File No. EA2020-102

CITY OF RICHLAND
Determination of Non-Significance

Description of Proposal: Bookwalter Winery proposes to expand operations by way of new construction on an adjacent parcel to the east. Proposed construction activities include: a new 2-story, 21,341 square foot metal building, 34-stall paved parking lot, stormwater retention swale and landscaping features.

Proponent: Bookwalter Winery LLC
894 Tulip Ln
Richland, WA 99352

Location of Proposal: 895 Malibu PR in the city of Richland, WA 99352 (Parcel ID #1-22982020002015).

Lead Agency: City of Richland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

( ) There is no comment for the DNS.

(**X**) This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for fourteen days from the date of issuance.

( ) This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

Responsible Official: Mike Stevens
Position/Title: Planning Manager
Address: 625 Swift Blvd., MS #35, Richland, WA 99352
Date: January 17, 2020

Signature_____

EA2020-102
BOOKWALTER
895 MALIBU

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them 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 agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject 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.

A. Background [HELP]

1. Name of proposed project, if applicable:
   Bookwalter Winery Expansion
2. Name of applicant:
   Bookwalter Winery, LLC
3. Address and phone number of applicant and contact person:
   894 Tulip Lane Richland, WA 99352 Phone #(509) 627-5000; John Bookwalter

4. Date checklist prepared:
January 6, 2020
5. Agency requesting checklist:
City of Richland, WA
6. Proposed timing or schedule (including phasing, if applicable):
Spring, 2020
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
None at this time
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
Geotechnical investigation of the site. Topographic and boundary survey of the property.
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.
Yes, application of proposed use for BPA right of way
10. List any government approvals or permits that will be needed for your proposal, if known.
City of Richland building permit, BPA right of way permit
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. (Lead agencies may modify this form to include additional specific information on project description.) The proposed building will be used for winery production and wine tasting events. Associated landscaping improvements for customers. Gravel area for truck delivery.

19,342 ft² BLDG PLANS ATTACHED

SEO 1/16/20

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.
This site is located to the NW corner of the intersection of Columbia Park Trail and Malibu PR NE. Located to the East of the existing Bookwalter Winery tasting room.

B. Environmental Elements [HELP]

1. Earth [help]

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?
There are portions of the site that are sloped at a 6' Horizontal to 1' Vertical Slope. Majority of the site at approximately 2%-8%.

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.
See geotechnical report for the site prepared by PBS dated September 12th, 2019. In summary the soils are characterized as Sand and Silty Sand, Gravel and Basalt.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. The site has no immediate indications of unstable soils and has been primarily under agricultural production for several years until recently.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

All fill will be from material excavated on site, import of materials for grading is not anticipated.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Potential erosion, both wind blown and runoff, are possible as a result of construction and will be managed with a temporary erosion control plan approved by the City of Richland.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? Approximately 45%-50% of the site will be covered with impervious surfaces after the project completion.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

During construction, erosion control measures will be implemented such as person-operated altering devices and silt fencing. After construction, the majority of the disturbed surfaces on the site will be grass and landscaping consistent with single family homes.

2. Air [help]

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. During construction there will be exhaust emissions from construction equipment as well as dust. After construction there would be normal air emissions resulting from a commercial building.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No off site sources of emissions will affect this proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

None.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is a ditch on the west side of the parcel that intermittently conveys surface water such as irrigation.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The majority of the on-site project improvements are located within 200' of the ditch.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No surface water withdrawals or diversions proposed with this project.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

The proposed site does not lie within a 100-year floodplain.

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.

The proposed project does not involve any discharge of waste materials to surface waters.

b. Ground Water: [help]

1) Will groundwater 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 groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn.

2) Describe waste material that will 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.

None, sanitary sewer will be discharged to the City municipal system.

c. Water runoff (including stormwater):

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. Storm water runoff will be collected within the site and disposed of via surface infiltration methods consistent with the City of Richland standards for storm water disposal. There will be no off-site discharges of design storm runoff from the project.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Stormwater will continue to flow to the north. Onsite stormwater from impervious surfaces will be collected in a stormwater pond and infiltrate onsite.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: The storm water disposal methods will be in compliance with City of Richland standards as well as the Washington State Department of Ecology Eastern Washington Stormwater Manual.

4. Plants [help]

a. Check the types of vegetation found on the site: Existing vineyards on the project site will be removed as needed.

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
_X_shrubs
_X_grass
____pasture
____crop or grain
_X_ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Remaining grass and brush will be removed where grading will take place. Vineyards will be removed as needed with the development of the project.

c. List threatened and endangered species known to be on or near the site.

There are no threatened or endangered species known to be on or near the site to the applicant's knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Landscaping will be utilized to enhance appearance

e. List all noxious weeds and invasive species known to be on or near the site.

There are no noxious weeds or invasive species known to be on or near the site to the applicant's knowledge.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Hawks, songbirds, deer, ground squirrel.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

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

There are no threatened or endangered species known to be on or near the site to the applicant's knowledge.

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

Yes, Richland is within the Pacific Flyway.

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

No measures are being proposed to preserve or enhance wildlife.

e. List any invasive animal species known to be on or near the site.

There are no invasive animal species known to be on or near the site to the applicant's knowledge.

6. *Energy and Natural Resources* [help]

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 will be used for heating, manufacturing, etc.
The project will require energy in order to serve the proposed building with electricity.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
This project has no impact to adjacent properties potential solar needs.

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:
The proposed building will be constructed in accordance with all applicable building codes as recognized by the City of Richland.

7. *Environmental Health* [help]

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.There are no identified potential health hazards with this proposal.

1) Describe any known or possible contamination at the site from present or past uses.
There are no known or possible contamination at the site from present or past uses to the applicant's knowledge.

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. None known.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. None.

4) Describe special emergency services that might be required.
None.

5) Proposed measures to reduce or control environmental health hazards, if any:
None at this time.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? There are no known sources of noise in the area that will directly affect this proposal.

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. On a short term basis there will be noise associated with infrastructure construction, hours of operation will be limited to those allowed by the City of Richland.

3) Proposed measures to reduce or control noise impacts, if any:
Construction hours will be limited to working hours defined by the City of Richland.

8. Land and Shoreline Use [help]

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. Currently the site and adjacent properties are vacant, single family homes, or commercial winery tasting rooms/restaurants. This proposal will not affect nearby land uses.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? This site is currently being used for vineyards. Approximately 3 acres of vineyards will be removed.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: The proposal does not anticipate any adverse impacts on agricultural ground, and does not anticipate that current agricultural practices will effect the development.

c. Describe any structures on the site.
There are no structures onsite.

d. Will any structures be demolished? If so, what?
No.

e. What is the current zoning classification of the site?
Commercial Winery (CW)

f. What is the current comprehensive plan designation of the site?
The commercial winery zone is for winery's to grow, produce and promote wine tourism. (COMMERCIAL) SEO 1.16.20

g. If applicable, what is the current shoreline master program designation of the site?
N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
~~No.~~ YES, THE CITY OF RICHLAND DESIGNATES THE SITE AS A CRITICAL AREA DUE TO THE POTENTIAL FOR GEOLOGIC HAZARDS, AS SUCH A GEO-TECH REPORT IS INCLUDED SEO 1.16.20

i. Approximately how many people would reside or work in the completed project?
Approximately 12 people will work in this facility.

j. Approximately how many people would the completed project displace?
None.

k. Proposed measures to avoid or reduce displacement impacts, if any:
None proposed.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: The site is to be built in accordance with City of Richland residential zoning and comprehensive plan requirements.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: None.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. None.

c. Proposed measures to reduce or control housing impacts, if any:
None.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? The tallest height of any building would be approximately 33'. The principal exterior building materials will be a combination of ribbed and flat metal panels.

b. What views in the immediate vicinity would be altered or obstructed?
No views in the immediate vicinity would be altered or obstructed by this project.

b. Proposed measures to reduce or control aesthetic impacts, if any:
None.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
The project would create light from the building mounted lights for the parking lot. This light would be created during the evening hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Not to the applicant's knowledge.

c. What existing off-site sources of light or glare may affect your proposal?
There are no off-site sources of light or glare that will affect the project proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:
All proposed lighting measures would be directed downward.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
Wine tasting will be available onsite.

b. Would the proposed project displace any existing recreational uses? If so, describe.
No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
None.

13. Historic and cultural preservation [help]

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 ? If so, specifically describe. Not to the applicant's knowledge.

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. Not to the applicants knowledge, no professional archeological studies have been completed to date on the project.

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, archaeological surveys, historic maps, GIS data, etc.
None.

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.
None.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.
Columbia Park Trail boarders the south of the site. Access to the site will be from Malibu PR NE which intersects Columbia Park Trail.

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?
Yes, there is are two bus stops located Columbia Park Trail adjacent to the site.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?
The project will provide adequate parking for customers and employees.

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). Yes, the project will widen Columbia Park Trail as well as add curb, gutter and sidewalk. Malibu PR NE will also be widened.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
No.

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 nonpassenger vehicles). What data or transportation models were used to make these estimates? Approximately 199 vehicular trips per day will be generated by the project. Peak volumes would occur in the morning (9 trips) and evening hours (31.6 trips). ITE Trip Generation Manual was used for estimation of traffic generated by winery tasting room and production.

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.
No.

h. Proposed measures to reduce or control transportation impacts, if any:
None.

15. Public Services [help]

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.
No.

b. Proposed measures to reduce or control direct impacts on public services, if any.
None.

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

c. 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 which might be needed. Utilities to include water, sewer, refuse service, and electricity will be provided by the City of Richland. Irrigation will be provided by Badger Mountain Irrigation District, and telephone is provided by CenturyLink and Charter Communications. New sanitary sewer, water, and irrigation mains, as well as dry utilities will need to be extended into the project in order to service the proposed building.

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee John Bookwalter

Position and Agency/Organization President Bookwalter Winery

Date Submitted: 4/7/20

D. Supplemental sheet for nonproject actions [HELP]

(**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, would affect the item at a greater intensity or at a faster rate than if the proposal were 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:

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,

BOOKWALTER WINERY

BOOKWALTER PRODUCTION FACILITY AND TASTING ROOM

PERMIT SET

BUILDING INFORMATION

NAME OF PROJECT:	Bookwalter Winery
STREET ADDRESS:	895 Malibu PR, Richland, WA
ARCHITECT:	MMEC Architecture & Interiors 7601 W. Clearwater Ave., Suite 450 Kennewick, WA, 99336 Joe Hampton (509)396-7278
CIVIL:	PBS 400 Bradley Blvd., Suite 106 Richland, WA, 99352 Jason Mellon (509)942-1600
STRUCTURAL:	GLR Engineers 9 S. Washington, Suite 213 Spokane, WA, 99201 Jacob Gokey (509)241-3885
MECHANICAL:	Routh Consulting Engineers 4512 N. 44th Place Pasco, WA, 99301 Rick Routh (509)547-8262
ELECTRICAL:	KWR Electrical Consulting & Design 5915 S. Regal Street Suite 201 Spokane, WA, 99223 Kelly Waterman (509)473-9218
OWNER:	Bookwalter Winery 894 Tulip Ln, Richland, WA, 99352 John Bookwalter
PROJECT SCOPE:	WINERY NEW CONSTRUCTION
JURISDICTION:	CITY OF RICHLAND
BUILDING CODES:	2015 INTERNATIONAL BUILDING CODES
OCCUPANCY GROUP:	A2, B, S2, AND F2
CONSTRUCTION TYPE:	II-B SPRINKLERED
BUILDING HEIGHT:	33'-0" - 24'-0" EAVE HEIGHT
PROJECT AREA:	MAIN LEVEL 19,342 SF UPPER LEVEL 1,999 SF TOTAL 21,341 SF
ALLOWABLE FLOOR AREA:	

DRAWING INDEX:

DESIGN BUILD NOTES

1. Fire Protection - Provide bidder designed automatic fire protection system designed in accordance with the requirements of the IFC, Local Jurisdiction, and building owner. Contractor shall prepare shop drawings; product data and calculations as required for jurisdictional approval. The contractor shall alone be responsible for deferred submittal to the AHJ and obtain all permits required for this scope of work. Fire protection system install to be coordinated with mechanical and electrical systems for the building.
2. Landscape - Provide bidder designed landscaping and irrigation to comply with all RWC requirements. Landscape drawing and planting list to be submitted for review and approval.
3. Gabion screen wall - Gabion screen wall to be bidder designed and installed, coordinate location with Civil and Landscape drawings. Provide design drawing and material samples for review.
4. A/V system - Provide Audio system for tasting room spaces. Design drawings and product data to be submitted for owner review and approval. Coordinate design and installation with electrical

BID ALTERNATES

1. Indoor/outdoor fireplace at Private Tasting 102; see A2.11 keynote 3 and detail 3/A8.11
2. Revise door 116D to be door type G (glazed); see A8.01
3. TV screen Covers; see 11/A8.40 for description of ALT 3A and 4/A 3B

ABBREVIATIONS

ACOU	ACOUSTICAL
ACP	ACOUSTICAL CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICAN DISABILITIES ACT
ADJ	ADJUSTABLE
A/E	ARCHITECT / ENGINEER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALUM	ALUMINUM
APPROX.	APPROXIMATE
ARCH	ARCHITECTURAL
AWT	ACOUSTICAL WALL TREATMENT
BD	BOARD
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
CAB	CABINET
CER	CERAMIC
CG	CORNER GUARD
CH	COAT HOOK
CIP	CAST-IN-PLACE CONCRETE
CJ	CONTROL JOINT
℄	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRIDOR
CONST	CONSTRUCTION
COW	COMPUTERS ON WHEELS
CPT	CARPET
CT	CERAMIC TILE
CW	COLD WATER
DBL	DOUBLE
DEMO	DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DPC	DECORATIVE POLISHED CONCRETE
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EG	ENTRY GRILLE (EXTERIOR)
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION
ELV	ELEVATOR
EM	ENTRY MAT (INTERIOR)
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FDTN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
FFE	FURNITURE, FIXTURES, AND EQUIPMENT
FIN	FINISH
FLR	FLOOR
FLUOR	FLUORESCENT
FOF	FACE OF FINISH
FP	FIRE PROOF
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT / FEET
FTG	FOOTING
GA	GAUGE
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GEN	GENERAL
GLAZ	GLASS / GLAZING
GLB	GLULAM BEAM
GYP	GYPSUM
HDWE	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HT	HEIGHT
HW	HOT WATER
IBC	INTERNATIONAL BUILDING CODE
IDR	INTERNALLY DRAINED ROOF
INSUL	INSULATION
INT	INTERIOR
IRP	IMPACT RESISTANT PANEL
JT	JOINT
LAM	LAMINATE
LAV	LAVATORY
LIN	LINOLEUM
LT	LIGHT
MATL	MATERIAL
MAR	MARKER WALL
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MP	METAL PANEL
MRS	MOTORIZED ROLLER SHADE
MTD	MOUNTED
MTL	METAL
MW	MICROWAVE
N	NORTH
NIC	NOT IN CONTRACT
NOM	NOMINAL
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OCC	OCCUPANCY
OFF	OFFICE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OPP	OPPOSITE
P	PAINT
PERF	PERFORATED
PLAM	PLASTIC LAMINATE
PR	PAIR
PROJ SCR	PROJECTION SCREEN
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PW	PLYWOOD
QT	QUARRY TILE
RAD	RADIUS
RAF	RUBBER ATHLETIC FLOORING
RB	RESILIENT BASE
RD	ROOF DRAIN
REINF	REINFORCED
REQ	REQUIRED
RM	ROOM
RS	ROLLER SHADE
RSS	ROD & SHELF
RSF	RESILIENT SHEET FLOORING
RST	RUBBER STAIR TREAD
S	SOUTH
SC	SEALED CONCRETE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SD	SOAP DISPENSER
SECT	SECTION
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SPEC	SPECIFICATION(S)
SS	STAINLESS STEEL
SSC	SOLID SURFACE COUNTERTOP
STV	STONE VENEER
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRL	STRUCTURAL
SUSP	SUSPENDED
SV	SHEET VINYL
TEL	TELEPHONE
TO	TOP OF
TPD	TOILET PAPER DISPENSER
TV	TELEVISION
TYP	TYPICAL
TZO	TERRAZZO
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
WAF	WOOD ATHLETIC FLOOR
WD	WOOD
WID	WASHER / DRYER
WF	WOOD FINISH
WP	WALL PAD
W/O	WITHOUT
WS	WOOD STAIR

SYMBOL LEGEND

- WINDOW LETTER
- WALL TYPE
- ELEVATIONS
- KEYNOTE
- SECTION
- ENLARGED PLAN
- DOOR NUMBER
- AIM TAG

SPECIALITY EQUIPMENT LEGEND

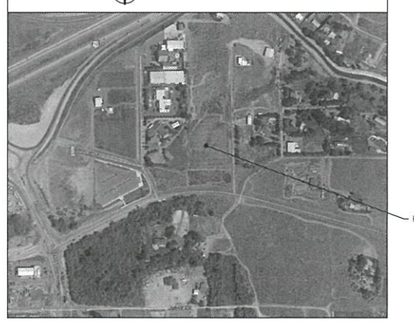
- FEC A / FEC B — FIRE EXTINGUISHER IN CABINET SEE DETAIL 3/A8.30
- FE — FIRE EXTINGUISHER ON WALL BRACKET
- RS — ROLLER SHADE. TYP.
- MRS — MOTORIZED ROLLER SHADE
- ROOM AND DOOR SIGN
- KB — KNOX BOX KEY VAULT - COORDINATE EXACT INSTALL LOCATION AND REQUIREMENTS W/ FIRE MARSHAL

CITY OF RICHLAND

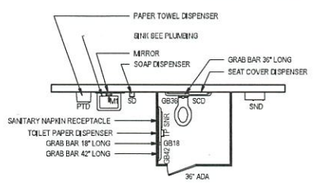
PROJECT NOTES:

1. MEET ALL REQUIREMENTS OF APPLICABLE BUILDING CODES AND REGULATIONS AND AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO IBC, NEC AND ADA.
2. REVIEW ALL CONTRACT DOCUMENTS AND FIELD CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES WITHIN THE DOCUMENTS AND/OR BETWEEN THE DOCUMENTS AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND OWNER AND SHALL BE RESOLVED BEFORE PROCEEDING.
3. ALL MATERIALS ARE TO BE OF HIGH QUALITY AND MATCH BUILDING STANDARD MATERIALS UNLESS OTHERWISE NOTED. ALL WORKMANSHIP IS TO BE EQUAL TO BEST STANDARDS OF PRACTICE.
4. DO NOT SCALE THE DRAWINGS, WRITTEN DIMENSIONS SHALL ALWAYS GOVERN.
5. CONTRACTOR TO PROVIDE FREQUENT DEBRIS REMOVAL AND CLEAN UP OF THEIR OWN WORK THROUGHOUT THE COURSE OF THE PROJECT.
6. CONTRACTOR TO PROTECT ALL UTILITIES, BUILDING AND SITE COMPONENTS NOT RELATED TO THIS WORK.
7. PROVIDE SUBMITTALS FOR ALL MATERIALS SPECIFIED.

VICINITY MAP



TOILET ACCESSORY LEGEND



REVISIONS

7497 REGISTERED ARCHITECT — ROYCE LOSARRETA III — STATE OF WASHINGTON

IPE PERMIT SET

COVER SHEET

BOOKWALTER WINERY
895 Malibu PR. Richland, WA

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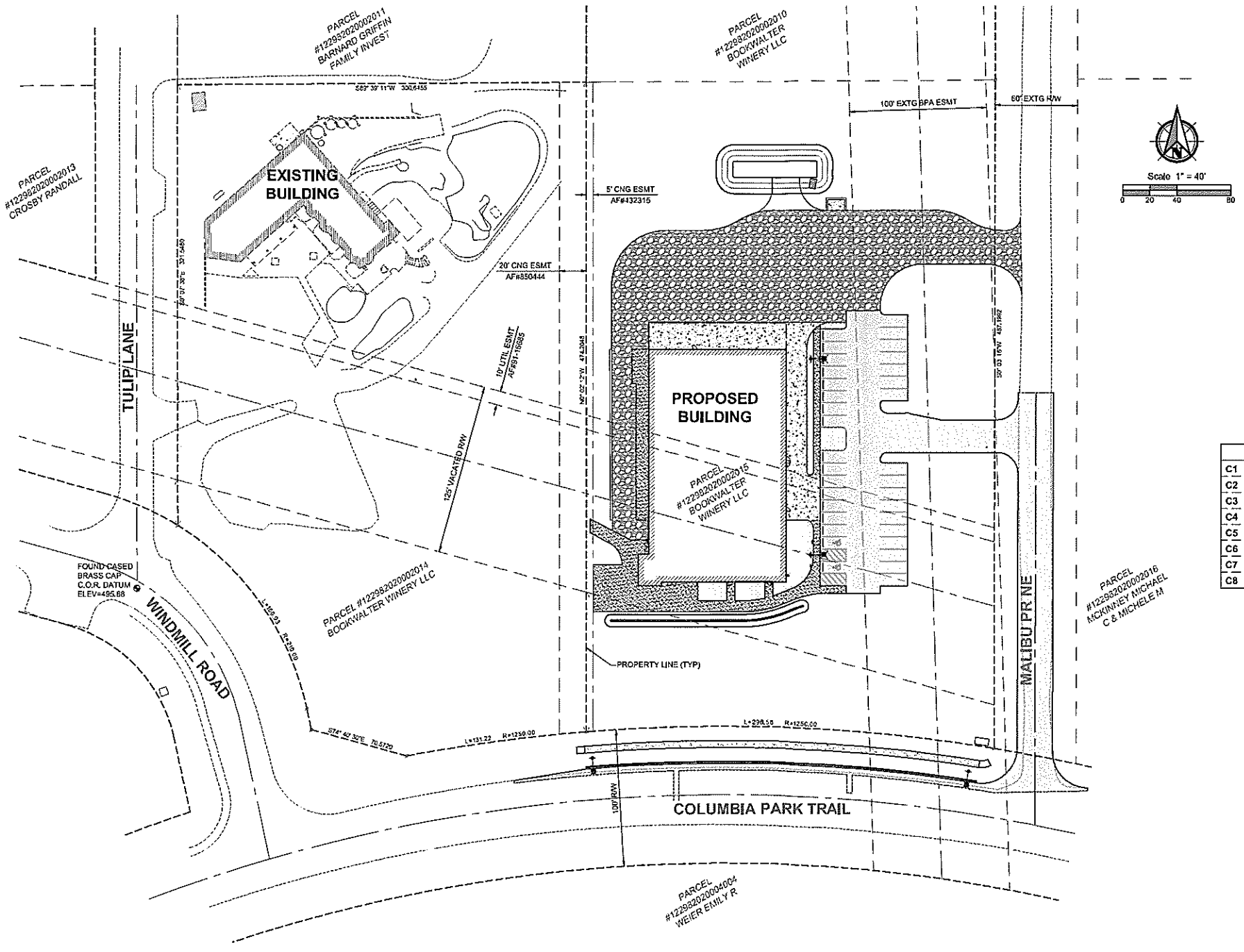
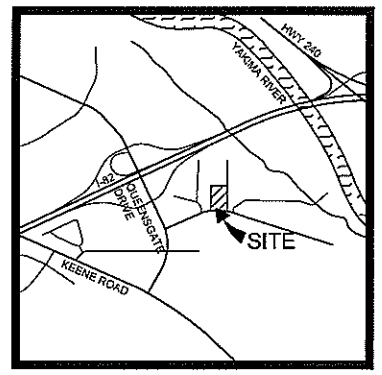
Sheet No:	G0.00

REFERENCED EXHIBITS TO SEPA CHECKLIST
FILE # EA2020-102
BOOKWALTER

BOOKWALTER WINERY EXPANSION

LOCATED IN THE N.W. 1/4, SEC. 22, T. 9 N., R. 28 E., W.M.





VICINITY MAP
NOT TO SCALE

OWNER/DEVELOPER:
BOOKWALTER WINERY
894 TULIP LANE
RICHLAND, WA 99352

SURVEYOR:
STRATTON SURVEYING AND MAPPING
313 N MORAIN STREET
KENNEWICK, WA 99336
PHONE: (509) 735-7364

ENGINEER:
PBS ENGINEERING AND ENVIRONMENTAL
ATTN: JASON MATTOX, P.E.
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RICHLAND, WA 99352
PHONE: (509) 942-1600

SHEET INDEX	
C1	COVER SHEET
C2	GENERAL NOTES AND LEGEND
C3	EROSION CONTROL, GRADING, AND STORM DRAINAGE PLAN
C4	SITE PLAN
C5	UTILITY PLAN
C6	COLUMBIA PARK TRAIL PLAN AND PROFILE
C7	MALIBU PLAN AND PROFILE
C8	DETAILS

SURVEY NOTES:

No.	Revision	Date	By	Appd
A	PRELIMINARY - ISSUED FOR REVIEW		KAS	RJB

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COVER SHEET FOR:
BOOKWALTER WINERY EXPANSION
A PROJECT SITE LOCATED IN RICHLAND, WASHINGTON

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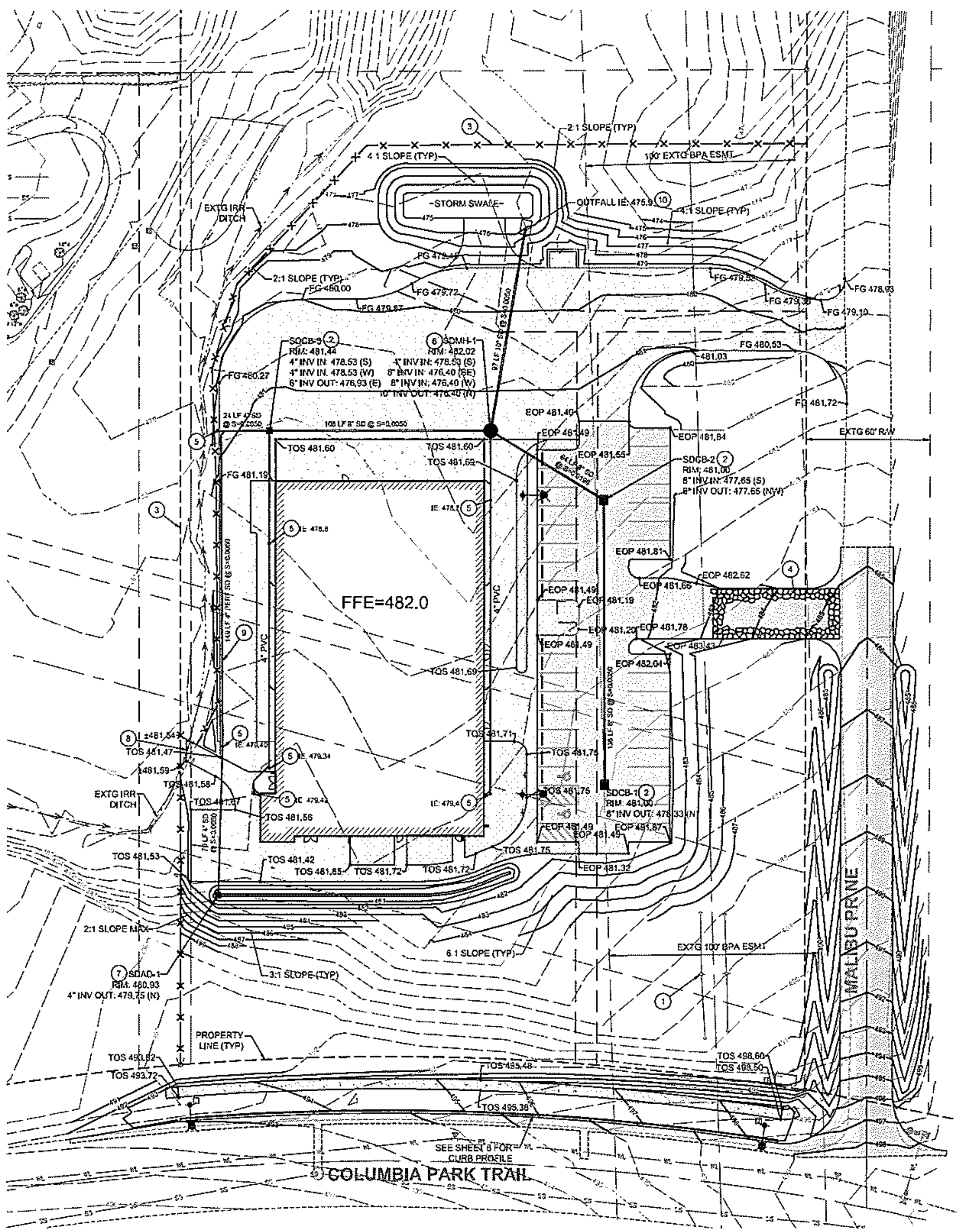
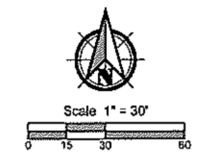
DESIGNED: KAS
CHECKED: JLM
JAN 2020
66142.000
SHEET ID
C1
SHEET 1 OF 8





SPOT ELEVATION ABBREVIATION LEGEND	
EOP	EDGE OF PAVEMENT
FG	FINISH GROUND
TOS	TOP OF SIDEWALK

GENERAL EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY EROSION AND SEDIMENTATION CONTROLS. EROSION AND SEDIMENTATION CONTROLS SHALL BE AS RECOMMENDED IN CHAPTER 8 OF THE WSDOT CONSTRUCTION MANUAL AND CHAPTER 710 OF THE WSDOT ROADSIDE MANUAL.
2. IN ADDITION TO THE TEMPORARY EROSION AND SEDIMENT CONTROL METHODS OUTLINED ON THIS PLAN, THE CONTRACTOR IS ENCOURAGED TO EVALUATE THE PROJECT EARTHWORK REQUIREMENTS AND NATURAL DRAINAGE AND STAGE CONSTRUCTION ACTIVITIES TO LIMIT THE EXTENT OF DISTURBED AREAS. THE CONTRACTOR SHALL EVALUATE THE EROSION AND SEDIMENT CONTROLS DURING THE COURSE OF THE PROJECT TO IDENTIFY POTENTIAL PROBLEM AREAS AND PROVIDE ADDITIONAL MEASURES TO INCREASE THEIR EFFECTIVENESS IN MINIMIZING EROSION AND SEDIMENT RUNOFF.
3. SILT FENCING SHALL BE INSTALLED AS DETAILED PRIOR TO ANY CONSTRUCTION WORK THAT INVOLVES EARTHWORK OR WILL POTENTIALLY DISTURB THE NATIVE VEGETATION. WHERE POSSIBLE, SILT FENCING SHALL FOLLOW THE EXISTING GROUND CONTOURS. WHERE SILT FENCING MUST BE INSTALLED ON A SLOPE, THE SLOPE SHALL BE LIMITED TO 3:1 (HORIZONTAL TO VERTICAL) AND GRAVEL CHECK DAMS SHALL BE PLACED AT 10 FOOT INTERVALS TO MINIMIZE RUNOFF FLOW ALONG THE FENCE. TO ENSURE SILT FENCING CAPTURES RUNOFF WATER, ENDS OF FENCING SHALL BE FLARED UPHILL AT LEAST 2 FEET.
4. UPON COMPLETION OF ROUGH SITE GRADING AND ROADWAY PAVING, THE CONTRACTOR SHALL OBSERVE DRAINAGE RUNOFF FLOW ACROSS THE FUTURE BUILDING SITES AND FORM TEMPORARY DRAINAGE SWALES AS NECESSARY TO ENSURE THAT SURFACE WATER IS RETAINED AND NOT PERMITTED TO LEAVE THE SITE OR DRAIN ACROSS STEEPLY GRADED SURFACES RESULTING IN EROSION.
5. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE CLEARING AND DISTURBANCE TO EXISTING VEGETATION OUTSIDE AREAS REQUIRED FOR CONSTRUCTION ACTIVITIES. AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE STABILIZED AND RESTORED BY HYDROSEEDING OR OTHER APPROVED METHODS AS EARLY AS PRACTICABLE.
6. STABILIZED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED AT INGRESS/EGRESS POINTS CONNECTING EXISTING PAVED ROADWAYS USING 4" TO 8" QUARRY SPALLS, 15' WIDE FOR A DISTANCE OF AT LEAST 50' SIMILAR TO WSDOT STANDARD PLAN 1-14. AT LEAST 1 CONSTRUCTION ENTRANCE SHALL BE REQUIRED DEPENDING ON CONTRACTORS INGRESS/EGRESS THROUGH THE SITE.
7. SURFACE RUNOFF SHALL NOT BE ALLOWED TO LEAVE THE PLAT, INCLUDING FUTURE ROAD CORRIDORS. GRADED FUTURE ROADWAYS ARE SUSCEPTIBLE TO SIGNIFICANT EROSION POTENTIAL AND MUST BE MONITORED AND MAINTAINED UNTIL THE ROADWAYS ARE COMPLETED IN THE FUTURE. LONG-TERM BMP MEASURES TO CONTROL AND RETAIN RUNOFF FROM THE GRADED LOTS AND THE FUTURE ROADWAYS SHALL INCLUDE TEMPORARY SWALES, PONDS, BERMS, STRAW BALES, ETC. AND MUST BE MAINTAINED AND/OR MODIFIED DURING AND FOLLOWING SITE GRADING ACTIVITIES UNTIL THE LOTS ARE FULLY-DEVELOPED.
8. ALL CONSTRUCTION ACTIVITIES ON THIS SITE SHALL FOLLOW AN EROSION CONTROL PLAN AS SET FORTH BY THE CITY OF RICHLAND EROSION CONTROL PLAN CONSTRUCTION BMP'S DETAILS. REFER TO CITY OF RICHLAND STANDARD DETAIL S-16 (3 SHEETS).

GENERAL GRADING NOTES

1. THE PROPOSED CONTOURS AND GIVEN SPOT ELEVATIONS SHOWN REPRESENT FINISH SURFACE ELEVATIONS UNLESS NOTED OTHERWISE.
2. GRADING IN FUTURE OR EXISTING RIGHT OF WAY SHALL COMPLY WITH CITY STANDARDS. THE PLACEMENT OF FILL MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE 2015 VERSION OF THE INTERNATIONAL BUILDING CODE (2015 IBC) APPENDIX J AND THE GEOTECHNICAL ENGINEERING REPORT BY PBS DATED 2019 MONTH DAY. THE DEVELOPER SHALL BE RESPONSIBLE FOR HIRING AN INDEPENDENT MATERIALS TESTING COMPANY TO COMPLETE AND DOCUMENT COMPACTION TESTS AND A LICENSED PROFESSIONAL ENGINEER TO CERTIFY THAT THE FILL PLACED ON LOTS IS BUILD-ABLE MEETING THE LATEST VERSION OF THE IBC. A COPY OF THIS CERTIFICATION SHALL BE PROVIDED TO THE CITY ENGINEER AND BUILDING INSPECTOR.
3. EMBANKMENT AND BACKFILL MATERIAL PLACED ON SLOPES OR BENEATH FUTURE BUILDING AND PARKING AREAS SHALL BE PLACED IN 8-INCH UNCOMPACTED LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY PER ASTM D1557 FOR IMPORT MATERIALS AND 92% OF MAXIMUM DRY DENSITY PER ASTM D1557 FOR QUALIFYING ON-SITE SOILS. LANDSCAPED AREAS OUTSIDE FUTURE BUILDING AND PARKING AREAS SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DRY DENSITY PER ASTM D-1557. IN-PLACE DENSITY TESTS SHALL BE MADE BY AN INDEPENDENT LABORATORY TO DETERMINE THE SPECIFIED DENSITY HAS BEEN ACHIEVED. ANY FILL MUST BE CERTIFIED AS BUILD-ABLE PER GENERAL GRADING NOTE 2.
4. ALL DISTURBED AREAS SHALL BE HYDRO-SEEDED AT THE COMPLETION OF THE PROJECT. GRADED AREAS FOR FUTURE DEVELOPMENT MAY REQUIRE ADDITIONAL APPLICATION OF HYDRO-SEED TO MAINTAIN LONG-TERM EROSION CONTROL.
5. EXCEPT WHERE SLOPE EASEMENTS ARE ESTABLISHED, OR WHERE WRITTEN AUTHORIZATION IS SECURED FROM ADJACENT PROPERTY OWNER FOR GRADING WORK UP TO THE PROPERTY LINE, ALL CUT AND FILL SLOPES SHALL BE SET BACK FROM THE EXISTING PROPERTY LINES IN ACCORDANCE WITH THE 2015 IBC APPENDIX J SECTION 108. MINIMUM SLOPE SETBACK SHALL BE 2' FROM PROPERTY LINE. SETBACK DIMENSIONS SHALL BE MEASURED PERPENDICULAR TO THE PROPERTY LINE.
6. TAKE ALL MEANS NECESSARY TO PROTECT EXISTING UTILITIES THAT ARE NOT A PART OF THIS CONTRACT.
7. AREA DRAINS ARE GENERALLY MEANT TO BE AT THE LOW SPOT OF HARDSCAPE AREAS OR PICK UP DRAINAGE IN A FLOW LINE. ENSURE PONDING DOES NOT OCCUR AND THAT POSITIVE DRAINAGE IS ACHIEVED TO EACH DRAIN STRUCTURE.
8. ACCESSIBLE PEDESTRIAN ROUTES SHALL ADHERE TO ADA STANDARDS. RUNNING SLOPES SHALL BE NO STEEPER THAN 5.0%, CROSS SLOPES AND LANDING PADS NO STEEPER THAN 2.0%, AND RAMP TRANSITIONS NO STEEPER THAN 8.33% RUNNING SLOPE.
9. ADA PARKING STALLS SHALL BE NO STEEPER THAN 2.0% IN ANY DIRECTION.
10. GROUND CONTOURS SHOWN AT 1' INTERVALS.

KEYED GRADING NOTES

(1) EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES SHALL BE PROTECTED DURING GRADING ACTIVITIES. UNLESS OTHERWISE NOTED.

(2) TYPE I STORM DRAIN CATCH BASIN PER CITY OF RICHLAND STANDARD DETAIL S-11.

(3) SILT FENCE PER CITY OF RICHLAND STANDARD DETAIL S-16 (3-SHEETS).

(4) STABILIZED CONSTRUCTION ENTRANCE PER CITY OF RICHLAND STANDARD DETAIL S-16 (3-SHEETS).

(5) 4" STORM DRAIN CLEANOUT PER CITY OF RICHLAND STANDARD DETAIL S-9.

(6) 72" SEDIMENT MANHOLE PER CITY OF RICHLAND STANDARD DETAIL S-17.

(7) PLASTIC AREA DRAIN PER DETAIL ON SHEET 8.

(8) FOOTBRIDGE BY OTHERS.

(9) 4" PERFORATED DRAIN PIPE. SEE DETAIL ON SHEET 8.

(10) INSTALL ALUMINUM TRASH GRATE AND RIP RAP PAD PER CITY OF RICHLAND STANDARD DETAIL S-15.

PBS
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EROSION CONTROL, GRADING, AND STORM DRAINAGE PLAN FOR:

BOOKWALTER WINERY EXPANSION

A PROJECT SITE LOCATED IN RICHLAND, WASHINGTON

811 Know what's below. Call before you dig.

RYAN JEFFREY BILLEN STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

DESIGNED: KAS
CHECKED: JLM
JAN 2020
66142.000

SHEET ID: C3
SHEET 3 OF 8

Layout Tab: EROSION CONTROL GRADING AND STORM DRAINAGE PLAN

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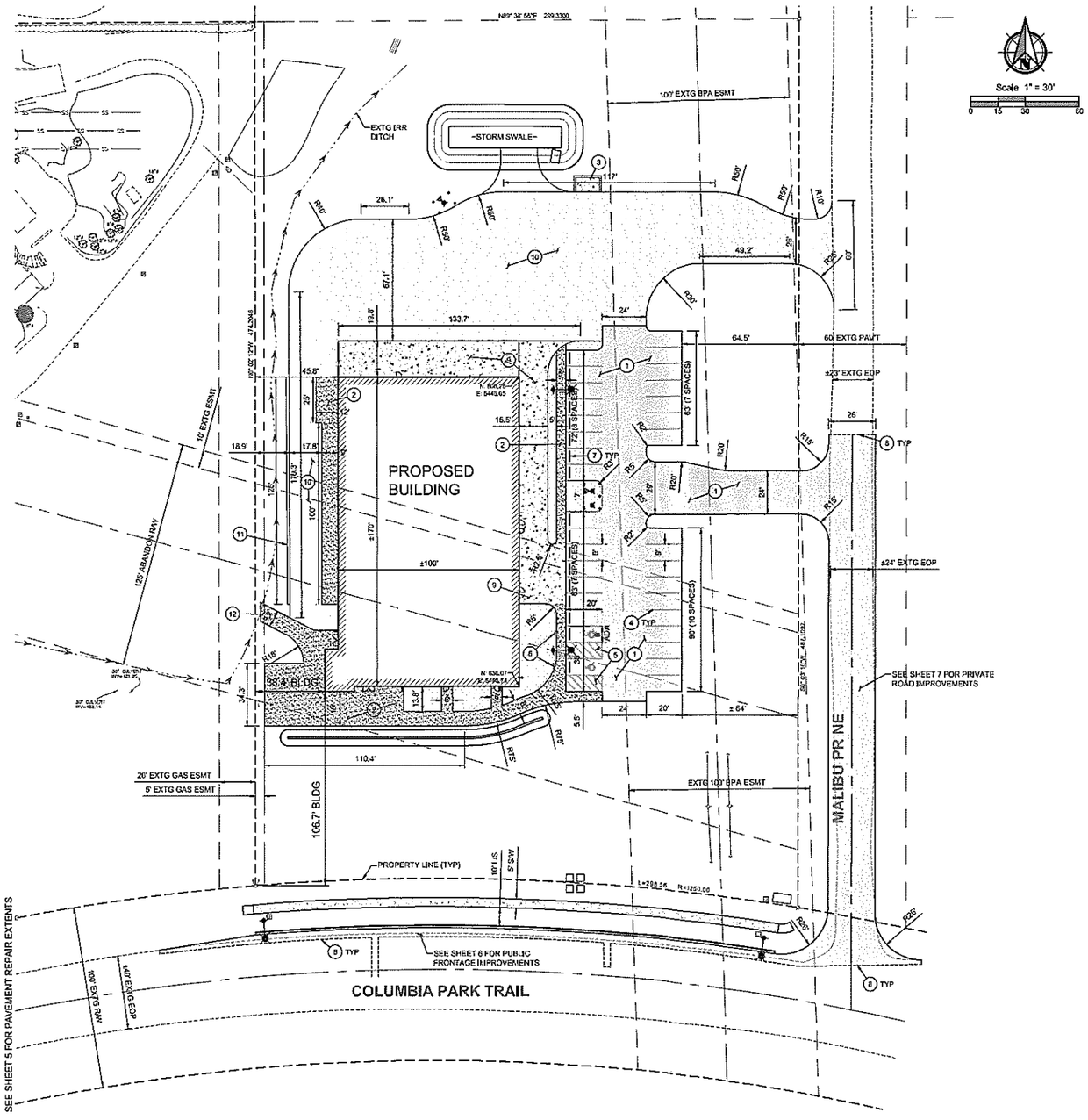

GENERAL CONSTRUCTION NOTES

1. SEE SHEET 2 FOR OVERALL SITE TYPICAL GENERAL CONSTRUCTION NOTES.
2. ELECTRICAL UTILITIES ARE SHOWN ON THIS PLAN FOR REFERENCE ONLY AND SHOULD BE VERIFIED WITH RESPECTIVE UTILITY PROVIDER BEFORE CONSTRUCTION. CONTRACTOR SHALL PROVIDE TRENCHING AND BACKFILL FOR ALL NEW UNDERGROUND ELECTRICAL UTILITIES.

KEYED CONSTRUCTION NOTES

1. 2.5" HMA OVER 6" CRUSHED ROCK BASE PER DETAIL 1 ON SHEET 8.
2. 4" CONCRETE OVER 2" CRUSHED ROCK BASE SIDEWALK PER DETAIL 3 ON SHEET 8. EXPANSION JOINTS AT MINIMUM 20' INTERVALS AND CONTROL JOINTS AT MINIMUM 5' INTERVALS.
3. INSTALL SINGLE SOLID WASTE CONTAINER PAD PER CITY OF RICHLAND STANDARD DETAILS SW-1 AND SW-3.
4. 4" WIDE (TYP) WHITE PARKING LOT STRIPING, DIMENSIONS AS SHOWN.
5. STRIPE ADA PARKING STALLS PER WSDOT STANDARD PLAN M-17.10-02.
6. INSTALL ADA PARKING SIGNAGE, SEE POST DETAIL 6 ON SHEET 8.
7. PRE-CAST CONCRETE WHEEL STOP PER DETAIL 7 ON SHEET 8.
8. SAW-CUT AND REMOVE EDGE OF EXISTING PAVEMENT LEAVING A NEAT VERTICAL EDGE. JOIN NEW ASPHALT TO EXISTING PER CITY OF RICHLAND STANDARDS PROVIDING A SMOOTH TRANSITION.
9. HEAVY DUTY CONCRETE 8" CONCRETE OVER 6" CRUSHED ROCK BASE SIDEWALK PER DETAIL 2 ON SHEET 8. EXPANSION JOINTS AT MINIMUM 20' INTERVALS AND CONTROL JOINTS AT MINIMUM 5' INTERVALS.
10. GRAVEL SECTION, 2" DEPTH 5/8" MAINTENANCE ROCK OVER 4" CRUSHED ROCK PER DETAIL 4 ON SHEET 8.
11. 6' TALL GABION FENCE DESIGN BY OTHERS.
12. FOOTBRIDGE BY OTHERS.

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SITE PLAN FOR: BOOKWALTER WINERY EXPANSION

A PROJECT SITE LOCATED IN RICHLAND, WASHINGTON

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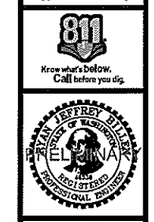

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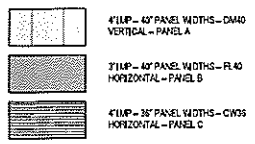
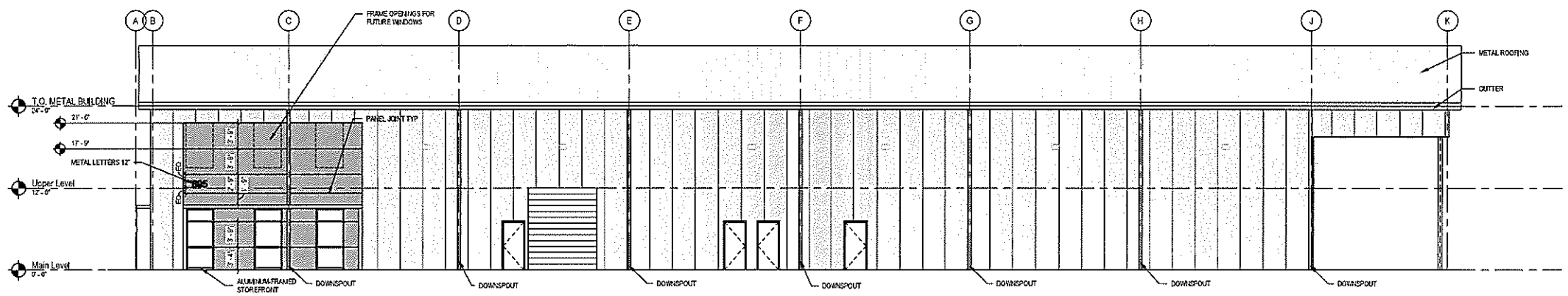
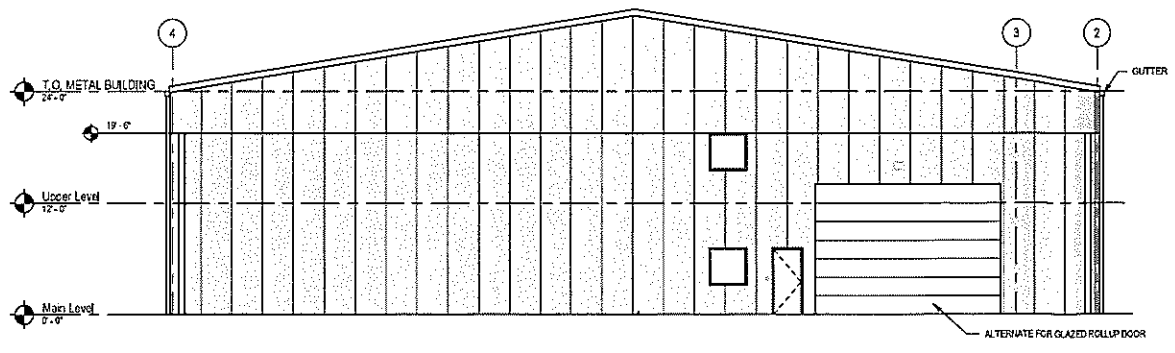
	66142.000
SHEET ID	C4
SHEET	4 OF 8

INSULATED METAL WALL PANEL TYPES





1 **EAST ELEVATION**
SCALE: 1/8" = 1'-0"



2 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"

REVISIONS

EXTERIOR ELEVATIONS

BOOKWALTER WINERY
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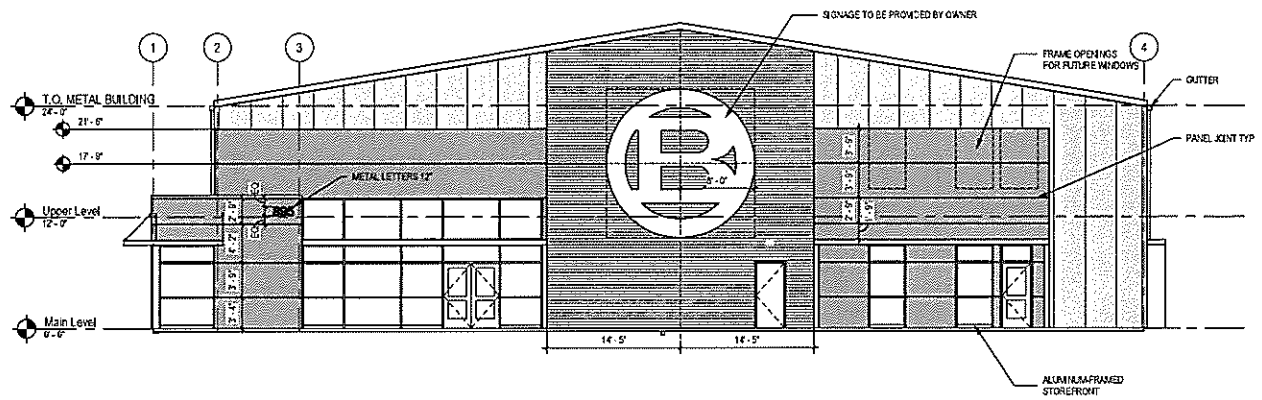


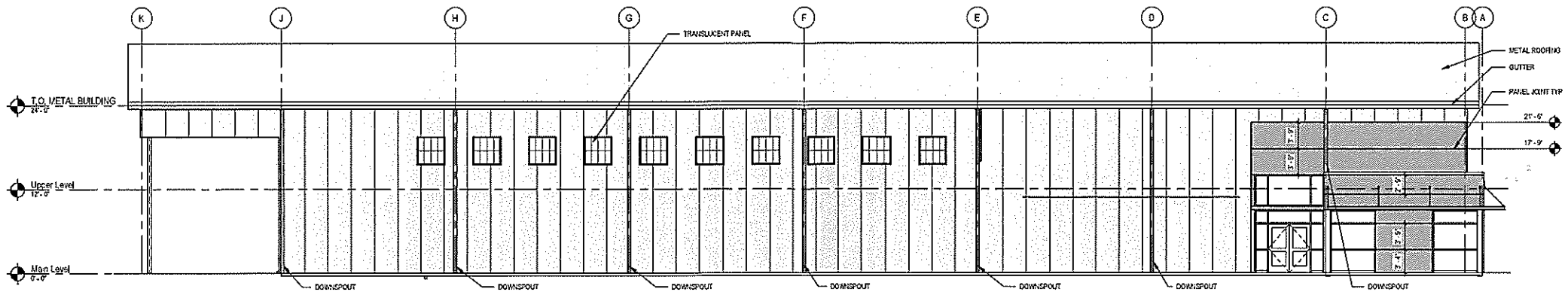
1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

INSULATED METAL WALL PANEL TYPES

4" INP – 42" PANEL WIDTHS – DM40
VERTICAL – PANEL A

3" INP – 42" PANEL WIDTHS – FL42
HORIZONTAL – PANEL B

4" INP – 36" PANEL WIDTHS – DW36
HORIZONTAL – PANEL C



2 WEST ELEVATION
SCALE: 1/8" = 1'-0"

REVISIONS

EXTERIOR ELEVATION

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Sheet Title	EXTERIOR ELEVATION
Sheet No	A3.02

Geotechnical Engineering Report

Bookwalter Winery
894 Tulip Lane
Richland, Washington

Prepared for:
MMEC Architecture
7601 W. Clearwater Avenue #450
Kennewick, Washington

September 12, 2019
PBS Project 66142.000

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Geotechnical Engineering Report

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894 Tulip Lane
Richland, Washington

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September 12, 2019
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Prepared by:

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Ryan White, PE, GE (OR)
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Reviewed by:

Saiid Behboodi, PE, GE (OR)
Principal Geotechnical Engineer

Table of Contents

Supporting Data

TABLES

FIGURES

APPENDICES

Appendix A: Field Explorations

Appendix B: Laboratory Testing

1 INTRODUCTION

1.1 General

This report presents results of PBS Engineering and Environmental Inc. (PBS) geotechnical engineering services for the proposed expansion of the existing Bookwalter Winery located at 894 Tulip Lane in Richland, Washington (site). The general site location is shown on the Vicinity Map, Figure 1. The locations of PBS' explorations in relation to existing and proposed site features are shown on the Site Plan, Figure 2.

1.2 Purpose and Scope

The purpose of PBS' services was to develop geotechnical design and construction recommendations in support of the planned expansion. This was accomplished by performing the following scope of services.

1.2.1 Literature and Records Review

PBS reviewed various published geologic maps of the area for information regarding geologic conditions and hazards at or near the site. PBS also reviewed previously completed reports for the project site and vicinity.

1.2.2 Subsurface Explorations

PBS excavated five test pits within the proposed development footprint to depths of up to 5.5 feet below the existing ground surface (bgs). The test pits were logged and representative soil samples collected by a member of the PBS geotechnical engineering staff. Interpreted test pit logs are included as Figures A1 through A5 in Appendix A, Field Explorations.

1.2.3 Field Infiltration Testing

One open-hole, falling-head field infiltration test was completed in test pit TP-3 at a depth of 5 feet bgs. Infiltration testing was monitored by PBS geotechnical engineering staff.

1.2.4 Soils Testing

Soil samples were returned to our laboratory and classified in general accordance with the Unified Soil Classification System (ASTM D2487) and/or the Visual-Manual Procedure (ASTM D2488).

1.2.5 Geotechnical Engineering Analysis

Data collected during the subsurface exploration, literature research, and testing were used to develop site-specific geotechnical design parameters and construction recommendations.

1.2.6 Report Preparation

This Geotechnical Engineering Report summarizes the results of our explorations, testing, and analyses, including information relating to the following:

- Field exploration logs and site plan showing approximate exploration locations
- Infiltration test results
- Groundwater levels and considerations
- Liquefaction potential
- Shallow foundation recommendations:
    - Minimum embedment
    - Allowable bearing pressure
    - Estimated settlement
    - Sliding coefficient

- Lateral earth pressures for retaining wall design including:
    - Active, passive, and at-rest earth pressures
    - Seismic lateral force
    - Allowable bearing pressure
    - Sliding coefficient
    - Groundwater and drainage considerations
- Earthwork and grading, cut, and fill recommendations:
    - Structural fill materials and preparation
    - Utility trench excavation and backfill requirements
    - Slab and pavement subgrade preparation
    - Wet weather considerations
- Seismic design criteria in accordance with the 2015 International Building Code (IBC) with state of Washington amendments
- Slab and pavement subgrade preparation recommendations
- Asphalt concrete (AC) pavement section recommendations

1.3 Project Understanding

Plans are currently in development; however, development of the site will likely include an approximately 17,000 square-foot building and associated walkways, driveway, and parking. Currently, the concept is to dedicate portions of the structure to production and storage while reserving an area for a tasting room. Preliminary site grading has not yet been completed.

2 SITE CONDITIONS

2.1 Surface Description

The relatively rectangular site is bordered to the south by Columbia Park Trail, to the east by Malibu PR NE, and to the north and west by client-owned land. The site is currently occupied by grape vines. Based on available topographic data, the site slopes to the north, with ground surface elevations ranging from a maximum of about 492 feet above mean sea level (amsl) at the southeast corner to 467 feet amsl at the northeast corner (USGS, 2017). Outside of the site, the ground surface is relatively flat to the east, west, and south. To the north, a horseshoe-shaped depression conveys water off site.

2.2 Geologic Setting

The site is located along the southern margin of the Columbia Basin, a geologic province of Eastern Washington that is separated from the Deschutes-Columbia Plateau and Blue Mountains Provinces of Oregon by the Oregon border. The province is composed primarily of volcanic basement rocks of the Columbia River Basalt Group (CRBG) subdivided into smaller recognizable flows and members that are overlain by Quaternary deposits (Derkey et al., 2006). The basalt flows originated from volcanic eruptions in eastern Oregon, eastern Washington, and western Idaho between 16.7 million years ago (Ma) and 5.5 Ma (Reidel, 2004).

Faulting along the southern margin of the Pasco-Walla Walla (PWW) Basin resulted in uplift and deformation along the Wallula fault system (USGS fault No. 846). This deformation forms the boundary of the southwestern PWW Basin that consists of the Horse Heaven Anticline (Horse Heaven Hills), a linear northwest topographic high point that has been continuously incised by the ancestral and modern-day Columbia River (Reidel and Fecht, 1994; Schuster, 1994; USGS, 2019). The narrow water gap bounded by Horse Heaven Hills ponded Pleistocene cataclysmic flood waters from Glacial Lake Missoula within the basin. Slowing flood waters

blanketed the basin with slackwater flood deposits over much of the low lying areas, forming the Touchet Beds.

The site is mapped as underlain by Pleistocene cataclysmic flood silt and sand (Riedel and Fecht, 1994) and adjacent to a drainage with exposed bedrock to the northeast of the site. These sediments are the youngest within a sequence of three and form broad flat alluvial terraces positioned above the Columbia River. These sediments were draped over older sediments as well as bedrock. Clasts are commonly basalt and granitic rocks. Deposits are typically matrix poor but were present and composed of basalt, quartz, and feldspar sands. The nearby drainage is mapped as consisting of sedimentary rocks, however, and several outcrops of CRBG is mapped southeast of the site.

2.3 Subsurface Conditions

The site was explored by excavating five test pits, designated TP-1 through TP-5, to depths of up to 5.5 feet bgs. The excavations were performed by Andrist Enterprises of Kennewick, Washington, using a Case CX130D excavator equipped with a 24-inch, toothed bucket.

PBS has summarized the subsurface units as follows:

SAND/SILTY SAND:	Sand with varying amounts of silt was encountered below the ground surface in test pits TP-1 through TP-3 to a depth of up to 1.5 feet bgs. This layer was generally brown and non-plastic.
GRAVEL:	Poorly graded gravel with varying amounts of sand and silt was encountered below the silty sand in all test pits except TP-2. The layer was approximately 1-foot-thick, brown, non-plastic, and contained fine to coarse, rounded to angular gravel.
BASALT:	Dark gray, strong (R4) to very strong (R5), dense basalt with close to moderately close joints and very slight weathering was encountered below the silty sand and gravel in all test pits. This deposit extended to the termination depth, which was determined by equipment refusal in all test pits.

The sediments encountered overlying bedrock during our exploration is consistent with geologic mapping by Reidel and Fecht (1994). The bedrock encountered is consistent with mapped CRBG outcrops to the southeast of the site.

2.4 Groundwater

Static groundwater was not encountered during our explorations. Based on a review of regional groundwater logs available from the Washington State Department of Ecology, we anticipate that the static groundwater level is present at a depth greater than 25 feet bgs. Please note that groundwater levels can fluctuate during the year depending on climate, irrigation season, extended periods of precipitation, drought, and other factors.

2.5 Infiltration Testing

PBS completed an open-hole, falling head infiltration test in test pit TP-3 at a depth of 5 feet bgs within the underlying basalt. The infiltration test was conducted in general accordance with the Stormwater Management Manual for Eastern Washington procedures. The test pit was filled with water to achieve a minimum 1-foot-high column of water. After a period of saturation, the height of the water column in the test pit was then measured initially and at regular, timed intervals. Results of our field infiltration testing are presented in Table 1.

Table 1. Infiltration Test Results

Test Location	Depth (feet bgs)	Field Measured Infiltration Rate (in/hr)	Soil Classification
TP-3	5	2.8	Fractured Basalt

The infiltration rate listed in Table 1 is not a permeability/hydraulic conductivity, but a field-measured rate, and does not include correction factors related to long-term infiltration rates. The design engineer should determine the appropriate correction factors to account for the planned level of pre-treatment, maintenance, vegetation, siltation, etc. In addition, short duration infiltration tests performed in basalt bedrock (such as the conditions encountered at the project) should be considered non-conservative due to the infilling of discontinuous fractures and voids that would indicate a faster short-term versus long-term rate. Field-measured infiltration rates are typically reduced by a minimum factor of 2 to 4 for use in design.

Soil types and fractured basalt bedrock can vary significantly over relatively short distances. The infiltration rate noted above is representative of one discrete location and depth. Installation of infiltration systems within the layer the field rate was measured is considered critical to proper performance of the systems.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Geotechnical Design Considerations

The subsurface conditions at the site consist of silty sand, gravel over basalt (approximately 1 to 2 feet bgs). Based on our observations and analyses, conventional foundation support on shallow spread footings is feasible for the proposed new building. Excavation of the silty sand and gravel with conventional equipment is feasible at the site. However, excavation below the elevation at which basalt was encountered could require use of a pneumatic/hydraulic rock hammer or blasting.

The grading and final development plans for the project had not been completed when this report was prepared. Once completed, PBS should be engaged to review the project plans and update our recommendations as necessary.

3.2 Shallow Foundations

Shallow spread footings bearing on recompacted silty sand, gravel, or basalt may be used to support loads associated with the proposed development, provided the recommendations in this report are followed. Footings should not be supported on undocumented fill.

3.2.1 Minimum Footing Widths / Design Bearing Pressure

Continuous wall and isolated spread footings should be at least 18 and 24 inches wide, respectively. Footings should be founded on dense gravel or basalt and be sized using a maximum allowable bearing pressure of 3,000 pounds per square foot (psf). This is a net bearing pressure and the weight of the footing and overlying backfill can be disregarded in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads. Allowable bearing pressures may be increased by one-third for seismic and wind loads.

Footings will settle in response to column and wall loads. Based on our evaluation of the subsurface conditions and our analysis, we estimate post-construction settlement will be less than 1 inch for the column and perimeter foundation loads. Differential settlement will be on the order of one-half of the total settlement.

3.2.2 Footing Embedment Depths

PBS recommends that all footings be founded a minimum of 24 inches below the lowest adjacent grade. The footings should be founded below an imaginary line projecting upward at a 1H:1V (horizontal to vertical) slope from the base of any adjacent, parallel utility trenches or deeper excavations.

3.2.3 Footing Preparation

Excavations for footings should be carefully prepared to a neat and undisturbed state. A representative from PBS should confirm suitable bearing conditions and evaluate all exposed footing subgrades. Observations should also confirm that loose or soft materials have been removed from new footing excavations and concrete slab-on-grade areas. Localized deepening of footing excavations may be required to penetrate loose, wet, or deleterious materials and expose dense gravel or basalt.

PBS recommends a layer of compacted, crushed rock be placed over the footing subgrades where gravel or basalt are note exposed to help protect them from disturbance due to foot traffic and the elements. Placement of this rock is the prerogative of the contractor; regardless, the footing subgrade should be in a dense or stiff condition prior to pouring concrete. Based on our experience, approximately 4 inches of compacted crushed rock will be suitable beneath the footings.

3.2.4 Lateral Resistance

Lateral loads can be resisted by passive earth pressure on the sides of footings and grade beams, and by friction at the base of the footings. A passive earth pressure of 300 pounds per cubic foot (pcf) may be used for footings confined by native soils, basalt, and new structural fills. The allowable passive pressure has been reduced by a factor of two to account for the large amount of deformation required to mobilize full passive resistance. Adjacent floor slabs, pavements, or the upper 12-inch depth of adjacent unpaved areas should not be considered when calculating passive resistance. For footings supported on native soils or new structural fills, use a coefficient of friction equal to 0.45 when calculating resistance to sliding. These values do not include a factor of safety (FS).

3.3 Floor Slabs

Satisfactory subgrade support for building floor slabs can be obtained from the gravel, basalt or compacted structural fill subgrades prepared in accordance with our recommendations presented in the Site Preparation, Wet/Freezing Weather and Wet Soil Conditions, and Imported Granular Materials sections of this report. A minimum 6-inch-thick layer of imported granular material should be placed and compacted over the prepared subgrade. Thicker aggregate sections may be necessary where undocumented fill is present, soft/loose soils are present at subgrade elevation, and/or during wet conditions. Imported granular material should be composed of crushed rock or crushed gravel that is relatively well graded between coarse and fine, contains no deleterious materials, has a maximum particle size of 1 inch, and has less than 5 percent by dry weight passing the US Standard No. 200 Sieve.

Floor slabs supported on a subgrade and base course prepared in accordance with the preceding recommendations may be designed using a modulus of subgrade reaction (k) of 150 pounds per cubic inch (pci).

3.4 Embedded Building Walls

The proposed new development may include embedded building walls up to 10 feet tall. The following recommendations are based on the assumption of flat conditions in front of and behind the wall and fully drained backfill. For unrestrained walls allowed to rotate at least 0.005H about the base, where H is the height of the wall, we recommend using an active earth pressure of 35 psf. Where walls are constrained against

rotation, we recommend using an at-rest earth pressure equal to 58 psf. We recommend any retaining walls founded on native soil, fractured basalt, or compacted structural fill be provided with adequate drainage and backfilled with clean, angular, crushed rock fill, in accordance with the recommendations provided in section 4.3.

For seismic loading, we recommend using an inverted triangular distribution (seismic surcharge) equivalent to 7H psf. Walls should be designed by applying the active earth pressure plus the seismic loading, or at-rest earth pressures, whichever is greater. If vertical surcharge loads, q, are present within 0.5H of the wall, a lateral surcharge of 0.3q (for walls allowed to rotate) and 0.5q (for restrained walls) should be applied as a uniform horizontal surcharge active over the full height of the wall. These values assume that the wall is vertical and the backfill behind the wall is horizontal. Seismic lateral earth pressures were computed using the Mononobe-Okabe equation. Recommended lateral earth pressure distributions are shown on Figure 3, Retaining Wall Earth Pressure Diagram. Additional lateral pressures due to surcharge loads can be estimated using the guidelines shown on Figure 4, Lateral Surcharge Detail.

Lateral loads can also be resisted by a passive resistance of 300 psf acting against retaining/embedded walls and foundations, and by friction acting on the base of spread footings or mats using a friction coefficient of 0.45.

3.4.1 Drainage

Recommended lateral earth pressures assume that walls are fully drained and no hydrostatic pressures develop. For cantilevered concrete walls, a minimum 2-foot-wide zone of free-draining material should be installed immediately behind the wall. A 4-inch diameter perforated drain pipe should be installed at the base of the drain rock and routed to a suitable discharge point approved by the civil engineer.

3.5 Seismic Design Considerations

3.5.1 Code-Based Seismic Design Parameters

The current seismic design criteria for this project are based on the 2015 International Building Code with State of Washington amendments. Based on subsurface conditions encountered at the site, Site Class C is appropriate for use in design. The seismic design criteria, in accordance with the 2015 IBC, are summarized in Table 2.

Table 2. 2015 IBC Seismic Design Parameters

Parameter	Short Period	1 Second
Maximum Credible Earthquake Spectral Acceleration	S_s = 0.42 g	S_1 = 0.16 g
Site Class	C	
Site Coefficient	F_a = 1.20	F_v = 1.64
Adjusted Spectral Acceleration	S_{MS} = 0.50 g	S_{M1} = 0.26 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.33 g	S_{D1} = 0.18 g

g= Acceleration due to gravity

3.5.2 Liquefaction Potential

Liquefaction is defined as a decrease in the shear resistance of loose, saturated, cohesionless soil (e.g., sand) or low plasticity silt soils, due to the buildup of excess pore pressures generated during an earthquake. This results in a temporary transformation of the soil deposit into a viscous fluid. Liquefaction can result in ground settlement, foundation bearing capacity failure, and lateral spreading of ground.

Based on a review of the Washington Department of Natural Resources (WADNR) Geologic Information Portal, the site is shown as having a low to moderate liquefaction hazard (WADNR, 2019); however, based on the soil types and shallow bedrock encountered in our explorations, our current opinion is that the risk of structurally damaging liquefaction settlement at the site is low. Subsequently, the risk of structurally damaging lateral spreading is also low.

3.6 Pavement Design

The provided pavement recommendations were developed based on our experience and references the associated Washington Department of Transportation (WSDOT) specifications for construction. If site-specific traffic data are available, these recommendations can be updated.

The minimum recommended pavement section thicknesses are provided in Table 3. Depending on weather conditions at the time of construction, a thicker aggregate base course section could be required to support construction traffic during preparation and placement of the pavement section.

Table 3. Minimum AC Pavement Sections

Traffic Loading	AC (inches)	Base Course (inches)	Subgrade
Pull-in Car Parking Only	2.5	9	Dense subgrade as verified by PBS personnel*
Drive Lanes and Access Roads	3	9	

* Subgrade must pass proofroll

The asphalt cement binder should be selected following WSDOT SS 9-02.1(4) – Performance Graded Asphalt Binder. The AC should consist of ½-inch hot mix asphalt (HMA) with a maximum lift thickness of 3 inches. The AC should conform to WSDOT SS 5-04.3(7)A – Mix Design, WSDOT SS 9-03.8(2) – HMA Test Requirements, and WSDOT SS 9-03.8(6) – HMA Proportions of Materials. The AC should be compacted to 91 percent of the maximum theoretical density (Rice value) of the mix, as determined in accordance with ASTM D2041, following the guidelines set in WSDOT SS 5-04.3(10) – Compaction.

Heavy construction traffic on new pavements or partial pavement sections (such as base course over the prepared subgrade) will likely exceed the design loads and could potentially damage or shorten the pavement life; therefore, we recommend construction traffic not be allowed on new pavements, or that the contractor take appropriate precautions to protect the subgrade and pavement during construction.

If construction traffic is to be allowed on newly constructed road sections, an allowance for this additional traffic will need to be made in the design pavement section.

4 CONSTRUCTION RECOMMENDATIONS

4.1 Site Preparation

Construction of the proposed improvements will involve clearing and grubbing of the existing vegetation or demolition of possible existing structures. Demolition should include removal of existing pavement, utilities, etc., throughout the proposed new development. Underground utility lines or other abandoned structural elements should also be removed. The voids resulting from removal of foundations or loose soil in utility lines should be backfilled with compacted structural fill. The base of these excavations should be excavated to firm native subgrade before filling, with sides sloped at a minimum of 1H:1V to allow for uniform compaction.

Materials generated during demolition should be transported off site or stockpiled in areas designated by the owner's representative.

4.1.1 Proofrolling/Subgrade Verification

Following site preparation and prior to placing aggregate base over shallow foundation, floor slab, and pavement subgrades, the exposed subgrade should be evaluated either by proofrolling or another method of subgrade verification. The subgrade should be proofrolled with a fully loaded dump truck or similar heavy, rubber-tire construction equipment to identify unsuitable areas. If evaluation of the subgrades occurs during wet conditions, or if proofrolling the subgrades will result in disturbance, they should be evaluated by PBS using a steel foundation probe. We recommend that PBS be retained to observe the proofrolling and perform the subgrade verifications. Unsuitable areas identified during the field evaluation should be compacted to a firm condition or be excavated and replaced with structural fill.

4.1.2 Wet/Freezing Weather and Wet Soil Conditions

Due to the presence of fine-grained silt and sands in the near-surface materials at the site, construction equipment may have difficulty operating on the near-surface soils when the moisture content of the surface soil is more than a few percentage points above the optimum moisture required for compaction. Soils disturbed during site preparation activities, or unsuitable areas identified during proofrolling or probing, should be removed and replaced with compacted structural fill.

Site earthwork and subgrade preparation should not be completed during freezing conditions, except for mass excavation to the subgrade design elevations. We recommend the earthwork construction at the site be performed during dry conditions.

Protection of the subgrade is the responsibility of the contractor. Construction of granular haul roads to the project site entrance may help reduce further damage to the pavement and disturbance of site soils. The actual thickness of haul roads and staging areas should be based on the contractors' approach to site development, and the amount and type of construction traffic. The imported granular material should be placed in one lift over the prepared undisturbed subgrade and compacted using a smooth-drum, non-vibratory roller. A geotextile fabric should be used to separate the subgrade from the imported granular material in areas of repeated construction traffic. Depending on site conditions, the geotextile should meet Washington State Department of Transportation (WSDOT) SS 9-33.2 – Geosynthetic Properties for soil separation or stabilization. The geotextile should be installed in conformance with WSDOT SS 2-12.3 – Construction Geosynthetic (Construction Requirements) and, as applicable, WSDOT SS 2-12.3(2) – Separation or WSDOT SS 2-12.3(3) – Stabilization.

4.1.3 Compacting Test Pit Locations

The test pit excavations were backfilled using the excavator bucket and relatively minimal compactive effort; therefore, soft spots can be expected at these locations. We recommend that the relatively uncompacted soil be removed from the test pits to a depth of at least 3 feet below finished subgrade elevation in pavement areas and to full depth in building areas. The resulting excavation should be backfilled with structural fill.

4.2 Excavation

The near-surface soils at the site can be excavated with conventional earthwork equipment. Sloughing and caving should be anticipated. All excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and state regulations. The contractor is solely responsible for adherence to the OSHA requirements. Trench cuts should stand relatively vertical to a depth of approximately 4 feet bgs, provided no groundwater seepage is present in the trench walls. Open excavation techniques may

be used provided the excavation is configured in accordance with the OSHA requirements, groundwater seepage is not present, and with the understanding that some sloughing may occur. Trenches/excavations should be flattened if sloughing occurs or seepage is present. Use of a trench shield or other approved temporary shoring is recommended if vertical walls are desired for cuts deeper than 4 feet bgs. If dewatering is used, we recommend that the type and design of the dewatering system be the responsibility of the contractor, who is in the best position to choose systems that fit the overall plan of operation.

4.2.1 Rock Excavation

For the purposes of this report, rock excavation would apply to subsurface materials that require systematic drilling and blasting or the use of a pneumatic/hydraulic rock hammer that cannot be excavated with a CAT 235 excavator, or equivalent, equipped with rock teeth. The project schedule and budget should include a contingency for rock excavation and increased backfill volumes. PBS should be retained to review the grading and utility plans when they are available for comparison with encountered field conditions; additional work may be required to better define the impact on the project.

4.3 Structural Fill

Structural fill should be placed over subgrade that has been prepared in conformance with the Site Preparation and Wet/Freezing Weather and Wet Soil Conditions sections of this report. Structural fill material should consist of relatively well-graded soil, or an approved rock product that is free of organic material and debris, and contains particles not greater than 4 inches nominal dimension.

The suitability of soil for use as compacted structural fill will depend on the gradation and moisture content of the soil when it is placed. As the amount of fines (material finer than the US Standard No. 200 Sieve) increases, soil becomes increasingly sensitive to small changes in moisture content and compaction becomes more difficult to achieve. Soils containing more than about 5 percent fines cannot consistently be compacted to a dense, non-yielding condition when the water content is significantly greater (or significantly less) than optimum.

If fill and excavated material will be placed on slopes steeper than 5H:1V, these must be keyed/benched into the existing slopes and installed in horizontal lifts. Vertical steps between benches should be approximately 2 feet.

4.3.1 On-Site Soil

On-site soils encountered in our explorations are generally suitable for placement as structural fill during moderate, dry weather when moisture content can be maintained by air drying and/or addition of water. The fine-grained fraction of the site soils are moisture sensitive, and during wet weather, may become unworkable because of excess moisture content. In order to reduce moisture content, some aerating and drying of fine-grained soils may be required. The material should be placed in lifts with a maximum uncompacted thickness of approximately 8 inches and compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557 (modified proctor).

4.3.2 Imported Granular Materials

Imported granular material used during periods of wet weather or for haul roads, building pad subgrades, staging areas, etc., should be pit or quarry run rock, crushed rock, or crushed gravel and sand, and should meet the specifications provided in WSDOT SS 9-03.14(2) – Select Borrow. In addition, the imported granular material should be fairly well graded between coarse and fine, and of the fraction passing the US Standard No. 4 Sieve, less than 5 percent by dry weight should pass the US Standard No. 200 Sieve.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 9 inches and be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

4.3.3 Base Aggregate

Base aggregate for floor slabs and beneath pavements should be clean crushed rock or crushed gravel. The base aggregate should contain no deleterious materials, meet specifications provided in WSDOT SS 9-03.9(3) – Crushed Surfacing Base Course, and have less than 5 percent (by dry weight) passing the US Standard No. 200 Sieve. The imported granular material should be placed in one lift and compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557.

4.3.4 Foundation Base Aggregate

Imported granular material placed at the base of excavations for spread footings, slabs-on-grade, and other below-grade structures should be clean, crushed rock or crushed gravel, and sand that is fairly well graded between coarse and fine. The granular materials should contain no deleterious materials, have a maximum particle size of 1½ inch, and meet WSDOT SS 9-03.12(1)A – Gravel Backfill for Foundations (Class A). The imported granular material should be placed in one lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

4.3.5 Granular Drain Backfill Material

Backfill in a 2-foot-wide zone against the back of retaining walls and for subsurface trench drains should consist of granular drain rock meeting the specifications provided in WSDOT SS 9-03.12(4) – Gravel Backfill for Drains. The granular drain rock should be wrapped in a geotextile fabric that meets the specifications provided in WSDOT SS 9-33.2 – Geosynthetic Properties, Tables 1 and 2, for drainage geotextile.

4.3.6 Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of 0.5H, where H is the height of the retaining wall, should consist of granular material meeting WSDOT SS 9-03.12(2) – Gravel Backfill for Walls. We recommend the granular wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the requirements provided in WSDOT SS 9-33.2 – Geosynthetic Properties, Table 3, for separation geotextile.

The wall backfill should be compacted to a minimum of 92 percent of the maximum dry density, as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from the retaining walls should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as jumping jack or vibratory plate compactor).

4.3.7 Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 2 feet above utility lines (i.e., the pipe zone) should consist of well-graded granular material with a maximum particle size of 1 inch and less than 10 percent by dry weight passing the US Standard No. 200 Sieve, and should meet the standards prescribed by WSDOT SS 9-03.12(3) – Gravel Backfill for Pipe Zone Bedding. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

Within pavement areas or beneath building pads, the remainder of the trench backfill should consist of well-graded granular material with a maximum particle size of 1½ inches, less than 10 percent by dry weight passing the US Standard No. 200 Sieve, and should meet standards prescribed by WSDOT SS 9-03.19 – Bank

Run Gravel for Trench Backfill. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department. The upper 2 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone should consist of excavated material free of wood waste, debris, clods, or rocks greater than 6 inches in diameter and meet WSDOT SS 9-03.14 – Borrow and WSDOT SS 9-03.15 – Native Material for Trench Backfill. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

4.3.8 Stabilization Material

Stabilization rock should consist of pit or quarry run rock that is well-graded, angular, crushed rock consisting of 4- or 6-inch-minus material with less than 5 percent passing the US Standard No. 4 Sieve. The material should be free of organic matter and other deleterious material. WSDOT SS 9-13.1(5) – Quarry Spalls can be used as a general specification for this material with the stipulation of limiting the maximum size to 6 inches.

5 ADDITIONAL SERVICES AND CONSTRUCTION OBSERVATIONS

In most cases, other services beyond completion of a final geotechnical engineering report are necessary or desirable to complete the project. Occasionally, conditions or circumstances arise that require additional work that was not anticipated when the geotechnical report was written. PBS offers a range of environmental, geological, geotechnical, and construction services to suit the varying needs of our clients.

PBS should be retained to review the plans and specifications for this project before they are finalized. Such a review allows us to verify that our recommendations and concerns have been adequately addressed in the design.

Satisfactory earthwork performance depends on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. We recommend that PBS be retained to observe general excavation, stripping, fill placement, footing subgrades, and/or pile installation. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

6 LIMITATIONS

This report has been prepared for the exclusive use of the addressee, and their architects and engineers, for aiding in the design and construction of the proposed development and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without express written consent of the client and PBS. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.

The opinions, comments, and conclusions presented in this report are based upon information derived from our literature review, field explorations, laboratory testing, and engineering analyses. It is possible that soil, rock, or groundwater conditions could vary between or beyond the points explored. If soil, rock, or groundwater conditions are encountered during construction that differ from those described herein, the client

is responsible for ensuring that PBS is notified immediately so that we may reevaluate the recommendations of this report.

Unanticipated fill, soil and rock conditions, and seasonal soil moisture and groundwater variations are commonly encountered and cannot be fully determined by merely taking soil samples or completing explorations such as test pits. Such variations may result in changes to our recommendations and may require additional funds for expenses to attain a properly constructed project; therefore, we recommend a contingency fund to accommodate such potential extra costs.

The scope of work for this subsurface exploration and geotechnical report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

If there is a substantial lapse of time between the submission of this report and the start of work at the site, if conditions have changed due to natural causes or construction operations at or adjacent to the site, or if the basic project scheme is significantly modified from that assumed, this report should be reviewed to determine the applicability of the conclusions and recommendations presented herein. Land use, site conditions (both on and off site), or other factors may change over time and could materially affect our findings; therefore, this report should not be relied upon after three years from its issue, or in the event that the site conditions change.

7 REFERENCES

ASCE. (2010). Minimum Design Loads for Buildings and Other Structures (ASCE 7-10).

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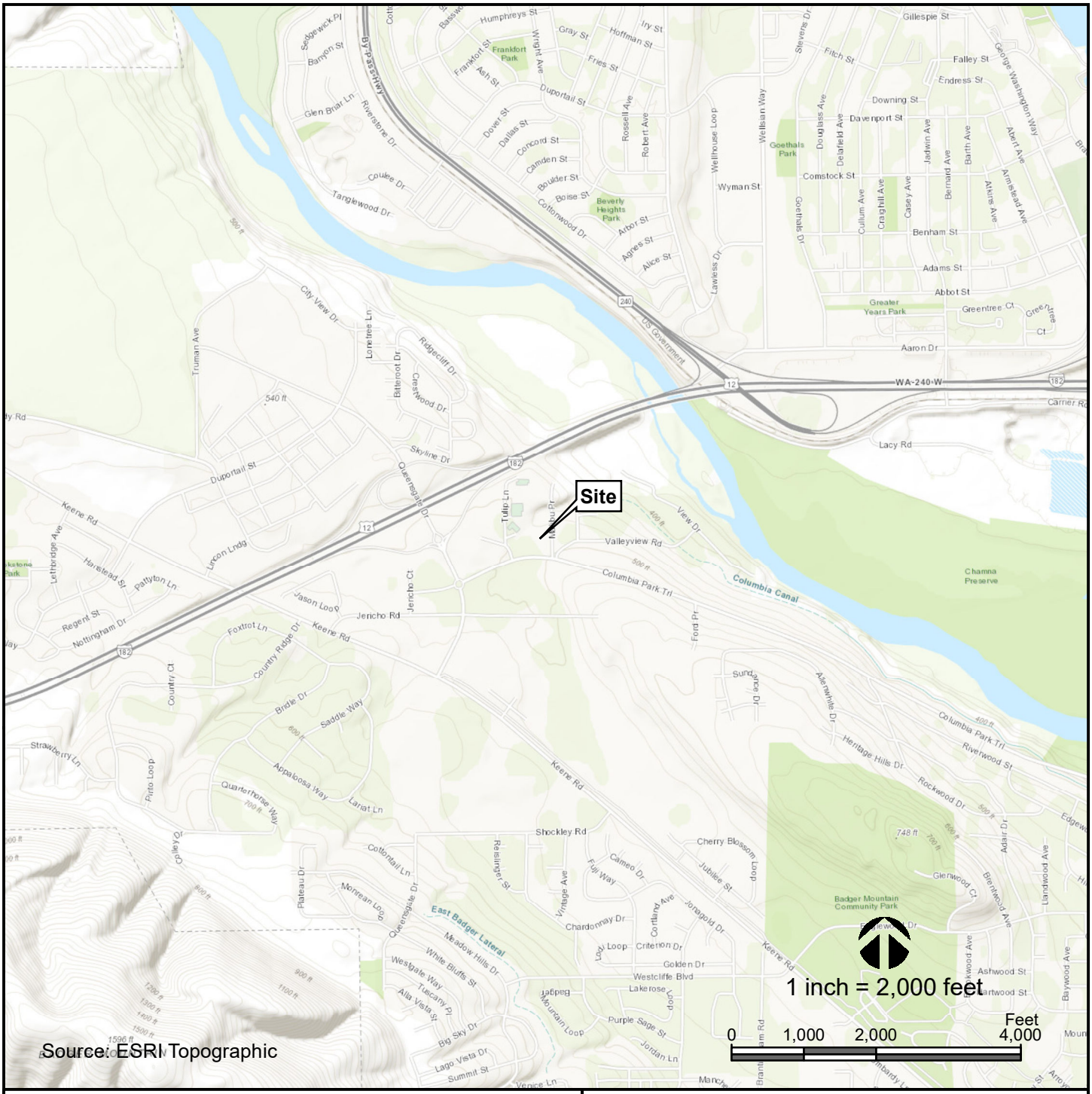
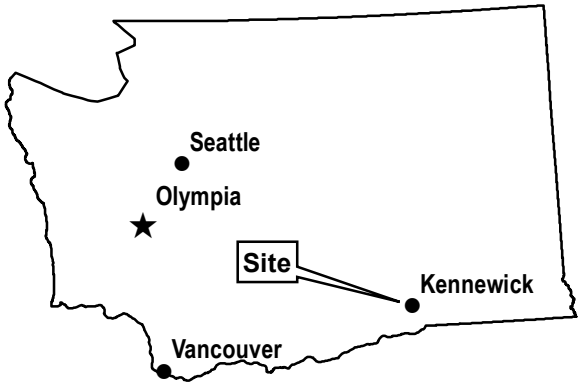
Figures





VICINITY MAP

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DATE: SEP 2019 · PROJECT: 66142.000

PBS

FIGURE
1

EXPLANATION

- TP-1 - Test pit name and approximate location
- TP-3 - Test pit name and approximate location with infiltration test

Notes: Google Earth imagery

1 inch = 100 feet

0 50 100 200 Feet

SITE PLAN

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FIGURE
2

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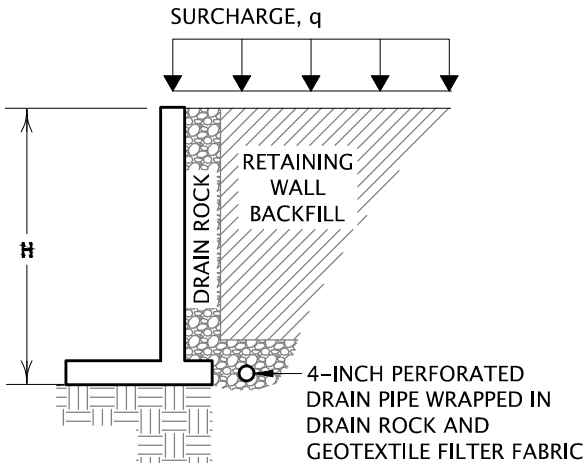
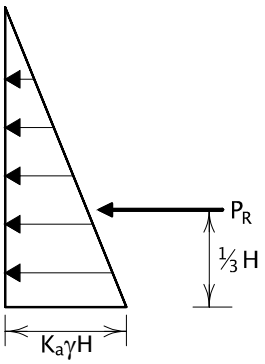


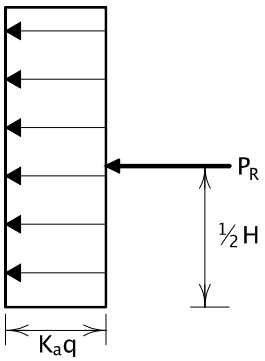
PARAMETER	VALUE
K_a	0.3
K_o	0.5
ΔK_{ae}	0.065
γ	115 pcf

ACTIVE EARTH PRESSURE



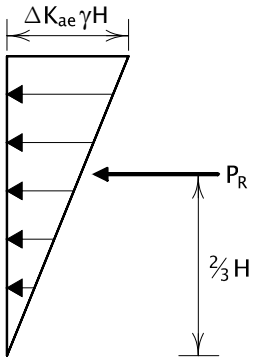
$$P_R = K_a \gamma \frac{H^2}{2}$$

SURCHARGE PRESSURE (ACTIVE)



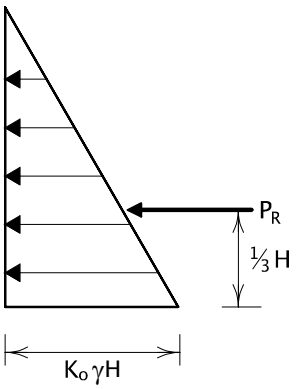
$$P_R = K_a q H$$

SEISMIC SURCHARGE PRESSURE



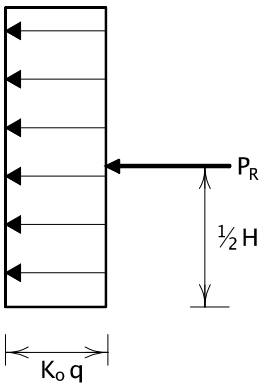
$$P_R = \Delta K_{ae} \gamma \frac{H^2}{2}$$

AT-REST EARTH PRESSURE



$$P_R = K_o \gamma \frac{H^2}{2}$$

SURCHARGE PRESSURE (AT-REST)



$$P_R = K_o q H$$

RETAINING WALL EARTH PRESSURE DIAGRAM

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SEP 2019
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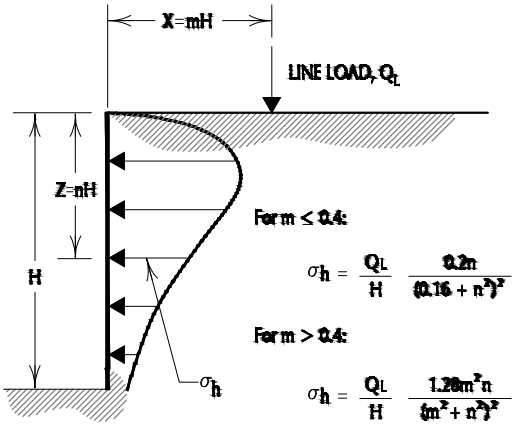
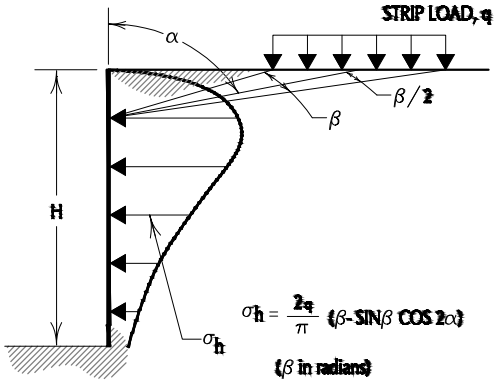
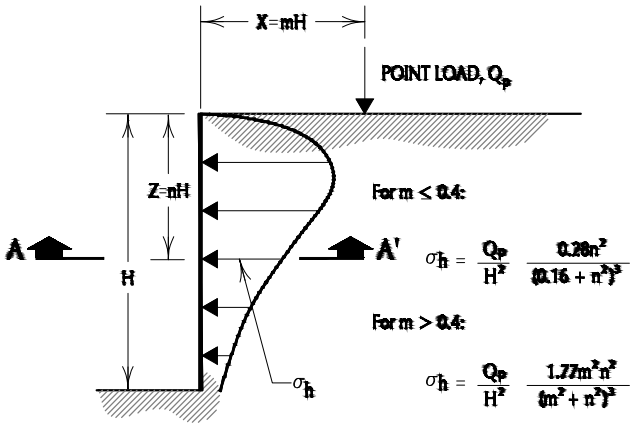
FIGURE
3

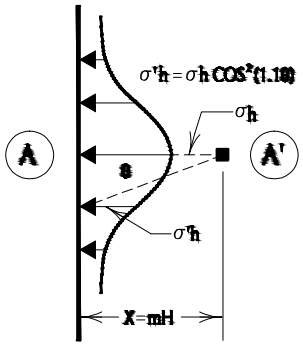


LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL





DISTRIBUTION OF HORIZONTAL PRESSURES

VERTICAL POINT LOAD

NOTES:

1. THESE GUIDELINES APPLY TO RIGID WALLS WITH POISSON'S RATIO ASSUMED TO BE 0.5 FOR BACKFILL MATERIALS.
2. LATERAL PRESSURES FROM ANY COMBINATION OF ABOVE LOADS MAY BE DETERMINED BY THE PRINCIPLE OF SUPERPOSITION.

PBS

LATERAL SURCHARGE DETAIL

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FIGURE
4

Appendix A
Field Explorations

Appendix A: Field Explorations

A1 GENERAL

PBS explored subsurface conditions at the project site by excavating 5 test pits to depths of up to approximately 5.5 feet bgs on August 5, 2019. The approximate locations of the explorations are shown on Figure 2, Site Plan. The procedures used to advance test pits, collect samples, and other field techniques are described in detail in the following paragraphs. Unless otherwise noted, all soil sampling and classification procedures followed engineering practices in general accordance with relevant ASTM procedures. "General accordance" means that certain local drilling/excavation and descriptive practices and methodologies have been followed.

A2 TEST PITS

A2.1 Excavation

Test pits were excavated using a Case CX130D equipped with a 24-inch-wide, toothed bucket provided and operated by Andrist Enterprises of Kennewick, Washington. The test pits were observed by a member of the PBS geotechnical staff, who maintained a detailed log of the subsurface conditions and materials encountered during the course of the work.

A2.2 Sampling

Representative disturbed samples were taken at selected depths in the test pits. The disturbed soil samples were examined by a member of the PBS geotechnical staff and sealed in plastic bags for further examination.

A2.3 Test Pit Logs

The test pit logs show the various types of materials that were encountered in the excavations and the depths where the materials and/or characteristics of these materials changed, although the changes may be gradual. Where material types and descriptions changed between samples, the contacts were interpreted. The types of samples taken during excavation, along with their sample identification number, are shown to the right of the classification of materials. Measured seepage levels, if observed, are noted in the column to the right.

A3 MATERIAL DESCRIPTION

Initially, samples were classified visually in the field. Consistency, color, relative moisture, degree of plasticity, and other distinguishing characteristics of the soil and rock samples were noted. Afterward, the samples were reexamined in the PBS laboratory and the field classifications were modified where necessary. The terminology used in the soil and rock classifications and other modifiers are defined in Table A-1, Terminology Used to Describe Soil and Rock.

Soil Descriptions

Soils exist in mixtures with varying proportions of components. The predominant soil, i.e., greater than 50 percent based on total dry weight, is the primary soil type and is capitalized in our log descriptions (SAND, GRAVEL, SILT, or CLAY). Smaller percentages of other constituents in the soil mixture are indicated by use of modifier words in general accordance with the ASTM D2488-06 Visual-Manual Procedure. "General Accordance" means that certain local and common descriptive practices may have been followed. In accordance with ASTM D2488-06, group symbols (such as GP or CH) are applied on the portion of soil passing the 3-inch (75mm) sieve based on visual examination. The following describes the use of soil names and modifying terms used to describe fine- and coarse-grained soils.

Fine-Grained Soils (50% or greater fines passing 0.075 mm, No. 200 sieve)
The primary soil type, i.e., SILT or CLAY is designated through visual-manual procedures to evaluate soil toughness, dilatency, dry strength, and plasticity. The following outlines the terminology used to describe fine-grained soils, and varies from ASTM D2488 terminology in the use of some common terms.

Primary soil NAME, Symbols, and Adjectives			Plasticity Description	Plasticity Index (PI)
SILT (ML & MH)	**CLAY (CL & CH)**	**ORGANIC SOIL (OL & OH)**		
SILT		Organic SILT	Non-plastic	0 – 3
SILT		Organic SILT	Low plasticity	4 – 10
SILT/Elastic SILT	Lean CLAY	Organic SILT/ Organic CLAY	Medium Plasticity	10 – 20
Elastic SILT	Lean/Fat CLAY	Organic CLAY	High Plasticity	20 – 40
Elastic SILT	Fat CLAY	Organic CLAY	Very Plastic	>40

Modifying terms describing secondary constituents, estimated to 5 percent increments, are applied as follows:

Description	% Composition	
With Sand	% Sand ≥ % Gravel	15% to 25% plus No. 200
With Gravel	% Sand < % Gravel	
Sandy	% Sand ≥ % Gravel	≤30% to 50% plus No. 200
Gravelly	% Sand < % Gravel	

Borderline Symbols, for example CH/MH, are used when soils are not distinctly in one category or when variable soil units contain more than one soil type. **Dual Symbols,** for example CL-ML, are used when two symbols are required in accordance with ASTM D2488.

Soil Consistency terms are applied to fine-grained, plastic soils (i.e., PI ≥ 7). Descriptive terms are based on direct measure or correlation to the Standard Penetration Test N-value as determined by ASTM D1586-84, as follows. SILT soils with low to non-plastic behavior (i.e., PI < 7) may be classified using relative density.

Consistency Term	SPT N-value	Unconfined Compressive Strength	
		tsf	kPa
Very soft	Less than 2	Less than 0.25	Less than 24
Soft	2 – 4	0.25 – 0.5	24 – 48
Medium stiff	5 – 8	0.5 – 1.0	48 – 96
Stiff	9 – 15	1.0 – 2.0	96 – 192
Very stiff	16 – 30	2.0 – 4.0	192 – 383
Hard	Over 30	Over 4.0	Over 383

Soil Descriptions

Coarse - Grained Soils (less than 50% fines)

Coarse-grained soil descriptions, i.e., SAND or GRAVEL, are based on the portion of materials passing a 3-inch (75mm) sieve. Coarse-grained soil group symbols are applied in accordance with ASTM D2488-06 based on the degree of grading, or distribution of grain sizes of the soil. For example, well-graded sand containing a wide range of grain sizes is designated SW; poorly graded gravel, GP, contains high percentages of only certain grain sizes. Terms applied to grain sizes follow.

Material NAME	Particle Diameter	
	Inches	Millimeters
SAND (SW or SP)	0.003 – 0.19	0.075 – 4.8
GRAVEL (GW or GP)	0.19 – 3	4.8 – 75
Additional Constituents:		
Cobble	3 – 12	75 – 300
Boulder	12 – 120	300 – 3050

The primary soil type is capitalized, and the fines content in the soil are described as indicated by the following examples. Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 percent. Other soil mixtures will have similar descriptive names.

Example: Coarse-Grained Soil Descriptions with Fines

>5% to < 15% fines (Dual Symbols)	≥15% to < 50% fines
Well graded GRAVEL with silt: GW-GM	Silty GRAVEL: GM
Poorly graded SAND with clay: SP-SC	Silty SAND: SM

Additional descriptive terminology applied to coarse-grained soils follow.

Example: Coarse-Grained Soil Descriptions with Other Coarse-Grained Constituents

Coarse-Grained Soil Containing Secondary Constituents	
With sand or with gravel	≥ 15% sand or gravel
With cobbles; with boulders	Any amount of cobbles or boulders.

Cobble and boulder deposits may include a description of the matrix soils, as defined above.

Relative Density terms are applied to granular, non-plastic soils based on direct measure or correlation to the Standard Penetration Test N-value as determined by ASTM D1586-84.

Relative Density Term	SPT N-value
Very loose	0 – 4
Loose	5 – 10
Medium dense	11 – 30
Dense	31 – 50
Very dense	> 50

Rock Descriptions

Scale of Rock Strength

Description	Designation	Unconfined Compressive Strength, psi	Unconfined Compressive Strength, MPa	Field Identification
Extremely weak rock	R0	35 – 150	0.25 – 1	Indented by thumbnail.
Very weak rock	R1	150 – 725	1 – 5	Crumbles under firm blows with point of geology pick; can be peeled by a pocket knife.
Weak rock	R2	725 – 3,500	5 – 25	Can be peeled with a pocket knife; shallow indentation made by firm blow with point of geological hammer.
Medium weak rock	R3	3,500 – 7,000	25 – 50	Cannot by scraped or peeled with a pocket knife; specimen can be fractured with a single firm blow of geological hammer.
Strong rock	R4	7,000 – 15,000	50 – 100	Specimen requires more than one blow with a geological hammer to fracture it.
Very strong rock	R5	15,000 – 36,000	100 – 250	Specimen requires many blows of geological hammer to fracture it.
Extremely strong rock	R6	> 36,000	> 250	Specimen can only be chipped with geological hammer.

Descriptive Terminology for Joint Spacing or Bedding

Descriptive Term	Spacing of Joints	
Very close	< 2 inches	< 50 mm
Close	2 inches – 1 foot	50 mm – 300 mm
Moderately close	1 foot – 3 feet	300 mm – 1 m
Wide	3 feet –10 feet	1 m – 3 m
Very wide	> 10 feet	> 3 m

Descriptive Terminology for Vesicularity

Descriptive Term	Percent voids by volume
Dense	< 1%
Slightly vesicular	1 – 10%
Moderately vesicular	10 – 30%
Highly vesicular	30 – 50%
Scoriaceous	> 50%

Correlation of RQD and Rock Quality

Rock Quality Descriptor	RQD Value
Very poor	0 – 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90

Rock Descriptions

Scale of Rock Weathering

Stage	Description	Quality Distinction
Fresh	Rock is fresh, crystals are bright, few joints may show slight staining as a result of ground water.	No discoloration
Very Slight	Rock is generally fresh, joints are stained, some joints may have thin clay coatings, crystals in broken face show bright.	Discoloration only on major discontinuity surfaces [1]
Slight	Rock is generally fresh, joints are stained and discoloration extends into rock up to 1 inch. Joints may contain clay. In granitoid rocks some feldspar crystals are dull and discolored. Rocks ring under hammer if crystalline.	Discoloration on all discontinuity surfaces and on rock
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some are clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.	Decomposition and/or disintegration < 50% of rock [2]
Moderately Severe	All rock, except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick. Rock goes "clunk" when struck.	Decomposition and/or disintegration > 50%, but not complete
Severe	All rock, except quartz, discolored or stained. Rock "fabric" is clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of harder rock usually left, such as corestones in basalt.	
Very Severe	All rock, except quartz, discolored or stained. Rock "fabric" is discernible, but mass effectively reduced to "soil" with only fragments of harder rock remaining.	Decomposition and/or disintegration 100% with structure/fabric intact
Complete	Rock is reduced to "soil." Rock "fabric" is not discernible, or only in small scattered locations. Quartz may be present as dikes or stringers.	Decomposition and/or disintegration 100% with structure/fabric destroyed

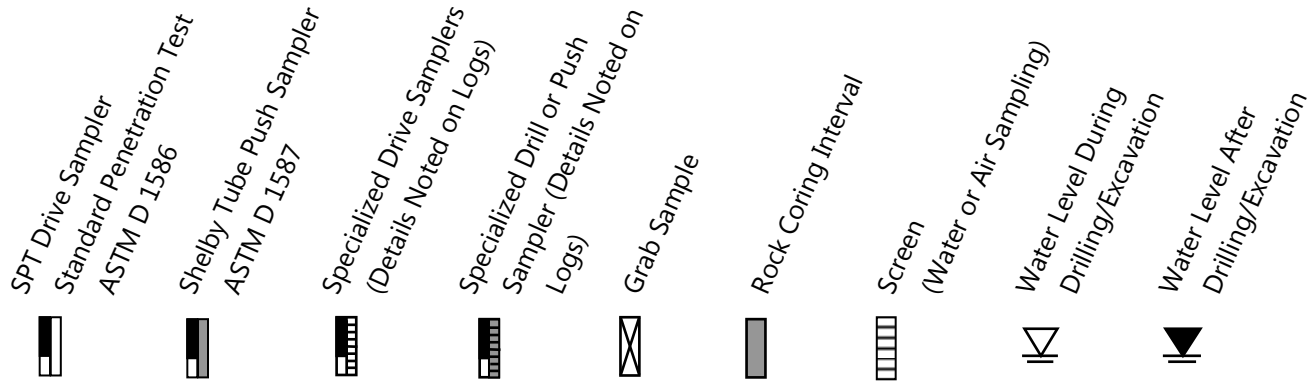
NOTES: [1] Discontinuities consist of any natural break (joint, fracture or fault) or plane of weakness (shear or gouge zone, bedding plane) in a rock mass

[2] Decomposition refers to chemical alteration of mineral grains; disintegration refers to mechanical breakdown

[3] Stage and description from ASCE Manual No. 56 (1976), quality distinction from Murray (1981)

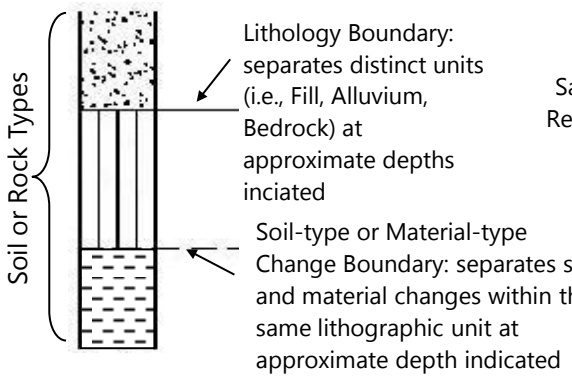
Table A-2
Key To Test Pit and Boring Log Symbols

SAMPLING DESCRIPTIONS

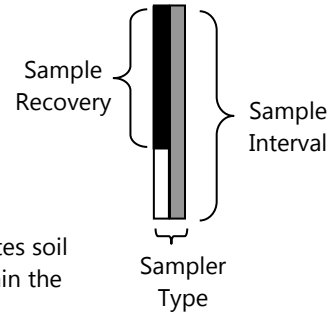


LOG GRAPHICS

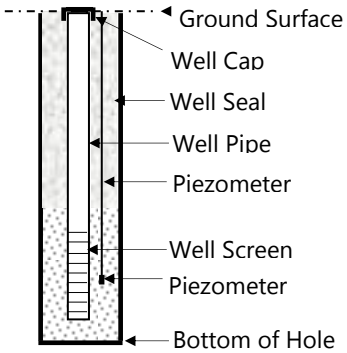
Soil and Rock



Sampling Symbols



Instrumentation Detail



Geotechnical Testing Acronym Explanations

PP	Pocket Penetrometer	HYD	Hydrometer Gradation
TOR	Torvane	SIEV	Sieve Gradation
DCP	Dynamic Cone Penetrometer	DS	Direct Shear
ATT	Atterberg Limits	DD	Dry Density
PL	Plasticity Limit	CBR	California Bearing Ratio
LL	Liquid Limit	RES	Resilient Modulus
PI	Plasticity Index	VS	Vane Shear
P200	Percent Passing US Standard No. 200 Sieve	bgs	Below ground surface
OC	Organic Content	MSL	Mean Sea Level
CON	Consolidation	HCL	Hydrochloric Acid
UC	Unconfined Compressive Strength		

Details of soil and rock classification systems are available on request.

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TEST PIT TP-1

APPROX. TEST PIT TP-1 LOCATION:
(See Site Plan)

Lat: 46.253030 Long: -119.297779

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH	TESTING	SAMPLE TYPE / SAMPLE ID	DYNAMIC CONE PENETROMETER / STATIC PENETROMETER / MOISTURE CONTENT % (0 50 100)	COMMENTS
0.0		Brown, silty SAND (SM); non-plastic; fine to medium sand; dry	0.0				Surface Conditions: Dry Grass/Grape Vines
			0.8		S-1		
1.0		Brown, poorly graded GRAVEL (GP) with sand and cobbles; fine sand; fine to coarse, rounded gravel; dry					
			1.5		S-2		
2.0		Dark gray, strong (R4) to very strong (R5), dense BASALT; close to moderately close joints; very slight weathering					
3.0							
4.0							
5.0							
			5.5				
6.0		Final depth 5.5 feet bgs; test pit backfilled with excavated material to existing ground surface. Groundwater not encountered at time of exploration.					
7.0							
8.0							
9.0							
10.0							

LOGGED BY: C. Nealey
COMPLETED: 8/05/19

EXCAVATED BY: Andrist Enterprises
EXCAVATION METHOD: CASE CX130D

FIGURE A1
Page 1 of 1

TEST PIT LOG - 1 PER PAGE 66142.000 TP1-5 20190824.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 9/10/19 RPG

BOOKWALTER WINERY EXPANSION
RICHLAND, WASHINGTON

PBS PROJECT NUMBER:
66142.000

TEST PIT TP-2

APPROX. TEST PIT TP-2 LOCATION:
(See Site Plan)

Lat: 46.253031 Long: -119.297200

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH	TESTING	SAMPLE TYPE / SAMPLE ID	DYNAMIC CONE PENETROMETER / STATIC PENETROMETER / MOISTURE CONTENT %	COMMENTS
0.0		Lines representing the interface between soil/rock units of differing description are approximate only, inferred where between samples, and may indicate gradual transition.				0 50 100	Surface Conditions: Dry Grass/Grape Vines
		Brown silty SAND (SM) with rootlets; non-plastic; fine sand; dry	0.0				
		Dark gray, poorly graded SAND (SP) with rootlets; fine to coarse sand; dry	0.7		S-1		
1.0							
		Dark gray, strong (R4) to very strong (R5), dense BASALT; close to moderately close joints; very slight weathering	1.5				
2.0							
3.0							
4.0							
5.0							
		Final depth 5.5 feet bgs; test pit backfilled with excavated material to existing ground surface. Groundwater not encountered at time of exploration.	5.5				
6.0							
7.0							
8.0							
9.0							
10.0						0 50 100	

LOGGED BY: C. Nealey
COMPLETED: 8/05/19

EXCAVATED BY: Andrist Enterprises
EXCAVATION METHOD: CASE CX130D

FIGURE A2
Page 1 of 1

TEST PIT LOG - 1 PER PAGE 66142.000 TP1-5 20190824.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 9/10/19 RPG

BOOKWALTER WINERY EXPANSION
RICHLAND, WASHINGTON

PBS PROJECT NUMBER:
66142.000

TEST PIT TP-3

APPROX. TEST PIT TP-3 LOCATION:
(See Site Plan)

Lat: 46.253701 Long: -119.297320

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH	TESTING	SAMPLE TYPE / SAMPLE ID	DYNAMIC CONE PENETROMETER / STATIC PENETROMETER / MOISTURE CONTENT % (0 50 100)	COMMENTS
0.0		Brown, silty SAND (SM) with rootlets; non-plastic; fine sand; moist	0.0		S-1		Surface Conditions: Dry Grass/Grape Vines
1.0		Brown, poorly graded GRAVEL (GP-GM) with silt, sand, cobbles, and rootlets; non-plastic; fine sand; fine to coarse, rounded to subrounded gravel; moist	1.0				
2.0		Dark gray, strong (R4) to very strong (R5), dense BASALT; close to moderately close joints; very slight weathering	2.0				
3.0							
4.0							Infiltration testing completed at 5 feet bgs
5.0		Final depth 5.0 feet bgs; test pit backfilled with excavated material to existing ground surface. Groundwater not encountered at time of exploration.	5.0		S-2		
6.0							
7.0							
8.0							
9.0							
10.0							

LOGGED BY: C. Nealey
COMPLETED: 8/05/19

EXCAVATED BY: Andrist Enterprises
EXCAVATION METHOD: CASE CX130D

FIGURE A3
Page 1 of 1

TEST PIT LOG - 1 PER PAGE 66142.000 TP1-5 20190824.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 9/10/19 RPG

BOOKWALTER WINERY EXPANSION
RICHLAND, WASHINGTON

PBS PROJECT NUMBER:
66142.000

TEST PIT TP-4

APPROX. TEST PIT TP-4 LOCATION:
(See Site Plan)

Lat: 46.253510 Long: -119.297791

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION Lines representing the interface between soil/rock units of differing description are approximate only, inferred where between samples, and may indicate gradual transition.
0.0		Poorly graded GRAVEL (GP) with sand and cobbles; fine sand; coarse, rounded to angular gravel; dry
1.0		Dark gray, strong (R4) to very strong (R5), dense BASALT; close to moderately close joints; very slight weathering
4.0		Final depth 4.0 feet bgs; test pit backfilled with excavated material to existing ground surface. Groundwater not encountered at time of exploration.

DEPTH | TESTING | SAMPLE TYPE SAMPLE ID | ◆ DYNAMIC CONE PENETROMETER ▣ STATIC PENETROMETER ● MOISTURE CONTENT % (0 50 100)

COMMENTS

Surface Conditions: Dry Grass/Grape Vines

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COMPLETED: 8/05/19

EXCAVATED BY: Andrist Enterprises
EXCAVATION METHOD: CASE CX130D

FIGURE A4
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TEST PIT LOG - 1 PER PAGE 66142.000_TP1-5_20190824.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 9/10/19 RPG

BOOKWALTER WINERY EXPANSION
RICHLAND, WASHINGTON

PBS PROJECT NUMBER:
66142.000

TEST PIT TP-5

APPROX. TEST PIT TP-5 LOCATION:
(See Site Plan)

Lat: 46.253487 Long: -119.297323

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION Lines representing the interface between soil/rock units of differing description are approximate only, inferred where between samples, and may indicate gradual transition.	DEPTH	TESTING	SAMPLE TYPE SAMPLE ID	DYNAMIC CONE PENETROMETER STATIC PENETROMETER MOISTURE CONTENT %	COMMENTS
0.0		Brown, poorly graded GRAVEL (GP) with cobbles; fine to coarse, rounded gravel; dry	0.0			0 50 100	Surface Conditions: Dry Grass/Grape Vines
1.0		Dark gray, strong (R4) to very strong (R5), dense BASALT; close to moderately close joints; very slight weathering	1.0				
3.0		Final depth 3.0 feet bgs; test pit backfilled with excavated material to existing ground surface. Groundwater not encountered at time of exploration.	3.0				
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							
10.0						0 50 100	

LOGGED BY: C. Nealey
COMPLETED: 8/05/19

EXCAVATED BY: Andrist Enterprises
EXCAVATION METHOD: CASE CX130D

FIGURE A5
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TEST PIT LOG - 1 PER PAGE 66142.000_TP1-5_20190824.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 9/10/19 RPG

Appendix B
Laboratory Testing

Appendix B: Laboratory Testing

B1 GENERAL

Samples obtained during the field explorations were examined in the PBS laboratory. The physical characteristics of the samples were noted and field classifications were modified where necessary. The testing procedures are described in the following paragraphs. Unless noted otherwise, all test procedures are in general accordance with applicable ASTM standards. "General accordance" means that certain local and common descriptive practices and methodologies have been followed.

B2 CLASSIFICATION TESTS

B2.1 Visual Classification

The soils were classified in accordance with the Unified Soil Classification System with certain other terminology, such as the relative density or consistency of the soil deposits, in general accordance with engineering practice. In determining the soil type (that is, gravel, sand, silt, or clay) the term that best described the major portion of the sample is used. Modifying terminology to further describe the samples is defined in Table A-1, Terminology Used to Describe Soil and Rock, in Appendix A.