BY	REVISIONS

SCALE: 1" = 20'
 PROJECT MANAGER: [Name]
 PROJECT ENGINEER: [Name]
 DESIGNER: [Name]
 ISSUED DATE: 02/26/2024



ACCESSIBLE PAVEMENT STALL MARKINGS
 NOT TO SCALE

SCALE: AS SHOWN
 PROJECT MANAGER: [REDACTED]
 DESIGNER: [REDACTED]
 CHECKER: [REDACTED]
 DATE: 02/28/2024

ATWELL

SCALE: AS SHOWN
 PROJECT MANAGER: [REDACTED]
 DESIGNER: [REDACTED]
 CHECKER: [REDACTED]
 DATE: 02/28/2024

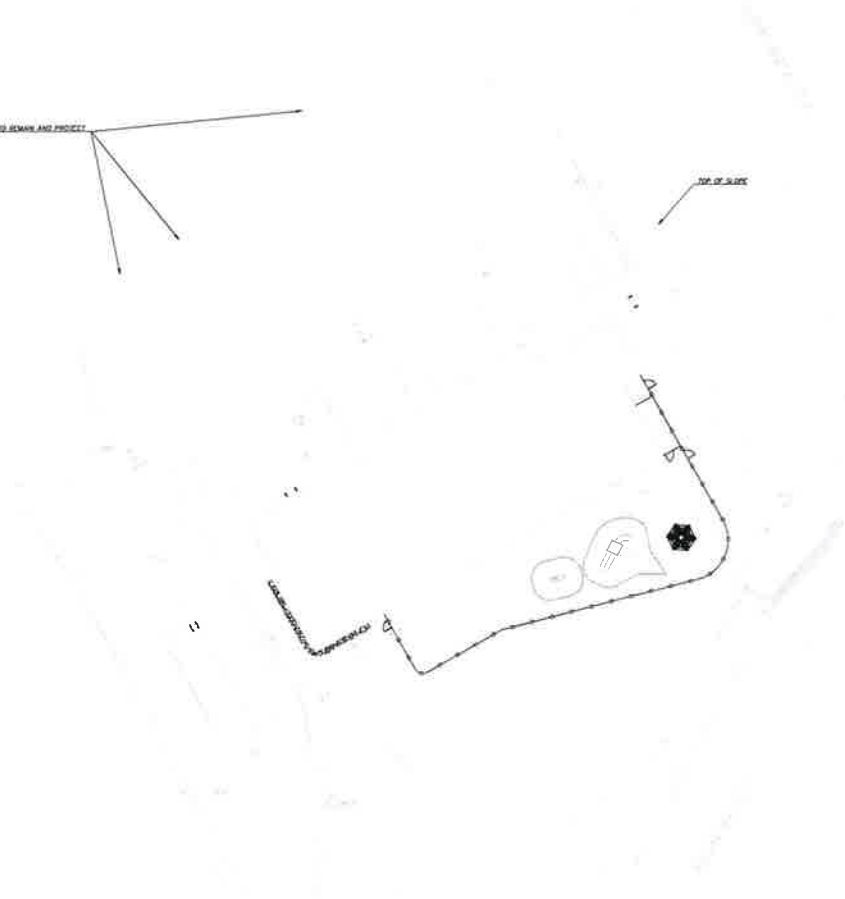
NO DATE BY

REVISIONS

DETAILS
 JGELC
 CIVIL PLANS
 02/28/2024
 CITY OF PORT TOWNSEND WASHINGTON

JOB NUMBER: 23-157
 PROJECT: RD-02
 SHEET: 12 OF 15

EXISTING PAVING TO REMAIN AND PROJECT



Sheet List Table		
Sheet Number	Sheet Title	Sheet Description
1	L0-00	LANDSCAPE COVER SHEET & SHEET INDEX
2	L1-00	MATERIALS SCHEDULE
3	L1-01	MATERIALS PLAN
4	L2-00	IRRIGATION SCHEDULE & NOTES
5	L2-01	IRRIGATION PLAN
6	L3-00	PLANTING SCHEDULE & NOTES
7	L3-01	PLANTING PLAN
8	L4-01	PLANTING DETAILS
9	L4-02	IRRIGATION DETAILS
10	L4-03	IRRIGATION DETAILS
11	L4-04	DETAILS

ATWELL
 21 CENTRAL AVENUE, SUITE 202
 CHICAGO, IL 60610
 P.O. BOX 1000, F.O. BOX 1000
 WASHINGTON, DC 20004

OWNER: OLIVER PERRINOLA TRCA
 875 N STATE STREET, 3A
 CHICAGO, IL 60610
 (312) 343-0200

ARCHITECT: PRESENT FUTURE ARCHITECTS
 111 W. CANTON STREET, #104
 CHICAGO, IL 60601
 (312) 343-1200

DESIGNER: STUBBS ATEL
 1044 LAWRENCE STREET,
 PORT TOWNSEND, WA 98368
 (360) 885-8800

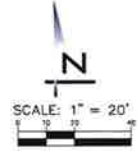
DATE: ATWELL, L.L.C.
 1100 BRIDGEWAY, SUITE 210
 CHICAGO, IL 60610
 (312) 343-1200

STRUCTURAL: WALTER BURDECK JOHNSON
 111 LAUREL STREET, SUITE 2000
 CHICAGO, IL 60602
 (312) 867-4300

MEP: MCCORMICK ENGINEERS
 2015 RIVERVIEW PLAZA, SUITE 204
 CHICAGO, IL 60608
 (312) 867-4300

**JEFFERSON COUNTY EARLY
 LEARNING CENTER**
 PORT TOWNSEND, WA 98368

NO.	REVISION	DATE
1	ISSUE FOR PERMIT	01/29/2024
2	FOR CONSTRUCTION	01/29/2024
3	FOR RECORD	01/29/2024



UNDERGROUND UTILITY NOTE
 UNDERGROUND UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITY LINES ARE SHOWN, OR THAT THE LOCATION, SIZE AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL UNCOVER ALL INDICATED PIPING WHERE CROSSING, INTERFERENCE, OR CONNECTIONS OCCUR PRIOR TO TRENCHING OR EXCAVATION FOR ANY PIPE OR STRUCTURES. TO DETERMINE ACTUAL LOCATIONS, SIZE AND MATERIAL, THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROVISION FOR PROTECTION OF SAID FACILITIES. THE CONTRACTOR SHALL NOTIFY ONE CALL AT 8-1-1 (WASHINGTON011.COM) AND ARRANGE FOR FIELD LOCATION OF EXISTING FACILITIES BEFORE CONSTRUCTION.

LANDSCAPE
 COVER SHEET &
 SHEET INDEX
L0-00

REFERENCE NOTES SCHEDULE

Aesthetic & Recreational Special Construction		
SYMBOL	DESCRIPTION	QTY
	PLAY STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
	PLACE STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
	PLAY STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
Fences & Gates		
SYMBOL	DESCRIPTION	QTY
	FENCE - REFER TO A100 FOR SELECTION	228 lf
	GATE - REFER TO A100 FOR SELECTION	4
Site Furnishings		
SYMBOL	DESCRIPTION	QTY
	BICYCLE PARKING - PACIFIC OUTDOORS - STEEL- POWDER COAT BLACK	4
Wood Decking		
SYMBOL	DESCRIPTION	QTY
	DECKING - REFER TO A100 FOR SELECTION	684 sf
Aesthetic & Recreational Special Construction		
SYMBOL	DESCRIPTION	QTY
	RESILIENT PLAY SURFACE - POURED-IN-PLACE - REFER TO A100 FOR SELECTIONS	1,787 sf
Rigid Paving		
SYMBOL	DESCRIPTION	QTY
	PEDESTRIAN SURFACE - REFER TO CIVL	5,774 sf
	PEDESTRIAN SURFACE - PIGMENTED CONCRETE - REFER TO CIVL	504 sf
Aggregate Surfaces		
SYMBOL	DESCRIPTION	QTY
	VEHICULAR SURFACE - 3/8-INCH MINUS DRAINED - 4-INCH DEPTH - AGGREGATE - LOCALLY SOURCED - COMPACT 90-PERCENT	4,554 sf
Planting Prescriptions		
SYMBOL	DESCRIPTION	QTY
	PLANTING FINISH - BARK MULCH - 3-INCH DEPTH	287 sf
	PLANTING FINISH - BLACK SLATE CHIP MULCH - 3-INCH DEPTH - COMMODITY BLACK SLATE 1-INCH AVAILABLE THROUGH THE HOME DEPOT - homedepot.com	104 sf



ATWELL

1101 N. LA SALLE AVE. SUITE 400
CHICAGO, IL 60610
TEL: (312) 329-1100
WWW.ATWELL.COM

OWNER	OLYMPIA PENINSULA TRUST 875 WASHINGTON BLVD SE SEASIDE WA 98138 (206) 504-9504
ARCHITECT	PERKINS+WILL ARCHITECTS 1101 W. DINEEN STREET, 404 CHICAGO, IL 60610 (312) 911-1000
DESIGNER	STUDIO 411 104 LAWRENCE STREET PORT TOWNSEND, WA 98148 (360) 888-8888
CIVIL	ATWELL, LLC 1101 W. DINEEN STREET, 404 CHICAGO, IL 60610 (312) 911-1000
STRUCTURAL	NEVEN NEUMANN ARCHITECTS 1110 LA SALLE STREET, SUITE 2200 CHICAGO, IL 60610 (312) 514-4565
MEP	MOCHNER ENGINEERS 3010 RIVERSIDE PLAZA, SUITE 300 CHICAGO, IL 60618 (312) 939-2441

JEFFERSON COUNTY EARLY
LEARNING CENTER

PORT TOWNSEND, WA 98368

REV.	DESCRIPTION	DATE
	ARCHITECT'S PROJECT NO.	2217



01/29/2024

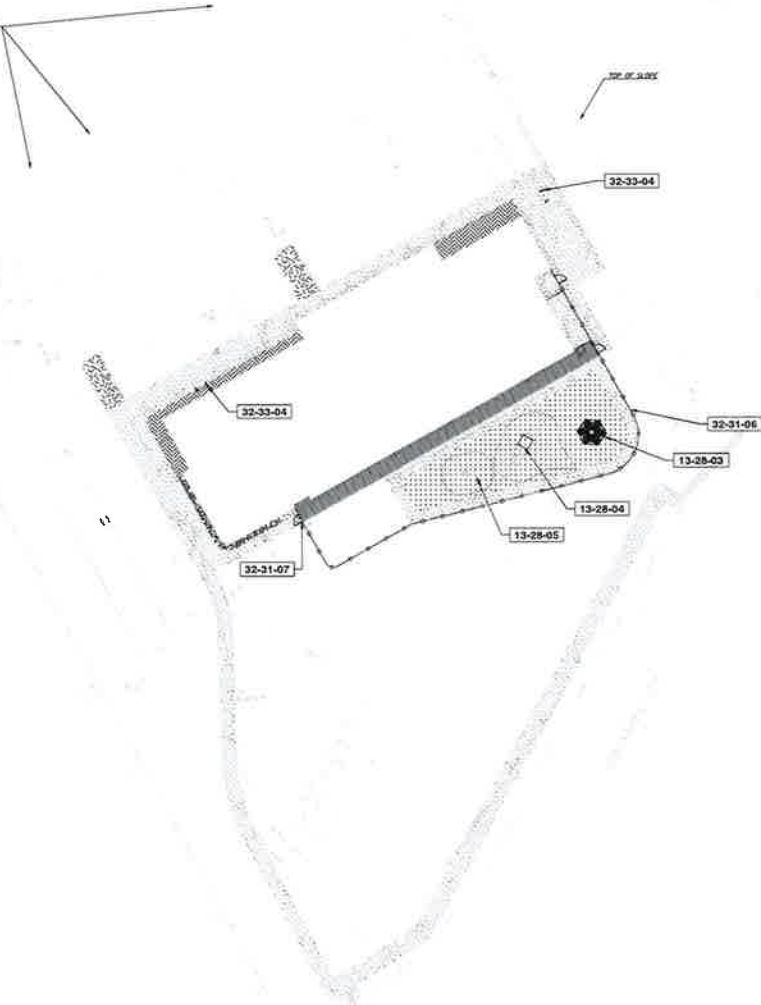
MATERIALS
SCHEDULE

L1-00

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EXISTING BUILDING TO REMAIN AND PROPERTY



REFERENCE NOTES SCHEDULE

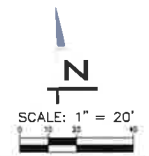
SYMBOL	Athletic & Recreational Special Construction DESCRIPTION	QTY
13-28-03	PLAY STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
13-28-04	PLACE STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
13-28-05	PLAY STRUCTURE - SELECTION AND LOCATIONS TO BE DETERMINED BY VENDOR	1
SYMBOL	Fences & Gates DESCRIPTION	QTY
32-31-06	FENCE - REFER TO A100 FOR SELECTION	228 #
32-31-07	GATE - REFER TO A100 FOR SELECTION	4
SYMBOL	Site Furnishings DESCRIPTION	QTY
32-33-04	BICYCLE PARKING - PACIFIC OUTDOORS - STEEL - POWDER COAT BLACK	4
SYMBOL	Wood Decking DESCRIPTION	QTY
[Symbol]	DECKING - REFER TO A100 FOR SELECTION	584 sf
SYMBOL	Athletic & Recreational Special Construction DESCRIPTION	QTY
[Symbol]	RESILIENT PLAY SURFACE - POURED-IN-PLACE - REFER TO A100 FOR SELECTIONS	1,787 sf
SYMBOL	Road Paving DESCRIPTION	QTY
[Symbol]	PEDESTRIAN SURFACE - REFER TO CIVIL	5,774 sf
[Symbol]	PEDESTRIAN SURFACE - PIGMENTED CONCRETE - REFER TO CIVIL	504 sf
SYMBOL	Approachable Surfaces DESCRIPTION	QTY
[Symbol]	VEHICULAR SURFACE - 5/8-INCH MINUS CRUSKED - 4-INCH DEPTH - AGGREGATE - LOCALLY SOURCED - COMPACT 90-PERCENT	4,554 sf
SYMBOL	Planting Specifications DESCRIPTION	QTY
[Symbol]	PLANTING FINISH - BARK MULCH - 3-INCH DEPTH	287 sf
[Symbol]	PLANTING FINISH - BLACK SLATE CHIP MULCH - 3-INCH DEPTH - COMMODITY BLACK SLATE 1-INCH AVAILABLE THROUGH THE HOME DEPOT - homedepot.com	104 sf



OWNER	OLYMPIC PENINSULA YMAA 877 WASHINGTON STATE ST SEASIDE WA 98132 (206) 534-8511
ARCHITECT	PREBERT FUTURE ARCHITECTS 114 W 10TH STREET, 404 CHICAGO, IL 60607 (312) 941-1202
DESIGNER	STUDIO STL 1046 ARDENNE STREET PORT TOWNSEND, WA 98368 (360) 814-0114
CIVIL	ATWELL LLC 1146 BROADWAY, SUITE 210 TACOMA, WA 98402 (252) 281-2028
STRUCTURAL	MEYER BORDMAN JOHNSON 111 LABALE STREET, SUITE 200 CHICAGO, IL 60610
MEP	SECURITY ENGINEERS 205 S RIVERVIEW PLAZA, SUITE 200 CHICAGO, IL 60606 (312) 888-2348

JEFFERSON COUNTY EARLY
LEARNING CENTER
PORT TOWNSEND, WA 98368

NO. & DESCRIPTION	DATE
ARCHITECT'S PROJECT NO.	2217



UNDERGROUND UTILITY NOTE
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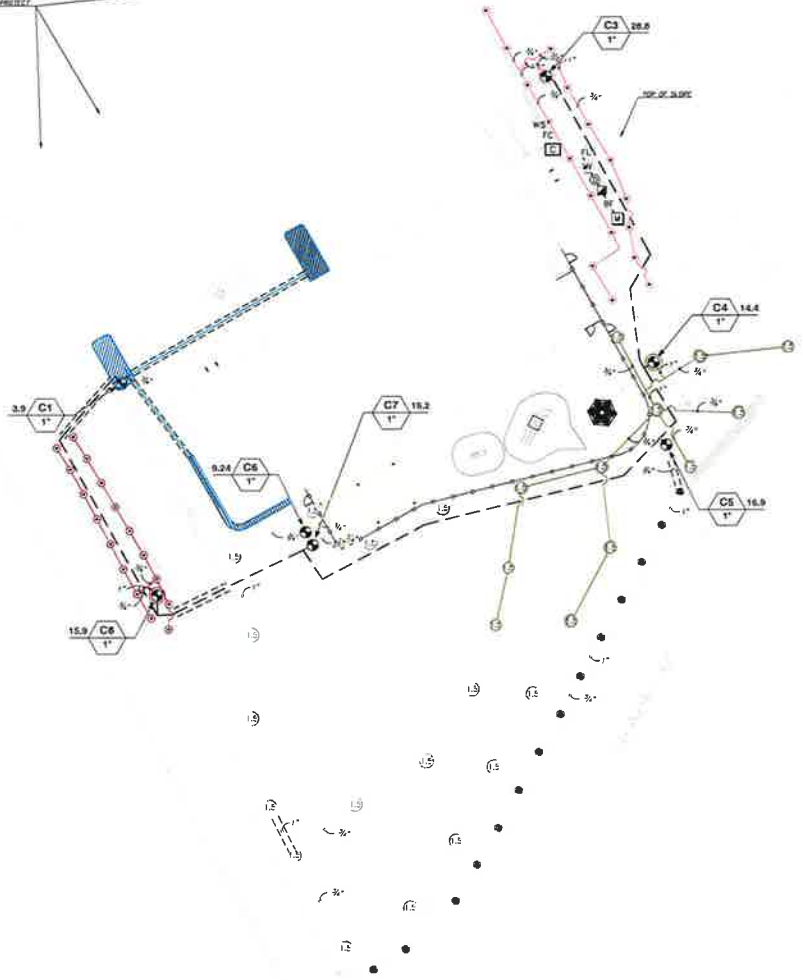


01/19/2014

MATERIALS
PLAN

L1-01

SEE PLAN SHEET 20 FOR MAIN AND BRANCH



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
●	Hunter PSU-06 10 Series Turf Spray, 6in. Pop-Up Adjustable and Full Circle, Drain Check Valve.
●	Hunter PSU-06 15 Series Turf Spray, 6in. Pop-Up Adjustable and Full Circle, Drain Check Valve.
●	Hunter PSU-06 17 Series Turf Spray, 6in. Pop-Up Adjustable and Full Circle, Drain Check Valve.
●	Hunter PROS-06 Strip Series Turf Spray, 6in. Pop-Up Co-molded wiper seal with UV Resistant Material.
●	Hunter POP-06 1.5 Hunter Rotor, 6in. Pop-Up, Adjustable to Full Circle.
■	Netafirm LVC210075-HMP Pre-Assembled Control Zone Kit, with 1in. Series 80 Control Valve, 3/4in. Disc Filter, and High Flow Pressure Regulator 4.50PM to 17.5PM.
■	Area to Receive Dripline Netafirm TLCV-06-12 Technique Pressure Compensating Landscape Dripline with Check Valves. 0.6 GPH emitters at 12" O.C. Dripline laterals spaced at 12" apart, with emitters offset for triangular pattern. 17mm.
●	Hunter ICV-02 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use.
■	Hunter HO-3RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 3/4in. NPT Inlet, 1-piece body.
●	Hunter ISV 1" 1in., 1-1/2in., 2in., and 3in. Brass Electric Master Valve, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use.
○	Drain Valve
BF	Fabco 825Y 1" Reduced Pressure Backflow Preventer
C	Hunter I2C-0800-M 8 Station Outdoor Modular Controller, No Module Required, Commercial Use, Metal Cabinet.
JD	Hunter FREEZE-CLIX Freeze Sensor installs easily to shut system off to avoid dangerous, icy conditions 5 year warranty.
WS	Hunter MWS (2) Weather Station with rain sensor, wind sensor, 120 VAC, 5 amp, 5 year warranty.
FL	Hunter W-HC-FLOW-R Wireless HC Flow Meter Kit, receiver only (domestic 500 MHz)
M	Water Meter 1" REFER TO CIVIL ENGINEER DRAWINGS
---	Irrigation Lateral Line: PVC Class 200 SDR 21
---	Irrigation Mainline: PVC Schedule 40
---	Ripe Steer: PVC Schedule 40
○	Valve Outlet
○	Valve Type
○	Valve Size

ATWELL
 2 CENTRAL AVENUE, SUITE 407
 180 WASHINGTON STREET
 PORT TOWNSEND, WA 98368
 P: 425.224.8851 F: 425.224.8852
 WWW.ATWELLWA.COM

OWNER
 OLYMPIA PENINSULA YBCA
 875 WILSON AVENUE, SUITE 300
 BELLEVUE, WA 98003
 (206) 544-0210

ARCHITECT
 PRESENT FUTURE ARCHITECTS
 1147 10TH STREET, SUITE 404
 CHICAGO, IL 60612
 (312) 961-1282

DESIGNER
 STUDIO PT
 184 LAWRENCE STREET
 PORT TOWNSEND, WA 98368
 (360) 886-8116

ENGINEER
 ATWELL, LLC
 1100 BROADWAY, SUITE 210
 CHICAGO, ILL 60602
 (408) 330-7294

STRUCTURAL
 BRYER ENGINEERS ARCHITECTS
 111 ANABLE STREET, SUITE 3250
 CHICAGO, IL 60610
 (312) 971-4266

MEP
 MCQUIRE ENGINEERS
 308 B RIVERSIDE PLAZA, SUITE 210
 CHICAGO, IL 60611
 (312) 938-2247

JEFFERSON COUNTY EARLY LEARNING CENTER
 PORT TOWNSEND, WA 98368

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	01/23/2024
2	ISSUED FOR CONSTRUCTION	01/23/2024
3	AS-BUILT	01/23/2024

PROJECT NO. 2217



01/23/2024
IRRIGATION PLAN

L2-01

UNDERGROUND UTILITY NOTE
 UNDERGROUND UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL UTILITY LINES ARE SHOWN, OR THAT THE LOCATION, SIZE, AND MATERIAL IS ACCURATE. THE CONTRACTOR SHALL UNCOVER ALL INDICATED PIPING BEFORE CROSSING, INTERFERENCES, OR CONNECTIONS OCCUR PRIOR TO TRENCHING OR EXCAVATION FOR ANY PIPE OR STRUCTURES. TO DETERMINE ACTUAL LOCATIONS, SIZE AND MATERIAL, THE CONTRACTOR SHALL MAKE THE APPROPRIATE PROVISION FOR PROTECTION OF SAID FACILITIES. THE CONTRACTOR SHALL NOTIFY ONE CALL AT 8-1-1 (WASHINGTON.CALL) AND ARRANGE FOR FIELD LOCATION OF EXISTING FACILITIES BEFORE CONSTRUCTION.



ATWELL

11 STANLEY WAY, SUITE 107
 CHICAGO, IL 60642
 P: 773.747.4400 F: 773.747.4401
 WWW.ATWELLGROUP.COM

OWNER OLYMPIA PENINSULA FISH
 111 W. 17TH AVE. SUITE 3A
 SEQUEM, WA 98142
 (206) 846-9238

ARCHITECT PRESENT FUTURE ARCHITECTS
 1141 W. 10TH STREET, 404A
 CHICAGO, IL 60642
 (312) 939-1132

DESIGNER STUDIO STL
 1160 BROADWAY STREET
 PORT TOWNSEND, WA 98108
 (360) 808-8874

CNCL ATWELL LLC
 1160 BROADWAY, SUITE 210
 TACOMA, WA 98104
 (206) 791-2104

STRUCTURAL HEYER ENGINEERING
 11 LABELLE STREET, SUITE 101
 CHICAGO, IL 60632
 (800) 343-8381

REP INCORPORATED
 205 S. FRANKLIN PLAZA, SUITE 250
 CHICAGO, IL 60606
 (312) 530-0241

**JEFFERSON COUNTY EARLY
 LEARNING CENTER**
 PORT TOWNSEND, WA 98368

REV.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	01/19/2024
2	ISSUED FOR CONSTRUCTION	01/19/2024
3	ISSUED FOR CONSTRUCTION	01/19/2024

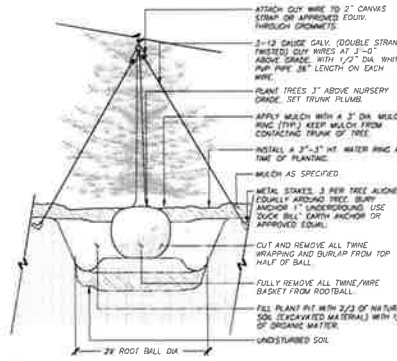


01/19/2024

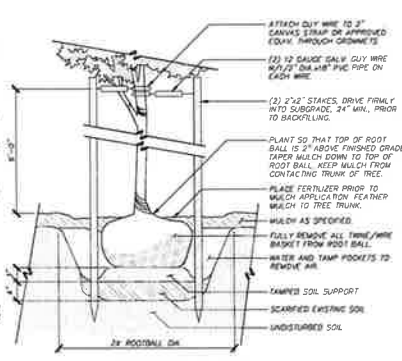
**PLANTING
 DETAILS**

L4-01

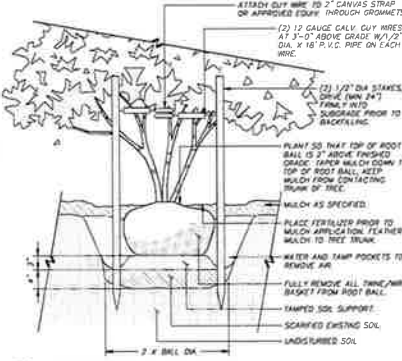
UNDERGROUND UTILITY NOTE
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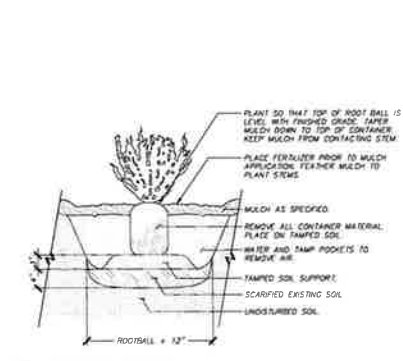
1 EVERGREEN TREE PLANTING
 1" = 1'-0"



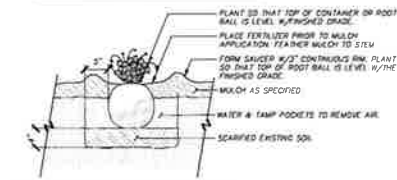
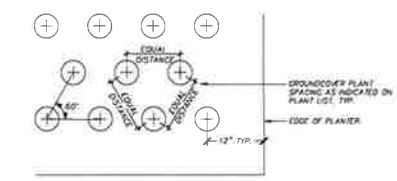
2 DECIDUOUS TREE PLANTING
 1" = 1'-0"



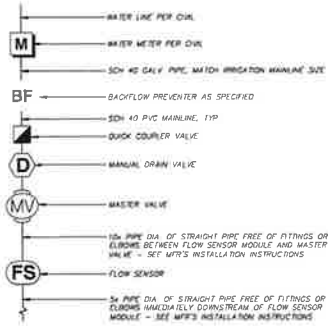
3 MULTI STEM TREE PLANTING
 1" = 1'-0"



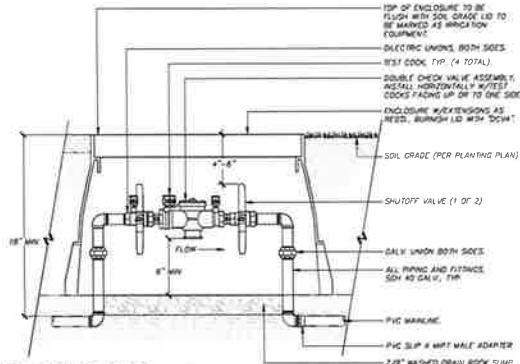
4 SHRUB PLANTING
 1" = 1'-0"



5 GROUND COVER PLANTING
 1" = 1'-0"

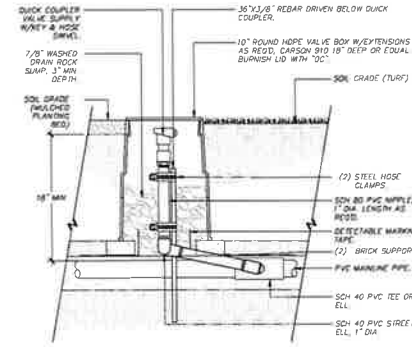


1 POC LAYOUT
1 1/2" x 1'-0"

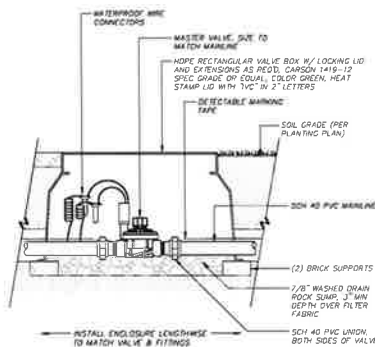


2 DOUBLE CHECK VALVE
1 1/2" x 1'-0"

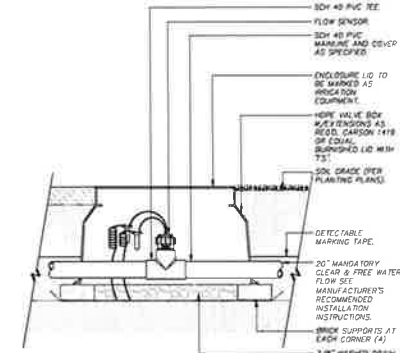
- NOTES:
- ENCLOSURE SHALL BE TWO STACKED METEY BOXES OR ONE OVERSIZED METER BOX. METER BOX SHALL HAVE REMOVABLE 30" x 30" DOWN COVER. METER BOX AND LID SHALL BE RATED FOR ANTICIPATED LOAD CONDITIONS.
 - BOX SHALL BE SIZED TO PROVIDE 6" MIN. CLEARANCE BETWEEN SIDE WALLS AND UNIONS OR TEST COCKS IF FACING SIDEWAYS, AND 4" MIN./6" MAX. BETWEEN UNDERSIDE OF LID AND HIGHEST POINT OF DEVICE.
 - ENCLOSURE LOCATED IN SIDEWALK OR AREAS WITH VEHICULAR TRAFFIC SHALL BE METAL. OLYMPIC FOUNDRY 3/4" DIA METER BOX OR APPROVED EQUAL BOXES IN OTHER NON-TRAFFIC AREAS TO BE CARSON INDUSTRIES 1200 1/8" DEPTH HOPE METER BOX WITH 1200 SOLID FLUSH OR T-COVER, OR APPROVED EQUAL.
 - INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND MINIMUM STANDARDS OF THE UNIFORM PLUMBING CODE (UPC) AND WASHINGTON STATE REST. OF HEALTH (HSDOH) APPROVED INSTALLATION LIST.
 - TESTING TO BE PERFORMED BY HSDOH CERTIFIED BACKFLOW ASSEMBLY TESTER UPON INSTALLATION. ANNUALLY THEREAFTER. AFTER ASSEMBLY IS REPAIRED OR REBUILT, OR AFTER AN HSDOH AT OWNER'S EXPENSE, THE SATISFACTORY TEST REPORT SHALL BE SUBMITTED TO THE AGENCY HAVING JURISDICTION PER HSDOH REQUIREMENTS.
 - DCVA IS TO BE OWNED, OPERATED, AND MAINTAINED BY PROPERTY OWNER.



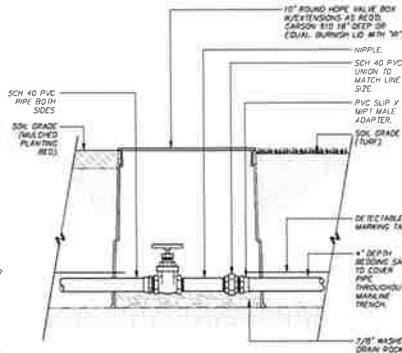
3 QUICK COUPLER VALVE
1 1/2" x 1'-0"



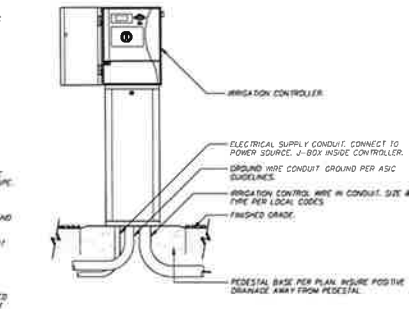
4 MASTER VALVE
1 1/2" x 1'-0"



5 FLOW SENSOR
1 1/2" x 1'-0"



6 MAINLINE ISOLATION VALVE
1 1/2" x 1'-0"



7 PEDESTAL MOUNT CONTROLLER
1' x 1'-0"

ATWELL
1101 CLINTON AVENUE, SUITE 100
PORT TOWNSEND, WA 98368
TEL: 206.398.1400 FAX: 206.398.1401
WWW.ATWELL.COM

OWNER: OLYMPIA PENINSULA TEEGA
815 STRAIN, SUITE 1A
STEVENSON, WA 98382
DNR 15-4-0216

ARCHITECT: PREMIER FUTURE ARCHITECTS
106 S 2ND STREET, SUITE 204
CHICAGO, IL 60604

DESIGNER: STUDIO STL
104 LAWRENCE STREET,
PORT TOWNSEND, WA 98389
206.398.8134

CIVIL: ATWELL, LLC
114 BROADWAY, SUITE 210
TACOMA, WA 98402
252.252.7529

STRUCTURAL: BEYER BORGARDT JOHNSON
1150 SALLE STREET, SUITE 2025
CHICAGO, IL 60607
312.631.4089

MEP: WOLVERINE ENGINEERS
369 S RIVERSIDE PLAZA, SUITE 204
CHICAGO, IL 60606
312.928.1241

JEFFERSON COUNTY EARLY LEARNING CENTER
PORT TOWNSEND, WA 98368

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DATE: 01/29/2024
SCALE: AS SHOWN
PROJECT NO: 2217

IRRIGATION DETAILS

L4-02

- SITE PLAN GENERAL NOTES**
1. SEE CIVIL NOTES FOR ADD'L INFO
 2. PROVIDE CURBS AND GUTTERS AS SHOWN
 3. PROVIDE CURBS AND GUTTERS AS SHOWN
 4. VERIFY EXISTING CONDITIONS IN FIELD
 5. SEE 2008-04-01 DATE REVISION

SITE PLAN LEGEND

ASPHALT	GRASS	REGISTERED PLAY SURFACE (6' COUNCIL)	STONE
CONCRETE	PROPOSED CONCRETE	POUND	NOT IN CONTRACT
EXISTING DRIVEWAY	EXISTING DRIVEWAY	EXISTING DRIVEWAY	EXISTING DRIVEWAY

OWNER: JEFFERSON COUNTY WA
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

ARCHITECT: HENNING EYRING ARCHITECTS
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

DESIGNER: STENO ST.
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

ENGINEER: ANWELL, LLC
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

STRUCTURAL: MFR STRUCTURAL JOHNSON
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

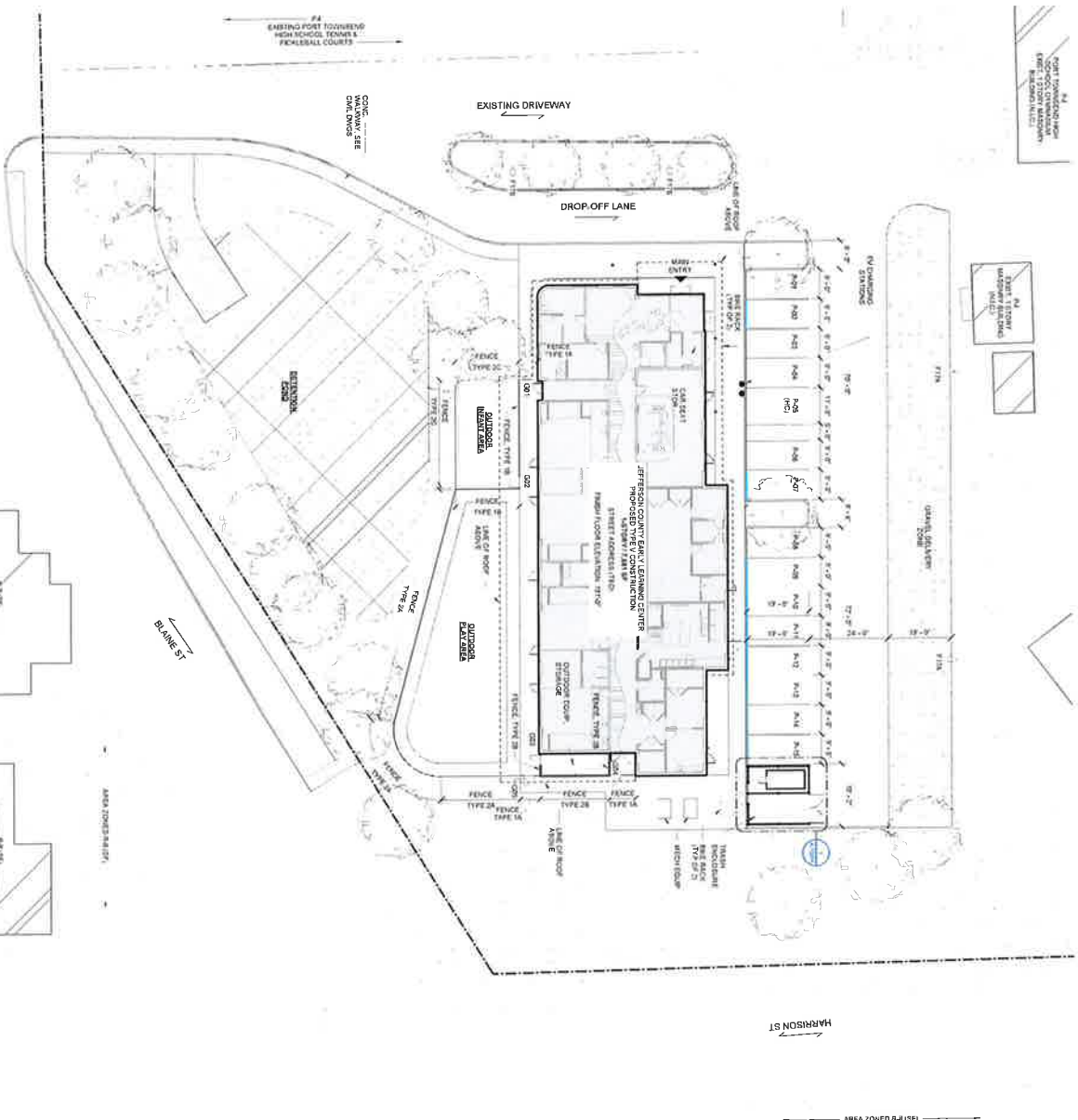
MECHANICAL/ELECTRICAL/PLUMBING: MFR STRUCTURAL JOHNSON
 1000 1ST ST. SE, STE. 100
 PORT TOWNSEND, WA 98368
 (360) 881-1000

JEFFERSON COUNTY EARLY LEARNING CENTER

STREET,
 PORT TOWNSEND, WA 98368

1	PERMIT	2014/08/28
2	CONSTRUCTION	2014/09/08
3	COMPLETION	2014/09/08
4	REVISION	2014/09/08
5	REVISION	2014/09/08

Author: [Name] Project No.: 2217



1 SITE PLAN

A100



TOPOGRAPHIC MAP

A PORTION OF PORT TOWNSEND HIGH SCHOOL

A.P.N. 001-023-00
CITY OF PORT TOWNSEND
JEFFERSON COUNTY, WASHINGTON
PREPARED FOR
STUDIO STL

BASIS OF BEARINGS:
WASHINGTON COORDINATE SYSTEM OF 1983, ADJUSTMENT 1991, NORTH ZONE, NORTH AMERICAN DATUM (NAD 83), DETERMINED FROM FIELD MEASUREMENTS TO CITY OF PORT TOWNSEND SURVEY CONTROL POINTS. PROCEDURES AND PROFILES BEARING SHOWN HEREON ARE GROUND DISTANCES.

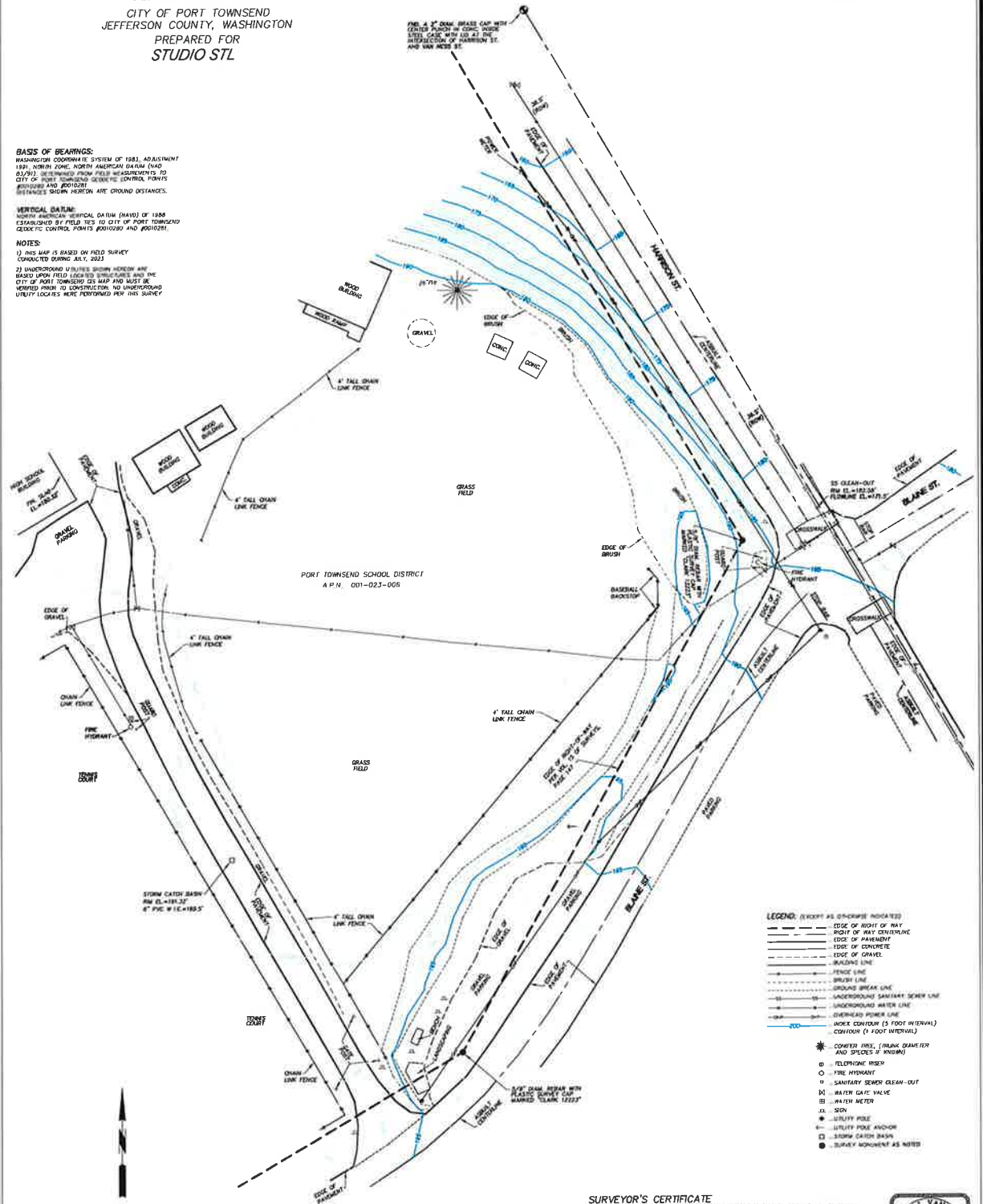
VERTICAL DATUM:
NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 ESTABLISHED BY FIELD TIES TO CITY OF PORT TOWNSEND CONTROL POINTS #0010200 AND #0010201.

NOTES:
1) THIS MAP IS BASED ON FIELD SURVEY CONDUCTED DURING JULY, 2023.
2) UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON FIELD LOCATIONS SURVEYED AND THE CITY OF PORT TOWNSEND GIS MAP AND MUST BE VERIFIED PRIOR TO CONSTRUCTION. NO UNDERGROUND UTILITIES LOCATED WERE PERFORMED FOR THIS SURVEY.

PROCEDURES:
THIS SURVEY IS BASED ON A GROUND SURVEY UTILIZING CONVENTIONAL TRIPLES METHODS WITH CLOSURES THAT MEET OR EXCEED THE STANDARDS CONTAINED IN WAC 332-130-090.

EQUIPMENT:
TRIMBLE 56.17 2000FC TOTAL STATION
TRIMBLE 7522 DATA COLLECTOR

DATE OF FIELD SURVEY:
JULY, 2023



- LEGEND: (EXCEPT AS OTHERWISE INDICATED)**
- EDGE OF RIGHT OF WAY
 - RIGHT OF WAY CENTERLINE
 - EDGE OF PAVEMENT
 - EDGE OF CONCRETE
 - EDGE OF GRAVEL
 - BOUNDARY LINE
 - FENCE LINE
 - BRUSH LINE
 - GROUND BREAK LINE
 - UNDERGROUND SANITARY SEWER LINE
 - UNDERGROUND WATER LINE
 - OVERHEAD POWER LINE
 - INDEX CONTOUR (5 FOOT INTERVAL)
 - CONTOUR (1 FOOT INTERVAL)
 - ★ CENTER PINS (ROUND GRAMMETS AND SPICES IF KNOWN)
 - TELEPHONE RISER
 - FIRE HYDRANT
 - SANITARY SEWER CLEAN-OUT
 - WATER CATE WALK
 - WATER METER
 - SIGN
 - UTILITY POLE
 - UTILITY POLE AVONCH
 - STORM CATCH BASIN
 - SURVEY MONUMENT AS NOTED

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF WASHINGTON AND DECLARE THAT THIS MAP CORRECTLY REPRESENTS A TOPOGRAPHIC SURVEY PERFORMED IN JULY, 2023 UNDER MY SUPERVISION, AND MEETS OR EXCEEDS INDUSTRY STANDARDS FOR TOPOGRAPHIC SURVEYS OF ITS CLASS, PERFORMED AT THE REQUEST OF THE PORT TOWNSEND SCHOOL DISTRICT IN JULY, 2023.



	TITLE: TOPOGRAPHIC MAP A PORTION OF P.T. HIGH SCHOOL A.P.N. 001-023-00	REVISIONS: DATE MARK NOTE	
	CLIENT: STUDIO STL 1005 LAWRENCE ST. PORT TOWNSEND, WA 98368		
P.O. BOX 757 • CARLSBORG, WA • 98324 PHONE: (360) 683-3438 • FAX: (360) 683-3241			