File No. EA2021-127

CITY OF RICHLAND
Determination of Non-Significance

Description of Proposal: Richland Energy Services is proposing to construct a new 115kV – 12.47kV electrical substation (Gateway substation) housing three transformers, three metalclad switchgears, equipment foundations, control house, and a new connection to an existing 115kV transmission line. Associated clearing/grading to develop the site along with the installation of an on-site septic system and installation of a seven (7) foot chainlink fence for safety and security will also occur.

Proponent: City of Richland Energy Services
Attn: Terra Flores
2700 Duportail Street
Richland, WA 99352

Location of Proposal: The project site is approximately 2.5 acres in size and is located at 3060 Twin Bridges Road, Richland, WA.

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: July 16, 2021

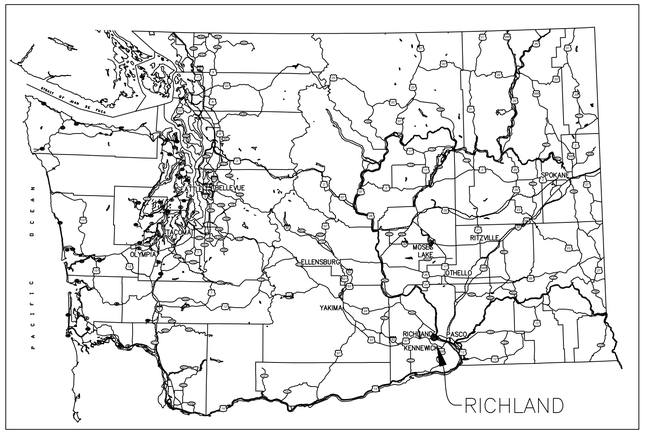
Signature _____

ENERGY SERVICES

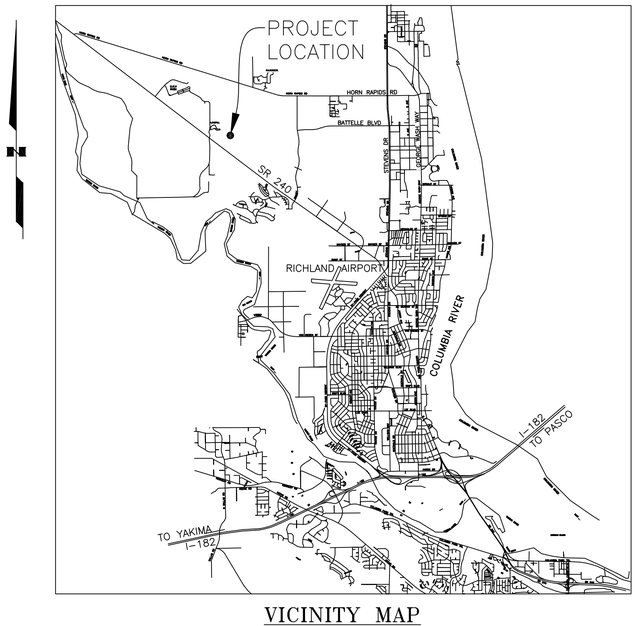
Richland

RICHLAND ENERGY SERVICES

GATEWAY SUBSTATION
SUBSTATION CONSTRUCTION



WASHINGTON AREA MAP



VICINITY MAP

DRAWING INDEX

TITLE	DRAWING NUMBER	SHEET	REVISION	NOTES
SUBSTATION CONSTRUCTION TITLE & DRAWING INDEX	GAT–000	1	0	
SUBSTATION CONSTRUCTION TITLE & DRAWING INDEX	GAT–000	2	0	
SUBSTATION CONSTRUCTION TITLE & DRAWING INDEX	GAT–000	3	0	
SITE PLAN	GAT–000	4	0	
115kV ONE–LINE DIAGRAM	GAT–001	1	1	
COR BANK 1 12.47 kV SWITCHGEAR ONE–LINE DIAGRAM	GAT–001	2	1	
BUSWORK LAYOUT PLAN	GAT–005	1	0	
BUSWORK LAYOUT HIGH BUS ELEVATION DETAILS	GAT–005	2	0	
BUSWORK LAYOUT LOW BUS ELEVATION DETAILS	GAT–005	3	0	
BUSWORK LAYOUT LOW BUS ELEVATION DETAILS	GAT–005	4	0	
BUSWORK LAYOUT ELEVATION DETAILS	GAT–005	5	0	
BUSWORK LAYOUT ELEVATION DETAILS	GAT–005	6	0	
BUSWORK LAYOUT ELEVATION DETAILS	GAT–005	7	0	
BUSWORK LAYOUT BILL OF MATERIAL	GAT–005	8	0	
STRUCTURAL STEEL STEEL STRUCTURE TYPE A01	GAT–007	1	0	
STRUCTURAL STEEL STEEL STRUCTURE TYPES A02, A03, & A04	GAT–007	2	0	
STRUCTURAL STEEL STEEL STRUCTURE TYPES A05, A06, & A07	GAT–007	3	0	
STRUCTURAL STEEL STEEL STRUCTURE TYPES A08, A09, & A10	GAT–007	4	0	
STRUCTURAL STEEL STEEL STRUCTURE DETAILS	GAT–007	5	0	
CIVIL TOPOGRAPHIC SURVEY	GAT–010	1	0	ISSUED FOR REFERENCE ONLY
CIVIL CLEARING AND GRUBBING PLAN	GAT–010	2	0	
CIVIL GRADING AND DRAINAGE PLAN	GAT–010	3	0	
CIVIL CROSS SECTIONS	GAT–010	4	0	
CIVIL DETAILS	GAT–010	5	0	
WATER AND SEPTIC UTILITY PLAN	GAT–010	6	0	
OIL CONTAINMENT SYSTEM PLAN	GAT–011	1	0	
OIL CONTAINMENT SYSTEM PLAN	GAT–011	2	0	
OIL CONTAINMENT ELEVATIONS	GAT–011	3	0	
OIL CONTAINMENT DETAILS	GAT–011	4	0	
OIL CONTAINMENT DETAILS	GAT–011	5	0	
OIL CONTAINMENT DETAILS	GAT–011	6	0	
OIL CONTAINMENT DETAILS	GAT–011	7	0	
FENCE AND GATE PLAN	GAT–015	1	0	
FENCE AND GATE DETIALS	GAT–015	2	0	
FENCE AND GATE SIGN DETAILS	GAT–015	3	0	
FENCE AND GATE BILL OF MATERIAL	GAT–015	4	0	
FOUNDATION PLAN	GAT–016	1	0	HOLD FOR STEEL FABRICATION
FOUNDATION DETAILS	GAT–016	2	0	HOLD FOR STEEL FABRICATION
FOUNDATION DETAILS	GAT–016	3	0	HOLD FOR STEEL FABRICATION
FOUNDATION DETAILS	GAT–016	4	0	
FOUNDATION DETAILS	GAT–016	5	0	HOLD FOR MANUFACTURER DESIGN
FOUNDATION DETAILS	GAT–016	6	0	HOLD FOR MANUFACTURER DESIGN
FOUNDATION DETAILS	GAT–016	7	0	
FOUNDATION DETAILS	GAT–016	8	0	HOLD FOR MANUFACTURER DESIGN

NO.	DRAWING NO.	REFERENCE DRAWING TITLE
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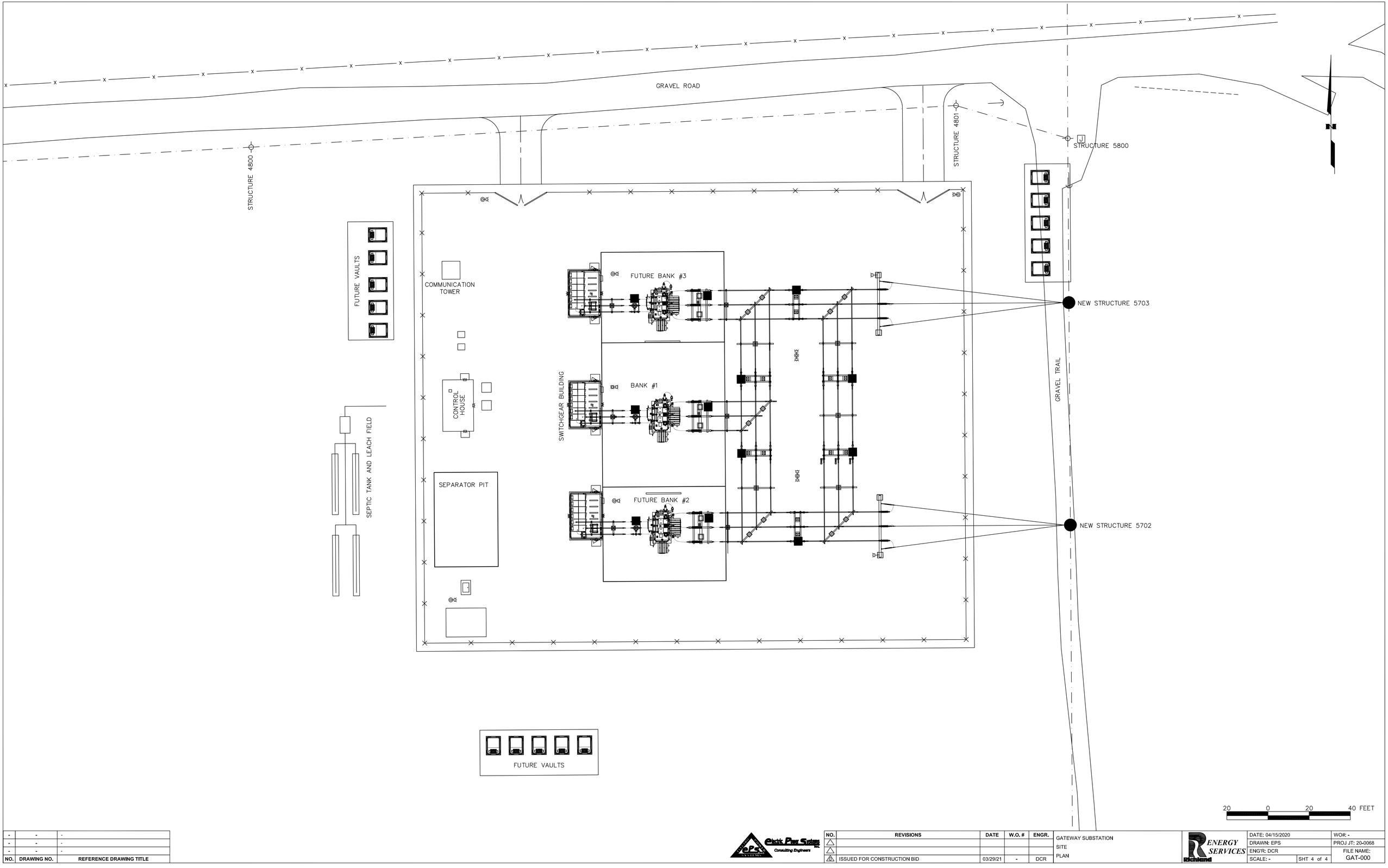
Electric Power Systems, Inc. Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
△				
△				
⚠	ISSUED FOR CONSTRUCTION BID	03/29/21	-	DCR

GATEWAY SUBSTATION
SUBSTATION CONSTRUCTION
TITLE & DRAWING INDEX

ENERGY SERVICES Richland

DATE: 06/11/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: DCR		FILE NAME: GAT-000
SCALE: -	SHT 1 of 4	



NO.	DRAWING NO.	REFERENCE DRAWING TITLE
-	-	-
-	-	-
-	-	-

Electric Power Systems Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	DCR

GATEWAY SUBSTATION
SITE
PLAN

Richland ENERGY SERVICES

DATE: 04/15/2020 | WO#: -
DRAWN: EPS | PROJ JT: 20-0068
ENG'R: DCR | FILE NAME: GAT-000
SCALE: - | SHT 4 of 4

Gateway Substation
Richland Energy Services
June 25, 2021

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:

   Gateway Substation

2. Name of applicant:

Richland Energy Services (RES), City of Richland

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

Terra Flores
509-942-7750
2700 Duportail St
Richland, WA 99352

4. Date checklist prepared:

June 25, 2021

5. Agency requesting checklist:

City of Richland

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

Construction of new substation to begin as soon as grading permit application is approved, July 2021.

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

The substation will be owned and operated by City of Richland Energy Services, with the option for a total of three transformers onsite. For initial construction, all steel buswork will be erected for all three banks, however only one transformer will be located on site to begin with. All infrastructure required for the additional two banks to be added at a later time is covered under this SEPA checklist.

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

- Spill, Prevention, Control and Countermeasure (SPCC) Plans will be developed by RES for respective equipment

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.

RES is not aware of any other governmental approvals of other proposals that directly affect the property for the proposed substation.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Interconnection Transmission Line and Loads Interconnection (BPA)
- Grading Permit (Richland)
- SEPA Checklist (Richland)
- Commecial Construction Permit (Richland)

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.)

Richland Energy Services proposes to construct a new substation to support the growing developments in the Horn Rapids industrial area. The area is being actively marketed by Economic Development for large scale industrial projects. Multiple companies have already approached the City of Richland about utilizing the area for new industry. Construction of the new substation in this area will address the need for additional capacity due to potential economic growth. This substation is strategically located to provide electrical capacity as large loads develop in the area.

RES conducted a methodical screening process to select a site that met the agencies' needs with regard to location, size, environmental constraints, and land use compatibility. The selected property is a 2.5 acre undeveloped site.

The proposed Gateway substation would be a 115kV – 12.47kV substation housing three transformers, three metalclad switchgears, equipment foundations, control house, and a new connection to an existing 115kV transmission line. The substation facility will be enclosed by a seven (7) foot chainlink fence for safety and security.

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.

The site is located in Richland, Benton County, Washington at 3060 Twin Bridges Road. See attached Site Vicinity Map.

Legal description of the property is as follows: That portion of the northwest quarter of Section 20, Township 10 North, Range 28 East, lying northerly of Washington State Route 240 and easterly of the City of Richland landfill.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site:

The natural topography of the site is generally flat. The site is above the grade of the gravel road on the north side of the property. There is an existing transmission line running North-South on the east side of the property.

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

b. What is the steepest slope on the site (approximate percent slope)?

~15%

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.

Sand is visible on all areas of the site. The NRCS mapping of the site is 100% Quincy fine sand-grassland.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No surface indications of unstable soils. There are no apparent signs of unstable soils on other properties in the general vicinity.

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.

The entire site will be graded and leveled for development of the substation facility. Reference attached “Substation Earthwork” portion of the specification for construction of Gateway substation.

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

Due to the generally flat nature of the site and sparse vegetation, it is unlikely erosion would occur as a result of clearing or construction.

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

Less than 40% of the site will be covered with impervious surfaces after project construction. Primary impervious areas will be transformer, metalclad switchgear, and control house foundations.

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

As the site will be watered during construction to reduct fugitive airborne dust, there is potential for the sand to form temporary rivulets which could carry some sand offsite.

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.

Air emissions during construction will be limited to fugitive dust from earthmoving and grading activities and low levels of construction equipment emissions ($PM_{2.5}$, PM10, NO_x, SO_2, CO, VOC). Operation of the substation will result in limitied CO_2 emissions from operating equipment (e.g. transformers or emergency generators).

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

No.

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

The site will be watered during construction to reduce fugitive dust emissions.

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.

No.

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.

Not applicable.

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.

Not applicable.

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

Not applicable.

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

The proposal 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.

Not applicable.

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.

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.

Domestic sewage into a septic tank will be discharged into the ground. The size is 1,000 gallon double compartment septic tank. This restroom facility will be used intermittently by RES crew that are on site for maintenance of the substation. The sewer site plan is attached.

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.

During construction runoff may occur from watering the site for dust control and will be absorbed by the natural landscape. There are not any waters that could potentially receive the runoff. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared in accordance with RMC 16.06.030.

Post construction runoff would be generated only by stormwater. Per RMC 16.06.050, a stormwater collection system would be constructed on site using the Sotrmwater Management Manual of Eastern Washington as technical guidance for design and management.

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

Transformer oils could potentially be released into group or surface waters should there be a significant leak. SPCC plans will be developed to address transformer oils and containment which will be constructed to ensure no spills or releases of oils would leave the site or impact ground or surface waters.

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

The project does not affect drainage patterns in the vicinity of the site.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Construction: No additional measures are anticipated beyond what will be required in the SWPPP.

Operation: No additional measures beyond the SPCC plans are anticipated.

4. Plants [help]

a. Check the types of vegetation found on the site:

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
_X__shrubs
_X__grass
____pasture
____crop or grain
____ 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?

The site is sparsely vegetated primarily with sagebrush, Russian thistle, rabbitbrush, hopsage and cheatgrass with bare sand exposure over most of the property. All of the site (2.5 acres) will be scrubbed and graded for site development.

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

The only plant species of concern as identified by the Washington Natural Heritage Program (NHP) as potentially occurring within the vicinity of the site is the Piper's daisy (Erigeron piperianus) which is currently identified as a sensitive species. The area identified by the NHP mapping for the species does not overlap with the site but is within 5-10 miles.

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

Substations, in general, are built with very little landscaping in order to not attract animals or birds which could lead to more frequent outages. Landscaping features can be detrimental to the ground grid system which is loosely packed gravel in order to protect personnel within the substation. No landscaping is planned for this substation.

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

Neither the site nor adjacent areas were specifically surveyed for noxious or invasive species. However, grass, sagebrush, and tumbleweeds were noted at the time of the site visit for Geotech in March 2020.

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.

Examples include:

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

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

The Washington Department of Fish and Wildlife Priority Habitat and Species database identified the potential presence of the following species:

- Ferruginous hawk (Buteo regalis). State threatened species, township-wide area. The site itself has no nesting opportunities or trees adjacent to the site.

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

Richland, WA is within the Pacific Flyway.

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

The site currently provides limited wildlife opportunity. There would be no specific effort to enhance or attract wildlife to the site due to the potential hazards associated with substations resulting in damage to the facility or wildlife.

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

There are no known invasive animal species on or near the site.

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 is a substation for provision of electricity to RES customers.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, none of the structures would be obtrusive enough to affect adjacent properties to the extent it would limit use of solar.

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:

None.

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 perceived health hazards with regard to electric and magnetic fields (EMF) associated with transmission lines and substations. However, EMF is present in our environment wherever electricity is generated or used including commonly used items in our homes and at work (e.g., computers, microwave, fluorescent lights). The issue of whether or not EMF from power lines causes health concerns has been studied for more than 30 years and the balance of scientific evidence indicates that exposure to EMF does not cause health concerns or disease. The typical exposure to EMF from transmission lines is lower than that of the commonly used household and office items noted above. Exposure to EMF can be reduced by distance - the further away, the lower the EMF exposure which drops rapidly with minimal distance. There are no federal standards limiting residential or occupational exposure to EMF.

1) Describe any known or possible contamination at the site from present or past uses.

The site has never been developed and has only been disturbed during the construction of the existing transmission line in 1981.

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.

There are no known hazardous conditions existing at the site.

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.

The transformers will contain oil. SPCC plans will provide direction regarding prevention and control of oils spills and the facility will be designed with oil containment features in case of accidental spills. Lead acid batteries for the DC power supply would be stored at the substation.

4) Describe special emergency services that might be required.

Fire Department, Emergency Medical and Police services might be required at the substation.

5) Proposed measures to reduce or control environmental health hazards, if any:

No measures beyond the required development of the SPCC plans are proposed.

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 existing sources of noise that would affect the substation project. The primary sources of noise is from vehicular traffic on WA State Route 240 which is south of the site and heavy equipment noise from the landfill located adjacent to the site property.

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.

Construction Noise: Construction of the substation would generate short-term, temporary noise impacts caused primarily by equipment operation associated with excavation, installation of infrastructure, pouring of the transformer, metalclad, and control house pads, and related activities. Noise during construction would be comparable to noise at other similar-sized site development project, and activities would be limited to standard allowable work hours of 7:00 a.m. to 9:00 p.m. (RMC 9.16.045(b)).

Operational Noise: The transformers of substations emit a low level "hum" or "buzz." The audible sound levels of the transformer shall not exceed the levels identified in NEMA Standard TR-1 for the three stages of cooling as measured in accordance with IEEE C57.12.90. Noise would be

attenuated by distance, reducing the sounds of the transformers at 100 feet away to a level similar to light traffic, such as what is currently experienced with SR 240.

3) Proposed measures to reduce or control noise impacts, if any:

None.

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.

The site is currently undeveloped and vacant. The property to the north of the site is the city landfill and west of the site is a commercial construction building. The area due south of the site is completely undeveloped and due east is working farmlands. The proposed substation would not affect the current uses of nearby or adjacent properties.

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?

The site has not been used as working farmlands or working forest lands.

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:

No.

c. Describe any structures on the site.

There are no structures on the site.

d. Will any structures be demolished? If so, what?

No structures would be demolished as part of the proposed project.

e. What is the current zoning classification of the site?

The zoning of the site is M-2, Heavy Manufacturing. M-2 zoning is intended to provide areas for heavy manufacturing uses involving activiteies that do not complement the character of commercial or residential areas.

f. What is the current comprehensive plan designation of the site?

The 2017 Comprehensive Plan designation of the site is industrial.

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

The site is not located within an area designated as a shoreline of Richland or a shoreline of statewide significance.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

No portion of the site has been classified as a critical area by the City or County.

i. Approximately how many people would reside or work in the completed project?

No one would reside at the facility nor work full time at the facility. Workers would be present only as part of regular maintenance activities or during an emergency event requiring immediate attention.

j. Approximately how many people would the completed project displace?

No one will be displaced as a result of this project.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable as there would be no displacements.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Per RMC 23.42.200, substations are permitted within any district provided they meet requirements for architecture (not applicable for the substation), site screening, fencing, and setbacks. RES will provide landscaping as required by code (RMC 23.22.020 B, 23.22.040, and 23.42.200), as long as it does not interfere with the safety or operation of the substation, will have a 7 foot chainlink fence for public safety, and would meet the required setbacks per code (RMC 23.22.040).

(See attached Conceptual Layout figure which illustrates the site can conform with setbacks per code.) The substation would be less intrusive on the existing land uses (heavy manufacturing) than many of the other permitted uses in the zone.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Not applicable as the project would not affect agricultural or forest lands.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No residential units would be provided as part of the substation

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

There are no residential units on the site.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable as there would be no impacts to housing.

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?

Transmission dead-end structures would be a maximum of 50 feet above ground surface. The building structures within the substation will be single story and will have a sheet metal exterior.

b. What views in the immediate vicinity would be altered or obstructed?

N/A.

c. 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?

Lighting for the substation would be minimal for security and to the extent it would allow staff to safely navigate through the facility for emergency maintenance during non-daylight hours. would be consistent with RMC 23.22.020 B.7 for commercial sites in that it would be "shielded or arranged so as not to reflect or cause glare to extend into any residential districts, or to interfere with the safe operation of motor vehicles" and compliant with the Pattern Outdoor Lighting Code (USA) standard version 2.0, July 2010.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Lighting would conform to the RMC requirements as noted above and therefore would not cause glare or reflection that would interfere with views from the residential uses adjacent to the site.

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 would affect this proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

No additional measures would be implemented.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?

None in the immediate vicinity.

b. Would the proposed project displace any existing recreational uses? If so, describe.

There are no recreational uses on this site.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Not applicable, as there are not any impacts to recreation from this proposal.

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.

No. A search of the Washington Information System for Architectural and Archaeological Records did not result in any records on or near the site. The closest sites mapped were approximately 4.5 miles away, as the crow flies, and is called the Gold Coast Historic District, Listing number 04000315. This area is roughly bounded by Willis St, Davison Ave, Hunt Ave, and George Washington Way.

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.

No, there are none of the noted features located within proximity of the site and none were noted in the above-mentioned database search. No material evidence or artifacts have been discovered during development of other sites within close vicinity of the substation site.

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.

Database research, location of the site, and lack of discovery during adjacent development activities.

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.

Should there be inadvertent discovery of artifacts or skeletal remains during site grading and construction activities, all activity would be immediately halted until a professional archaeologist could assess the discovery. Should the discovery be deemed potentially eligible, the Washington State Department of Archaeology and Historic Preservation would be contacted.

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.

The site is located from a gravel road, accessed from Twin Bridges Road. The area will be fully developed with roads as the Horn Rapids industrial area continues to grow.

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?

The site is not currently served by public transit. RES staff would visit the facility on a limited basis for regular maintenance and in the case of emergency events. They would travel to the site in a City vehicle. There will be no public access 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?

Per RMC 23.54.030, the City's Administrative Official would determine the number of parking spaces required as other Titles within the RMC do not specify a requirement for this type of use. No parking spaces would be eliminated.

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).

No improvements will be required for this site development.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No, only vehicular transportation would be used.

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?

There would be no daily trips associated with operation of the substation facility. As noted above, the only trips to the site would be for maintenance and emergencies.

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, it would not interfere with movement of agricultural or forest products.

h. Proposed measures to reduce or control transportation impacts, if any:

Not applicable.

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, the proposal would not result in an increased demand on public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. Utilities [help]

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

The site is undeveloped and there are no utilities currently available at the site. Connections and service would be available once the substation is developed.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The proposed project is an electric utility. Water and sewer services will be needed for on site buildings.

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 Terra Flores

Position and Agency/Organization

Richland Energy Services / Electrical Distribution Engineer II

Date Submitted: 6/25/2021

TOPOGRAPHIC SURVEY

LOCATED IN SECTION 20, TOWNSHIP 10 NORTH, RANGE 26 EAST, W.M.
CITY OF RICHLAND, BENTON COUNTY, WASHINGTON

NOTES:

1. BASIS OF BEARING IS GRID, OREGON STATE PLANE, NORTH ZONE, NAD83(11), BASED ON GNSS TIES TO CITY OF RICHLAND CONTROL POINT "CAR 21". CONFIRMED BY TIES TO NE CORNER SECTION 20 & NGS OPUS OBSERVATION. DISTANCES ARE GRID. TO CONVERT TO GROUND DISTANCE DIVIDE BY A COMBINED FACTOR OF 0.99990411.

2. ELEVATION DATUM IS NAVD88 BASED ON GNSS TIES TO CITY OF RICHLAND CONTROL POINT "CAR 21", CONFIRMED BY TIES TO NE CORNER SECTION 20 & NGS OPUS OBSERVATION.

3. CONTOURS ARE DERIVED FROM DIRECT FIELD OBSERVATIONS. CONTOUR INTERVAL IS 1.0 FEET.

4. EQUIPMENT AND PROCEDURES: THIS SURVEY WAS PERFORMED WITH MULTI FREQUENCY TRIMBLE R8-4 GNSS RECEIVERS CONFIGURED FOR REAL TIME KINEMATIC SURVEYING. ELEVATIONS OF INSULATORS WERE MEASURED BY DIRECT REFLECTORLESS OBSERVATION USING A LEICA TCR 405 TOTAL STATION.

5. UNDERGROUND UTILITIES SHOWN HEREON ARE FROM UNDERGROUND UTILITY LOCATE MARKS PROVIDED BY OTHERS.

LEGEND

- = EDGE OF GRAVEL
- = MINOR CONTOUR
- = MAJOR CONTOUR
- = UNDERGROUND WATER
- = OVERHEAD POWER
- = FENCE
- = POWER POLE
- = GUY ANCHOR
- = JUNCTION BOX

DAVID P. BAALMAN — PROFESSIONAL LAND SURVEYOR — WASHINGTON

DATE: 4-9-20

RSI ROGERS SURVEYING INC., P.S.
1455 COLUMBIA PARK TRAIL
RICHLAND, WA. 99352
PHONE (509) 783-4141
FAX: (509) 783-8994
www.rogerssurveying.com

CLIENT: ELECTRICAL POWER SYSTEMS INC | JOB 101220
PROJECT: TOPOGRAPHIC SURVEY — GATEWAY SUBSTATION SITE
REV: NONE

DRN. BY DPB	SCALE 1"= 30'	F. B. NO. RTK	SHEET 1
APPROVED DPB	DATE 4-9-20	ACAD VER -C3D19 FILE: 10120.DWG	OF 1

3060 Twin Bridges Rd

21-01796

ISSUED FOR REFERENCE ONLY
– DO NOT EDIT –

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

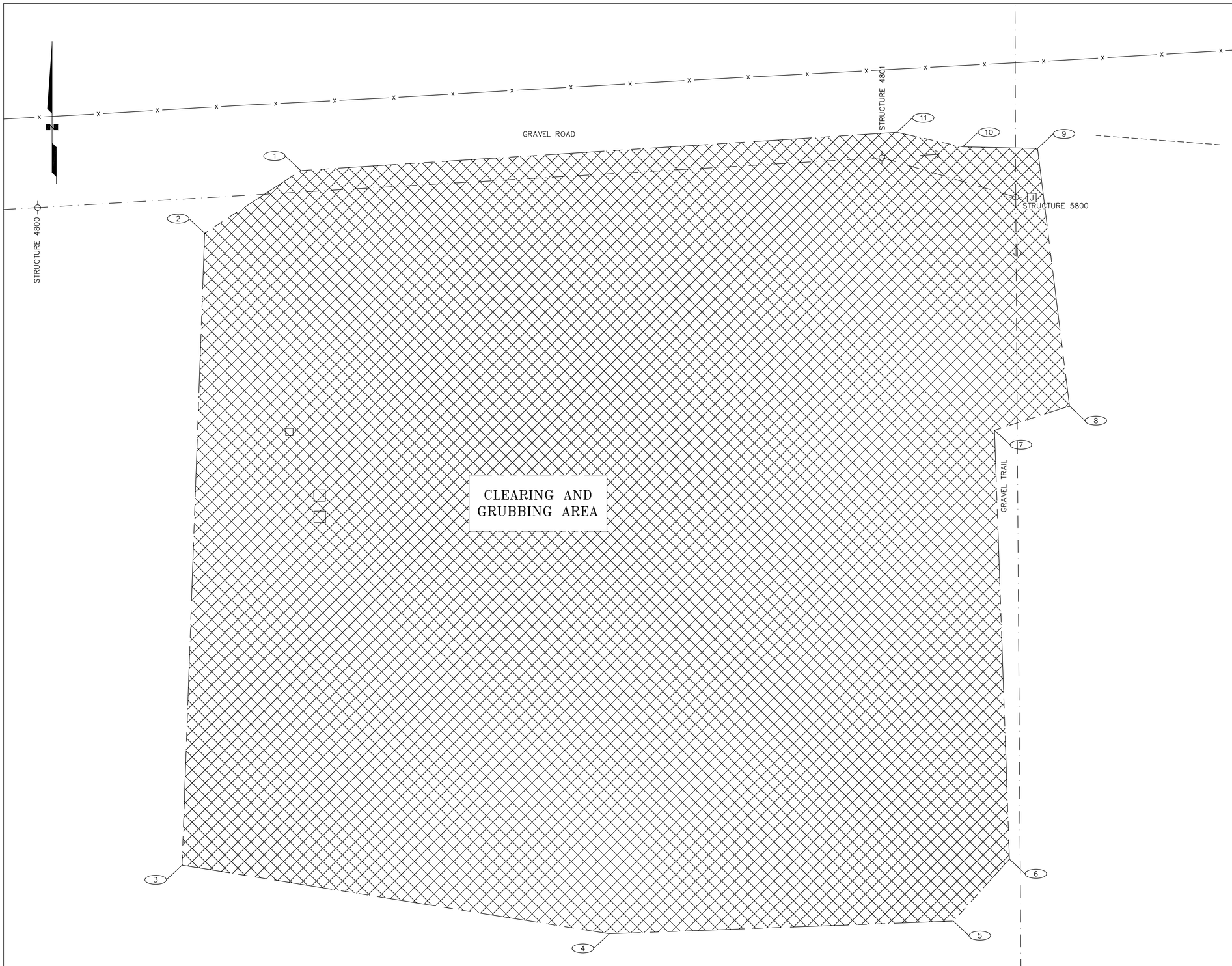
Electric Power Systems Inc. — Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
0	ISSUED FOR CONTRUCTION BID	04/09/20	-	GDH

GATEWAY SUBSTATION
CIVIL
TOPOGRAPHIC SURVEY

Richland ENERGY SERVICES

DATE: 05/01/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: GDH		FILE NAME:
SCALE: -	SHT 1 of 6	GAT-010



CLEARING AND GRUBBING AREA COORDINATE TABLE

POINT NO.	NORTHING	EASTING	DESCRIPTION
1	370145.61	1934277.23	CORNER OF CLEARING AND GRUBBING
2	370120.20	1934238.21	CORNER OF CLEARING AND GRUBBING
3	369863.94	1934229.05	CORNER OF CLEARING AND GRUBBING
4	369836.13	1934402.34	CORNER OF CLEARING AND GRUBBING
5	369841.29	1934541.90	CORNER OF CLEARING AND GRUBBING
6	369866.40	1934564.66	CORNER OF CLEARING AND GRUBBING
7	370040.31	1934558.60	CORNER OF CLEARING AND GRUBBING
8	370050.10	1934589.01	CORNER OF CLEARING AND GRUBBING
9	370154.56	1934576.05	CORNER OF CLEARING AND GRUBBING
10	370155.24	1934545.65	CORNER OF CLEARING AND GRUBBING
11	370161.08	1934518.96	CORNER OF CLEARING AND GRUBBING

ESTIMATED GRUBBING AREA = 11,400 SQ. YARDS

LEGEND:

CLEARING LIMITS

AREA TO BE GRUBBED

GENERAL NOTES:

G1 SEE REFERENCE 1 FOR UTILITY LOCATIONS. ALL UTILITIES ARE TO BE VERIFIED BEFORE DIGGING.

20 0 20 40 FEET

NO.	DRAWING NO.	REFERENCE DRAWING TITLE
1	GAT-010/1	TOPOGRAPHIC SURVEY

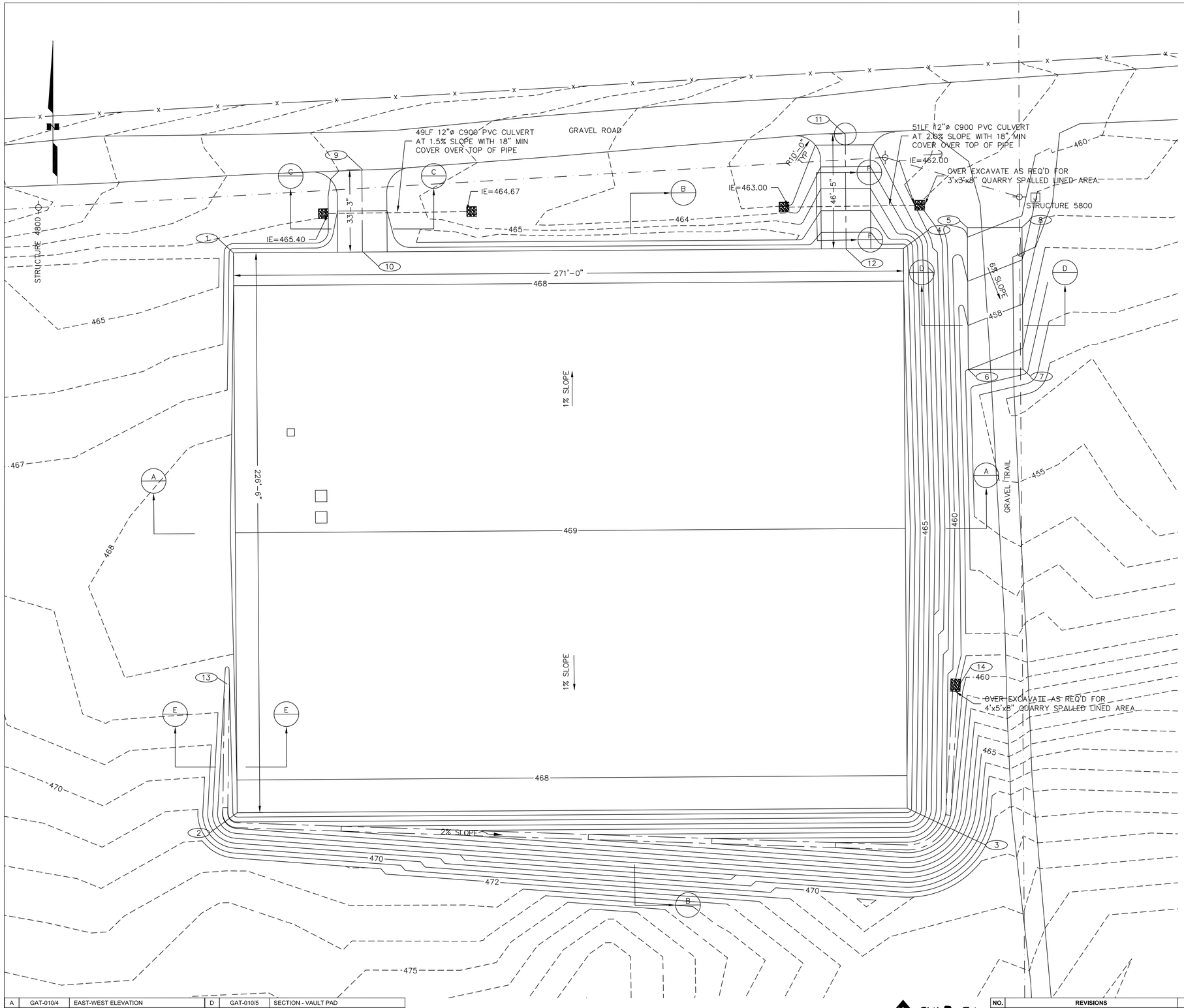
NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

GATEWAY SUBSTATION
CIVIL
CLEARING AND GRUBBING PLAN

Electric Power Systems, Inc. Consulting Engineers

Richland ENERGY SERVICES

DATE: 05/01/2020 | WO#: -
DRAWN: EPS | PROJ JT: 20-0068
ENG'R: GDH | FILE NAME: GAT-010
SCALE: - | SHT 2 of 6



COORDINATE TABLE

POINT NO.	NORTHING	EASTING	FINISHED ELEVATION	DESCRIPTION
1	370112.19	1934249.33	467.87	CORNER OF PAD
2	369885.70	1934250.86	467.87	CORNER OF PAD
3	369887.53	1934521.86	467.87	CORNER OF PAD
4	370114.03	1934520.32	467.87	CORNER OF PAD
5	370122.39	1934546.17	460.22	CORNER OF VAULT PAD
6	370064.98	1934546.56	457.00	CORNER OF VAULT PAD
7	370065.12	1934568.64	457.48	CORNER OF VAULT PAD
8	370122.54	1934568.25	459.74	CORNER OF VAULT PAD
9	370145.84	1934301.58	EXISTING	BEGINNING OF ACCESS ROAD
10	370112.55	1934301.80	467.87	END OF ACCESS ROAD
11	370160.29	1934496.63	EXISTING	BEGINNING OF ACCESS ROAD
12	370113.87	1934496.95	467.87	END OF ACCESS RAOD
13	369937.78	1934246.73	467.00	BEGINNING OF DRAIN DITCH
14	369934.80	1934541.32	459.00	END OF DRAIN DITCH

LEGEND:

—100— PROPOSED CONTOUR (FINISHED GRADE)

– – –100– – – EXISTING CONTOUR

——— PROPOSED PAD EDGE

——— – ——— DRAINAGE DITCH

NOTES:

1. ESTIMATED SOIL QUANTITIES:
   - CUT: 11,235 CU YD
   - BACKFILL: 10,870 CU YD
   - STRUCTURAL FILL: 4,450 CU YD
   - CRUSHED ROCK: 1,145 CU YD
   - LEVELING COURSE: 35 CU YD
   - QUARRY SPALLS: 1 CU YD

20 0 20 40 FEET

A	GAT-010/4	EAST-WEST ELEVATION	D	GAT-010/5	SECTION - VAULT PAD
B	GAT-010/4	NORTH-SOUTH ELEVATION	E	GAT-010/5	SECTION - DITCH DETAIL
C	GAT-010/5	SECTION - TYPICAL ACCESS ROAD	F	GAT-010/5	SECTION - CULVERT DETAIL
NO.	DRAWING NO.	REFERENCE DRAWING TITLE	NO.	DRAWING NO.	REFERENCE DRAWING TITLE

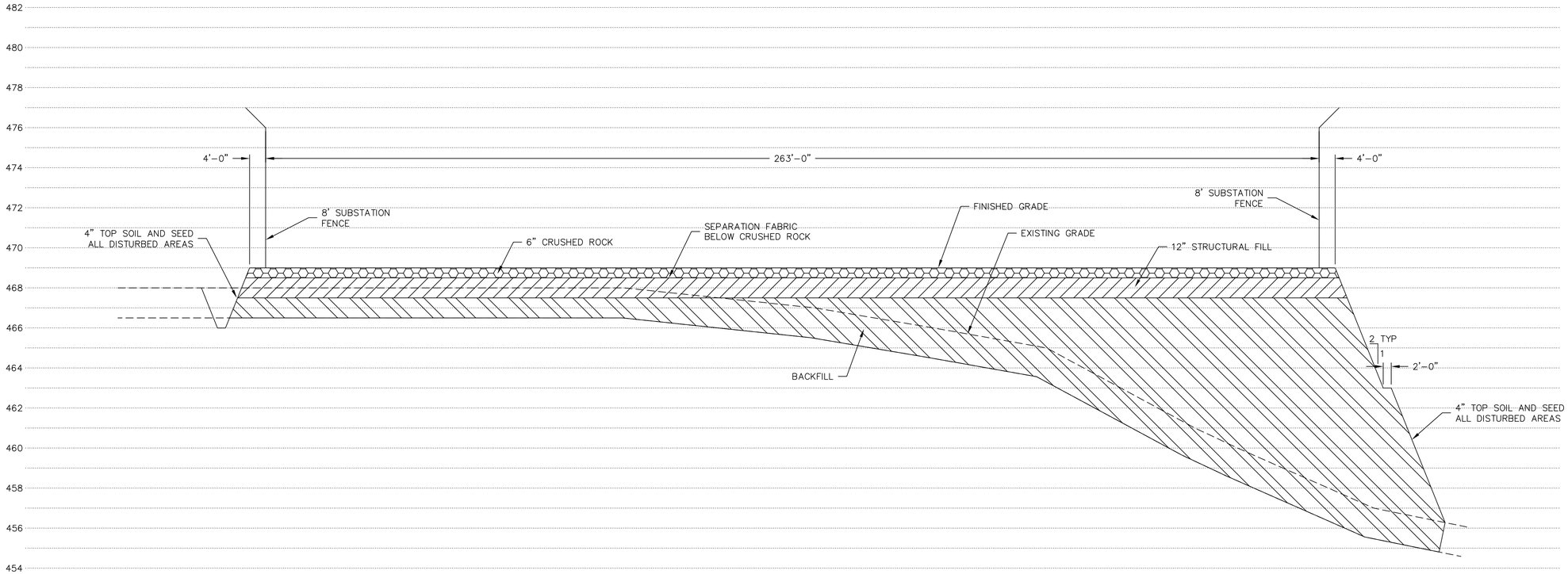
Electric Power Systems, Inc. Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

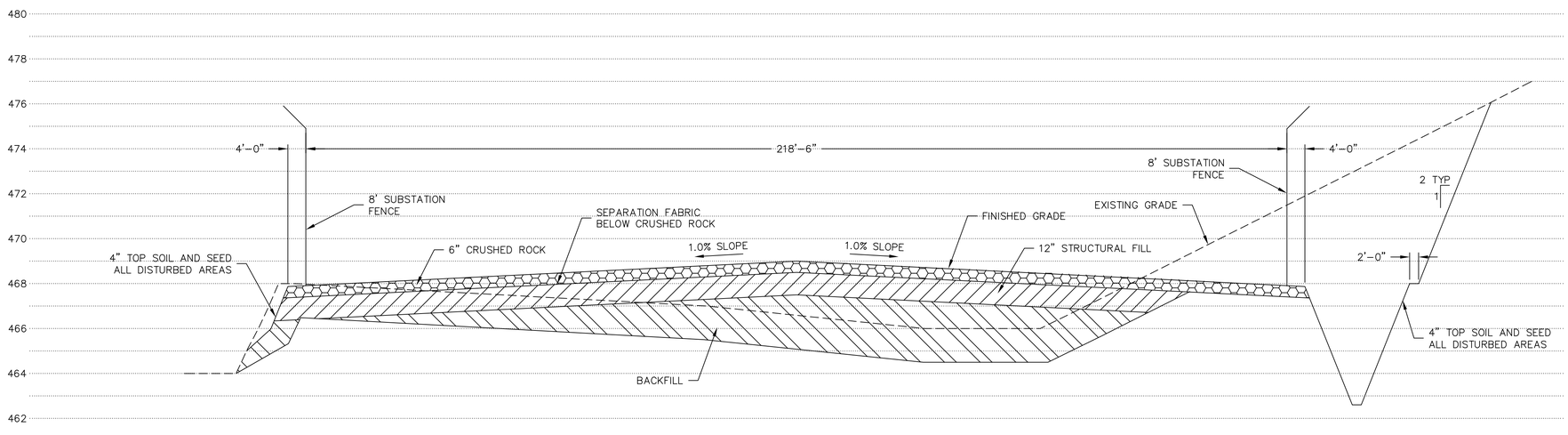
GATEWAY SUBSTATION
CIVIL
GRADING AND DRAINAGE PLAN

ENERGY SERVICES Richland

DATE: 05/01/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: GDH		FILE NAME: GAT-010
SCALE: -	SHT 3 of 6	



A EAST-WEST ELEVATION



B NORTH-SOUTH ELEVATION

15 0 15 30 FEET
HORIZONTAL SCALE

3 0 3 6 FEET
VERTICAL SCALE

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

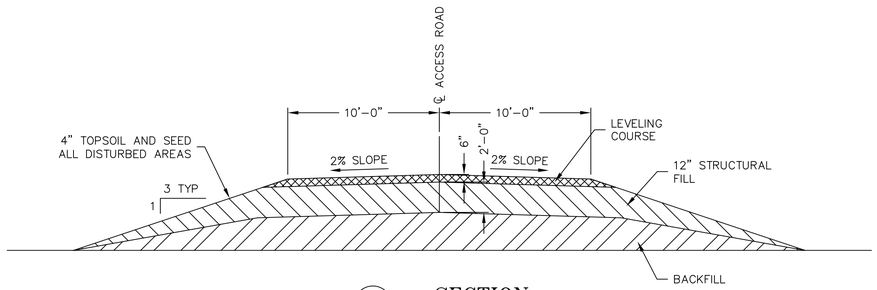
Electric Power Systems, Inc. Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

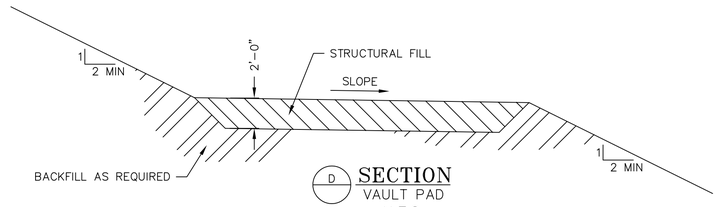
GATEWAY SUBSTATION
CIVIL
CROSS SECTIONS

RENERGY SERVICES Richland

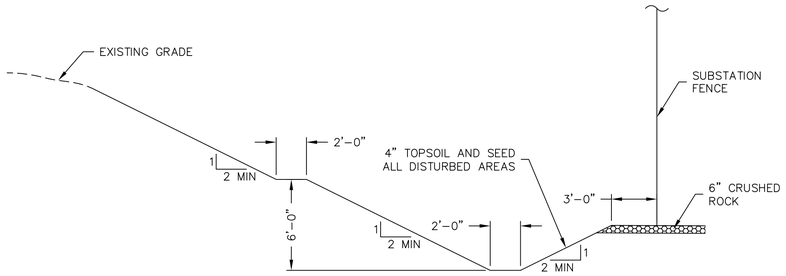
DATE: 05/26/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: GDH		FILE NAME: GAT-010
SCALE: -	SHT 4 of 6	



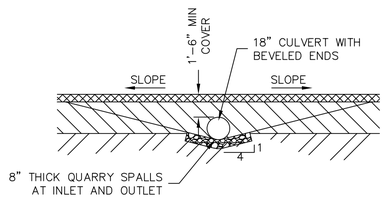
C SECTION
TYPICAL ACCESS ROAD
N.T.S.



D SECTION
VAULT PAD
N.T.S.



E SECTION
DITCH DETAIL
N.T.S.



F SECTION
CULVERT DETAIL
N.T.S.

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

NO.	REVISIONS	DATE	W.O. #	ENGR.
2				
1				
0	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

Electric Power Systems, Inc. Consulting Engineers

GATEWAY SUBSTATION
CIVIL
DETAILS

Richland ENERGY SERVICES

DATE: 05/26/2020 | WO#: -
DRAWN: EPS | PROJ JT: 20-0068
ENGR: GDH | FILE NAME: GAT-010
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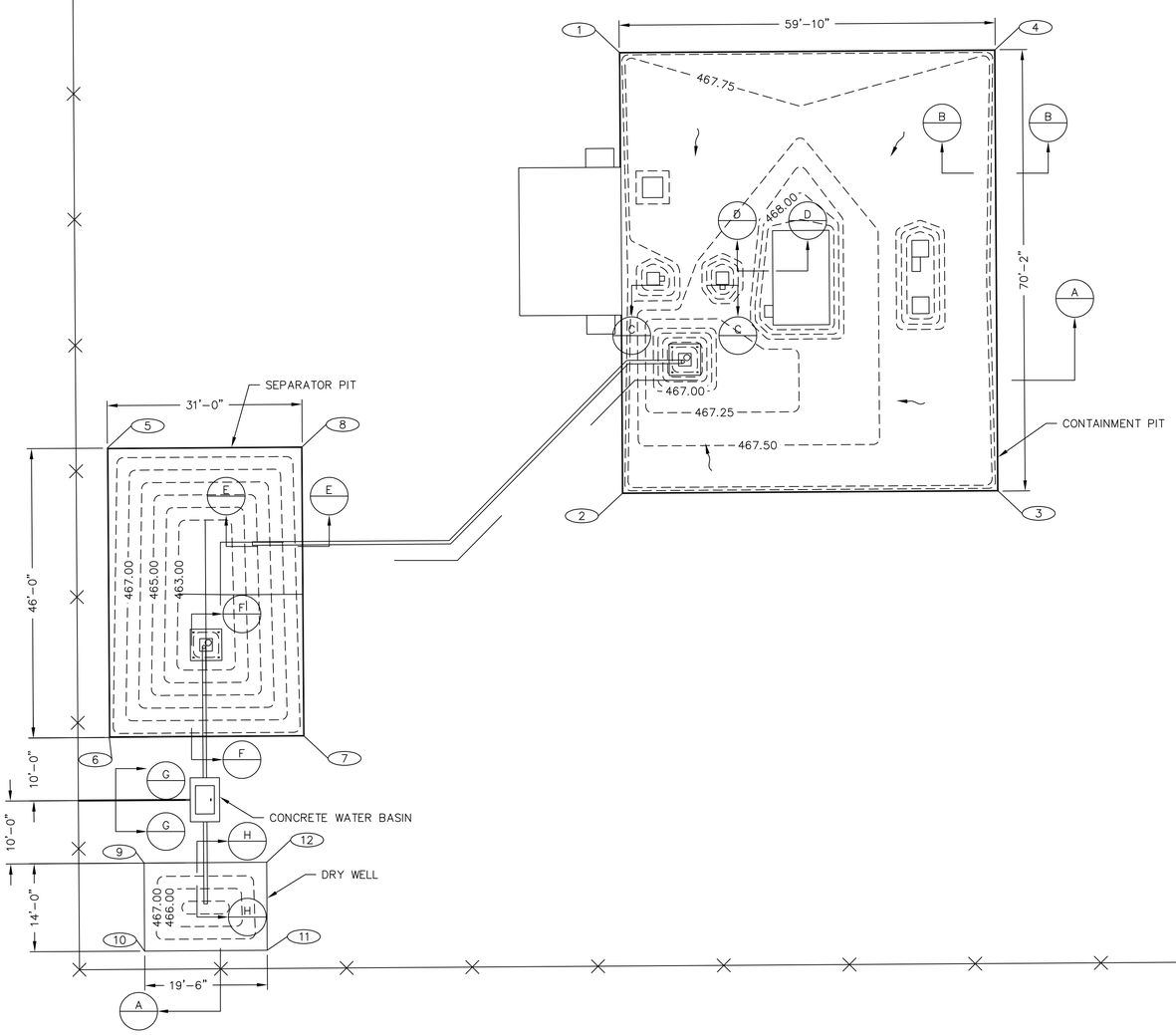


COORDINATE TABLE

POINT NO.	NORTHING	EASTING	FINISHED ELEVATION	DESCRIPTION
1	370035.59	1934340.70	468.81	CORNER OF CONTAINMENT BERM
2	369965.42	1934341.18	468.83	CORNER OF CONTAINMENT BERM
3	369965.82	1934400.98	468.83	CORNER OF CONTAINMENT BERM
4	370035.99	1934400.50	468.81	CORNER OF CONTAINMENT BERM
5	369972.65	1934259.27	468.89	CORNER OF SEPERATOR BERM
6	369926.65	1934259.58	468.43	CORNER OF SEPERATOR BERM
7	369926.86	1934290.58	468.43	CORNER OF SEPERATOR BERM
8	369972.86	1934290.27	468.89	CORNER OF SEPERATOR BERM
9	369906.69	1934265.12	468.07	CORNER OF DRY WELL
10	369892.69	1934265.22	467.93	CORNER OF DRY WELL
11	369892.82	1934284.71	467.93	CORNER OF DRY WELL
12	369906.82	1934284.62	468.07	CORNER OF DRY WELL

LEGEND:

- ----100---- LINER PROPOSED CONTOUR
- ——100—— SURFACE PROPOSED CONTOUR
- BERM
- SUBSURFACE DIRECTION OF FLOW

NOTES:

1. ESTIMATED SOIL QUANTITIES:
   DRAIN ROCK: ~270 CU YD
   SAND: ~50 CU YD
   STRUCTURAL FILL: ~360 CU YD
   CRUSHED ROCK: SEE DRAWING GAT-010 SHEET 3
   3" RIPRAP ROCK: ~15 CU YD

12 0 12 24 FEET

A	GAT-011/3	ELEVATION	D	GAT-011/4	CONTAINMENT FOUNDATION SEAL	G	GAT-011/5	CONCRETE WATER BASIN
B	GAT-011/4	CONTAINMENT BERM	E	GAT-011/4	SEPARATOR BERM	H	GAT-011/5	DRY WELL
C	GAT-011/4	CONTAINMENT SUMP	F	GAT-011/4	SEPARATOR SUMP			
NO.	DRAWING NO.	REFERENCE DRAWING TITLE	NO.	DRAWING NO.	REFERENCE DRAWING TITLE	NO.	DRAWING NO.	REFERENCE DRAWING TITLE

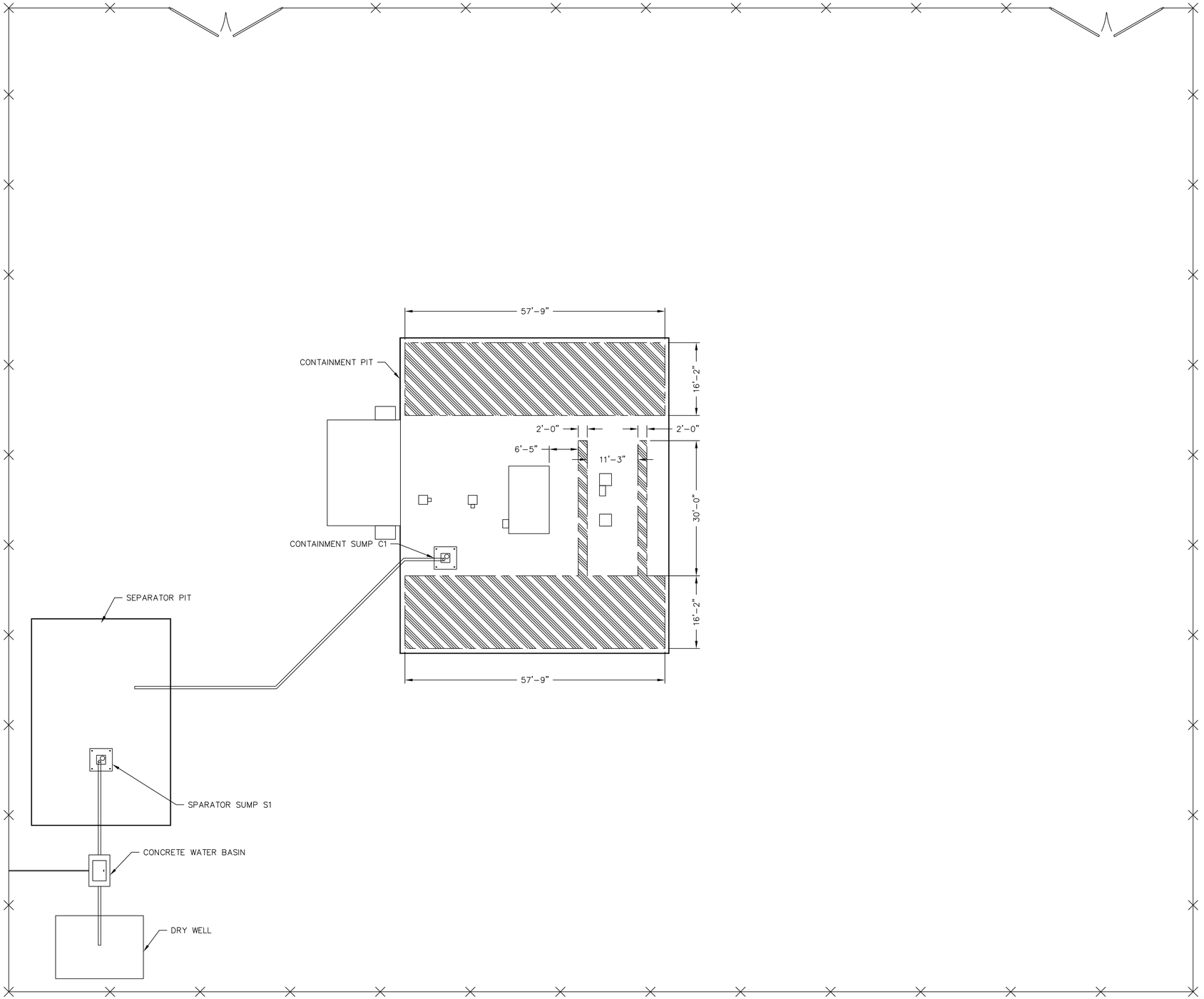
Electric Power Systems Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

GATEWAY SUBSTATION
OIL CONTAINMENT
SYSTEM PLAN

RENERGY SERVICES Richland

DATE: 07/07/2020 | WO#: -
DRAWN: EPS | PROJ JT: 20-0068
ENG'R: GDH | FILE NAME: GAT-011
SCALE: - | SHT 1 of 7



LEGEND:

BERM

GEO-NET

12 0 12 24 FEET

NO.	DRAWING NO.	REFERENCE DRAWING TITLE	NO.	DRAWING NO.	REFERENCE DRAWING TITLE
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

Electric Power Systems Inc. Consulting Engineers

GATEWAY SUBSTATION
OIL CONTAINMENT
SYSTEM PLAN

Richland ENERGY SERVICES

DATE: 07/07/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: GDH		FILE NAME: GAT-011
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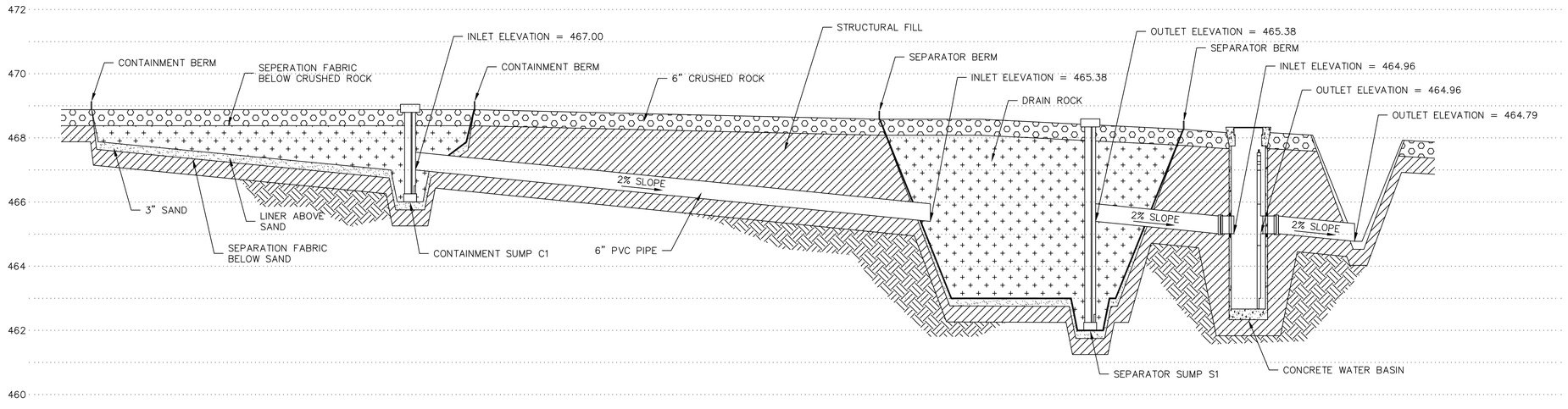


A ELEVATION

10 0 10 20 FEET
HORIZONTAL SCALE

2 0 2 4 FEET
VERTICAL SCALE

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

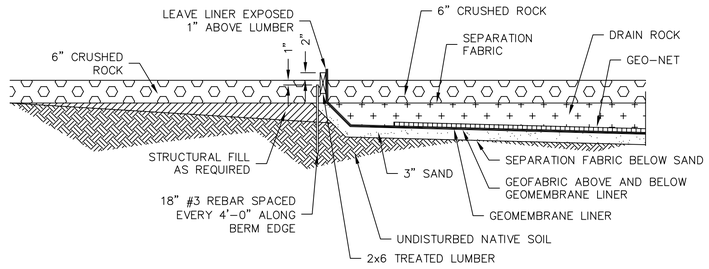
Electric Power Systems Inc. Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

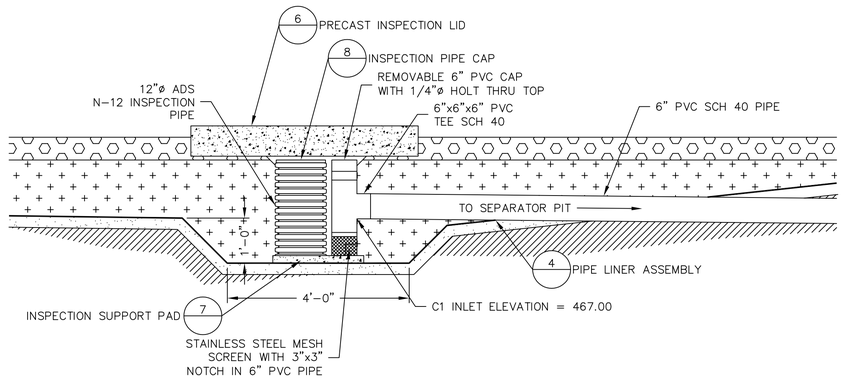
GATEWAY SUBSTATION
OIL CONTAINMENT
ELEVATIONS

ENERGY SERVICES Richland

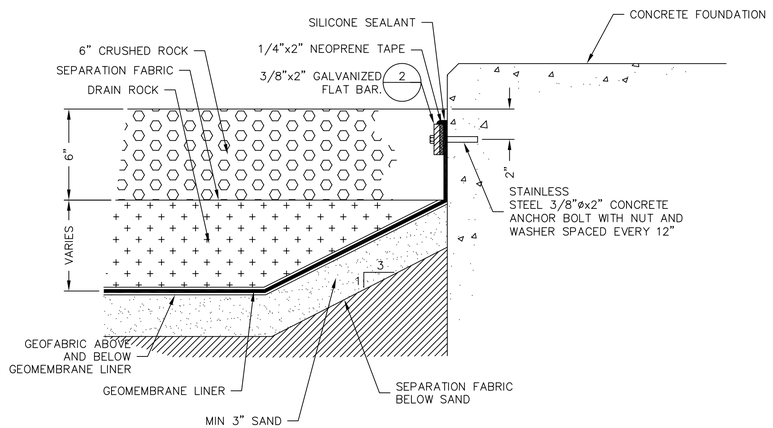
DATE: 07/01/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENG'R: GDH		FILE NAME: GAT-011
SCALE: -	SHT 3 of 7	



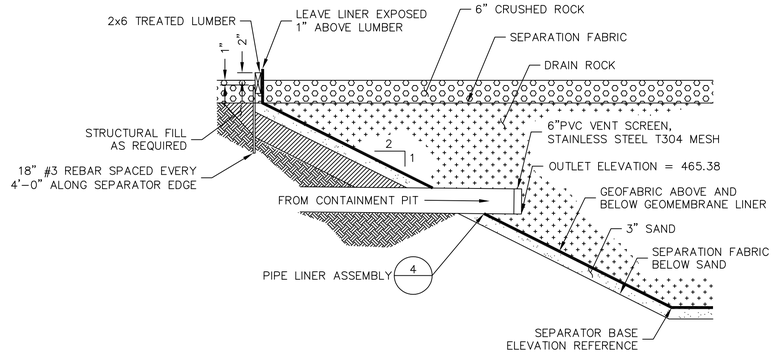
B CONTAINMENT BERM
N.T.S.



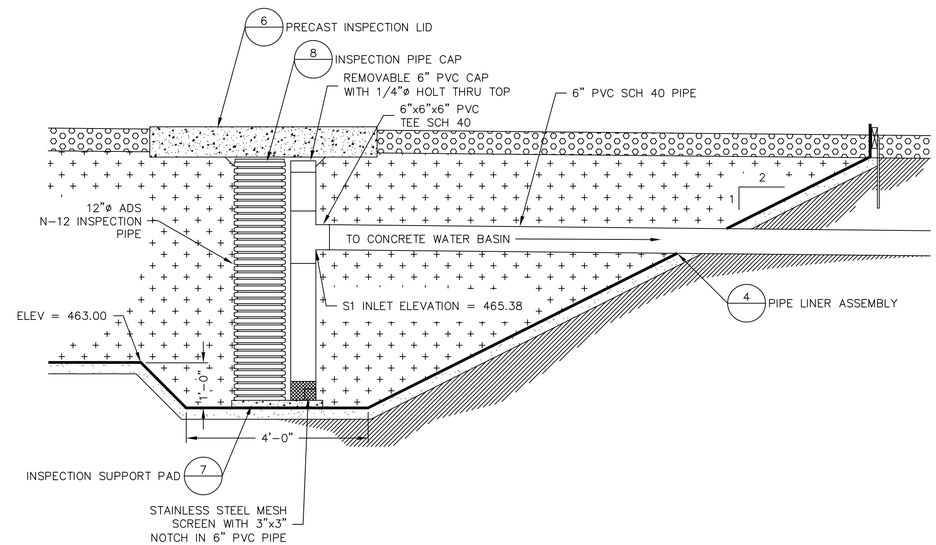
C CONTAINMENT SUMP
N.T.S.



D CONTAINMENT FOUNDATION SEAL
N.T.S.



E SEPARATOR BERM
N.T.S.



F SEPARATOR SUMP
N.T.S.

NO.	DRAWING NO.	REFERENCE DRAWING TITLE
2	GAT-011/6	DETAIL - FLAT BAR
4	GAT-011/6	DETAIL - PIPE LINER ASSEMBLY

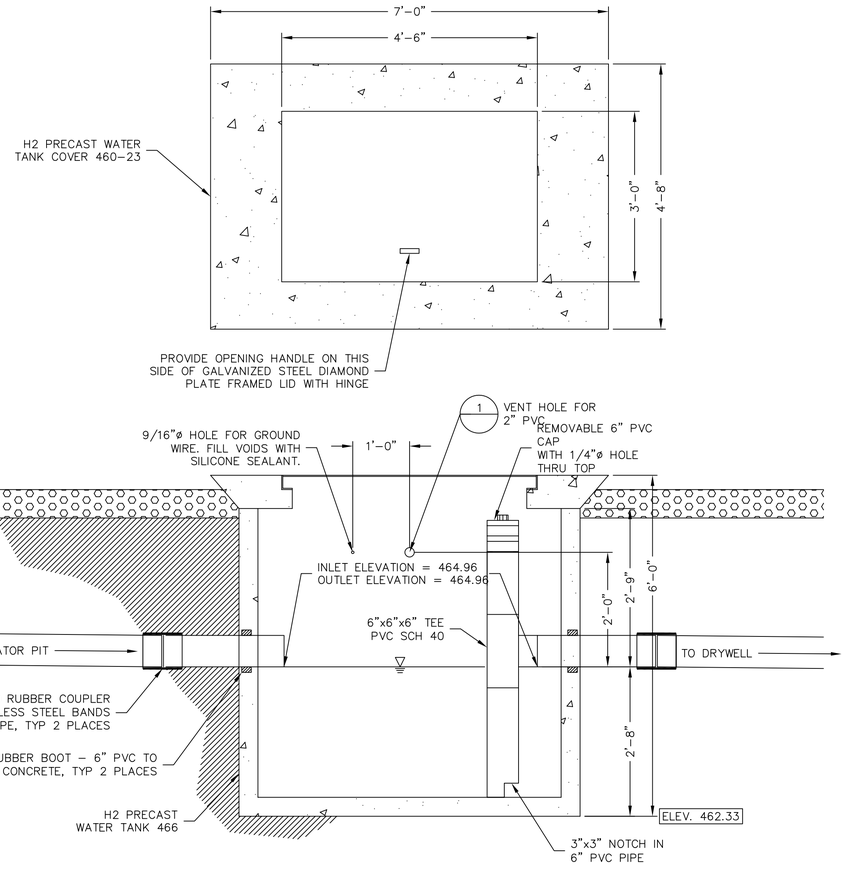
Electric Power Systems Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

GATEWAY SUBSTATION
OIL CONTAINMENT
DETAILS

ENERGY SERVICES Richland

DATE: 07/01/2020 | WO#: -
DRAWN: EPS | PROJ JT: 20-0068
ENGR: GDH | FILE NAME: GAT-011
SCALE: - | SHT 4 of 7



G CONCRETE WATER BASIN
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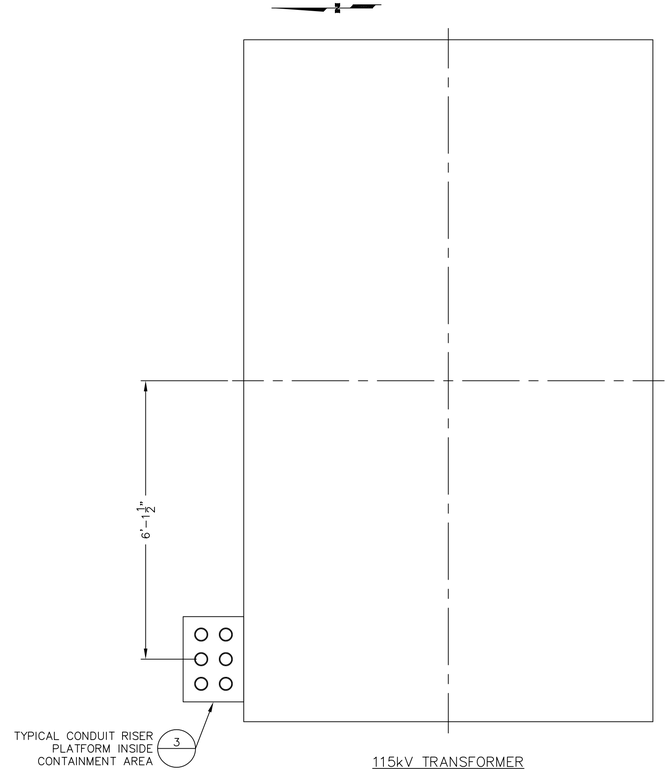
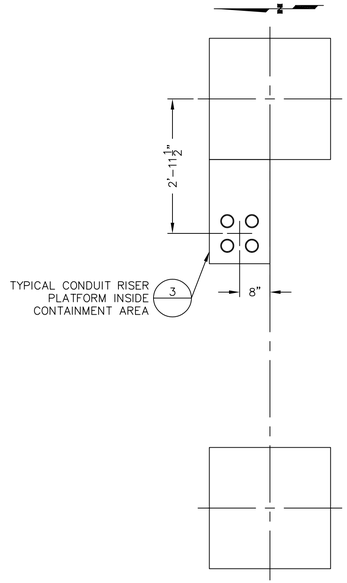
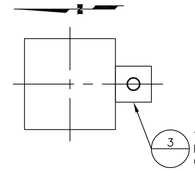


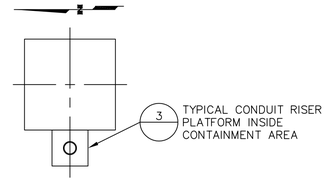
115kV TRANSFORMER



115kV CIRCUIT SWITCHER



12.5kV BUS SUPPORT



12.5kV SWITCH

I CONDUIT RISER PLATFORM LOCATIONS
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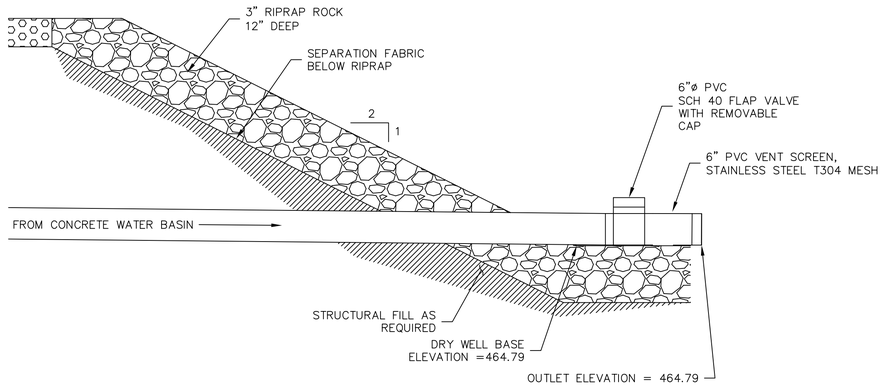


H DRY WELL
N.T.S.

NO.	DRAWING NO.	REFERENCE DRAWING TITLE
1	GAT-011/6	DETAIL - VENT PIPE
3	GAT-011/6	DETAIL - TYPICAL CONDUIT RISER PLATFORM

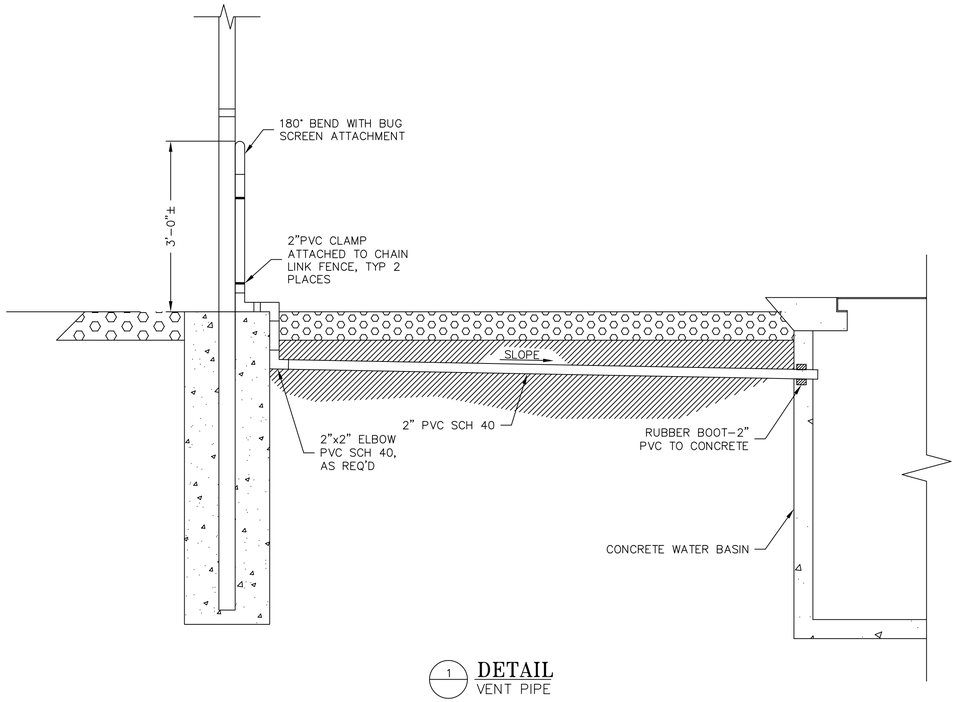
Electric Power Systems Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

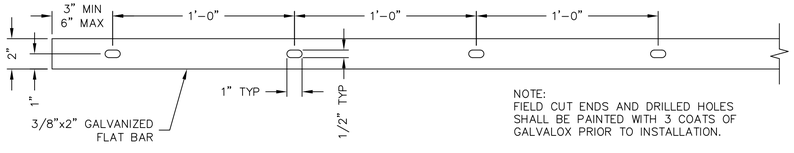
GATEWAY SUBSTATION
OIL CONTAINMENT
DETAILS

ENERGY SERVICES Richland

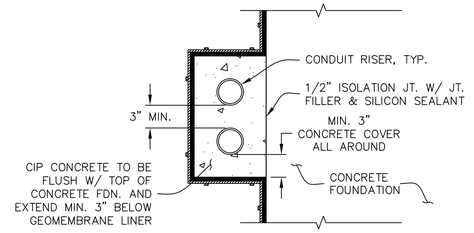
DATE: 07/01/2020	WO#: -
DRAWN: EPS	PROJ JT: 20-0068
ENG'R: GDH	FILE NAME: GAT-011
SCALE: - SHT 5 of 7	



1 DETAIL
VENT PIPE

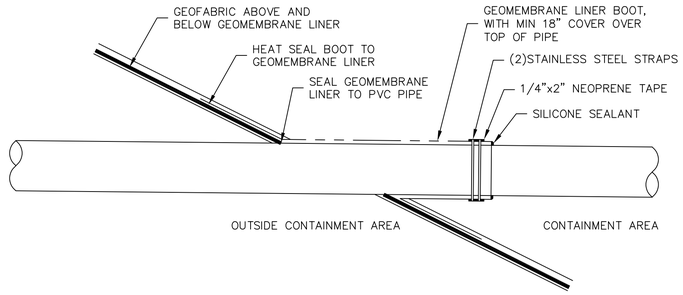


2 DETAIL
FLAT BAR

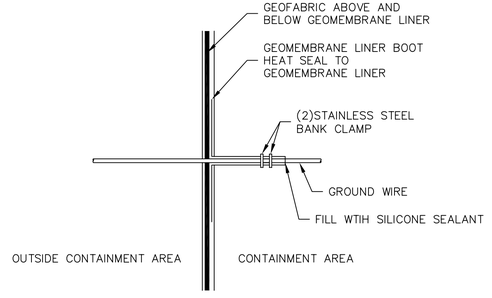


PLAN

3 DETAIL
TYPICAL CONDUIT RISER PLATFORM INSIDE CONTAINMENT AREA



4 DETAIL
PIPE LINER ASSEMBLY



5 DETAIL
GROUND WIRE LINER ASSEMBLY

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

Electric Power Systems, Inc. Consulting Engineers

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2				
3				
4	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

GATEWAY SUBSTATION
OIL CONTAINMENT
DETAILS

RENERGY SERVICES Richland

DATE: 07/01/2020 | WO#: -
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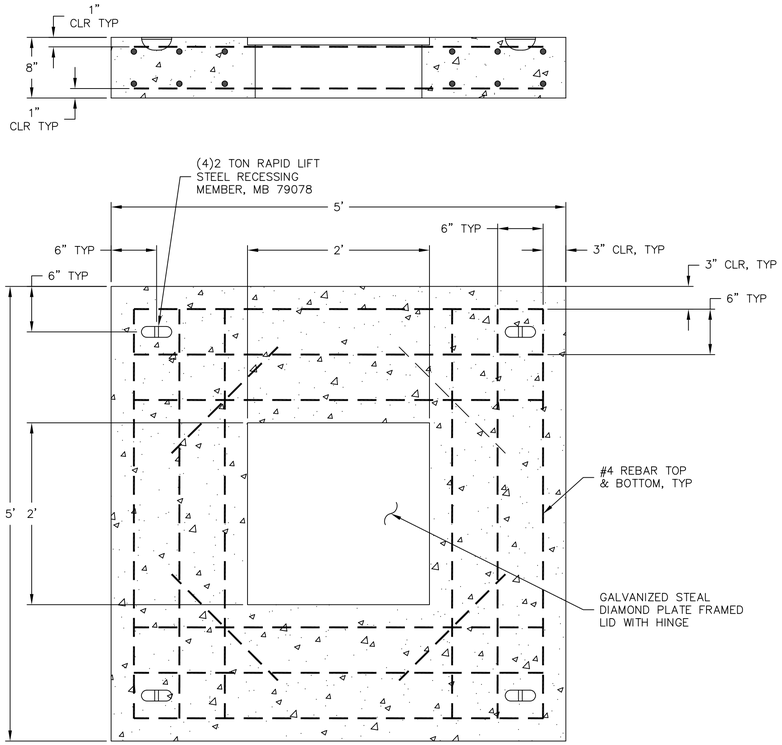
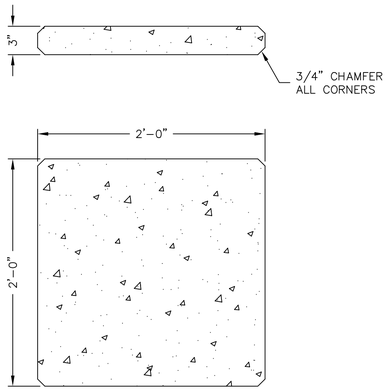
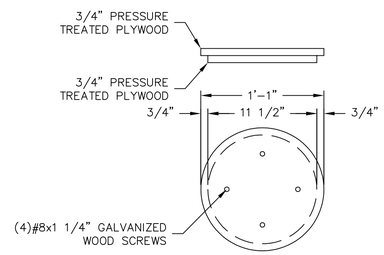
ENG'R: GDH | FILE NAME: GAT-011
SCALE: - | SHT 6 of 7



6 **DETAIL**
PRECAST INSPECTION LID



7 **DETAIL**
INSPECTION SUPPORT PAD



8 **DETAIL**
INSPECTION PIPE CAP

NO.	DRAWING NO.	REFERENCE DRAWING TITLE

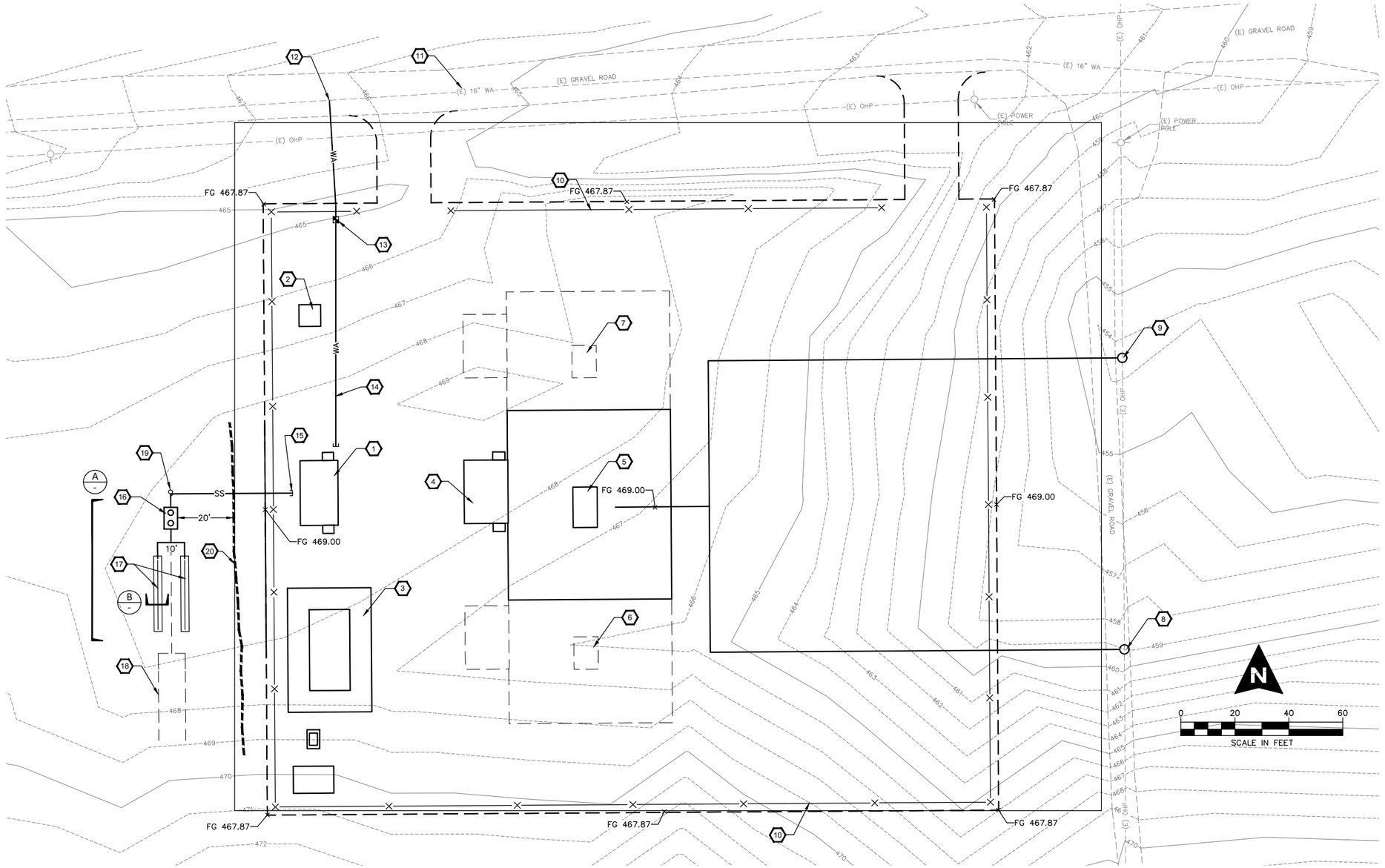
Electric Power Systems Consulting Engineers

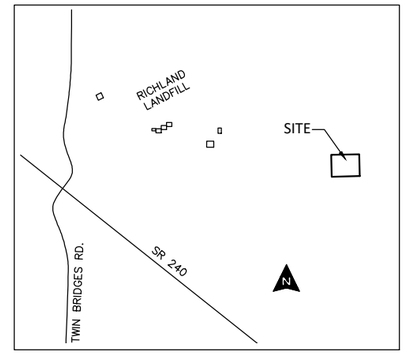
NO.	REVISIONS	DATE	W.O. #	ENGR.
1	ISSUED FOR CONSTRUCTION BID	03/29/21	-	GDH

GATEWAY SUBSTATION
OIL CONTAINMENT
DETAILS

Richmond ENERGY SERVICES

DATE: 07/01/2020		WO#: -
DRAWN: EPS		PROJ JT: 20-0068
ENGR: GDH		FILE NAME: GAT-011
SCALE: -	SHT 7 of 7	



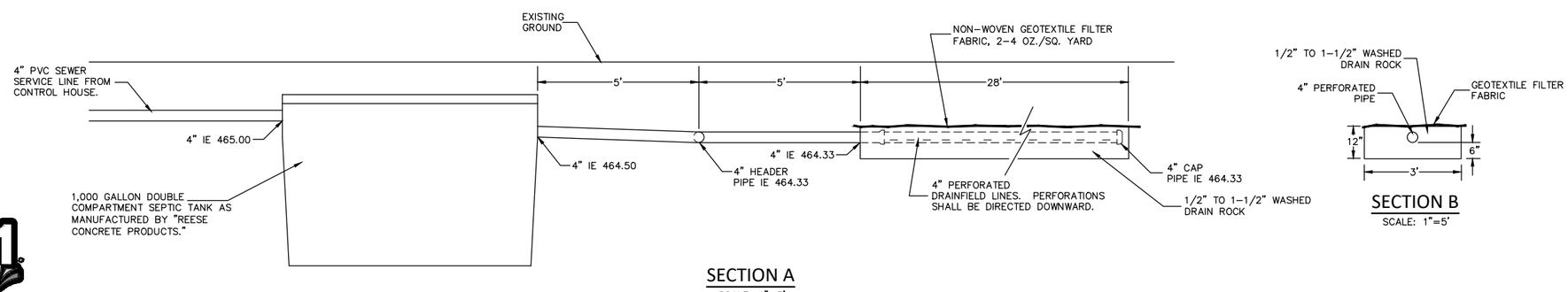


VICINITY MAP

CITY OF RICHLAND, WA
PARCEL#120081000001004
SITE LOCATED IN NE. $\frac{1}{4}$ OF THE NW. $\frac{1}{4}$ OF SECTION 20,
T. 10 N., R. 28 E., W.M.

KEYED CONSTRUCTION NOTES

1. NEW CONTROL HOUSE.
2. NEW COMMUNICATION TOWER.
3. NEW SEPARATOR PIT.
4. NEW SWITCHGEAR BUILDING.
5. NEW BANK #1.
6. FUTURE BANK #2.
7. FUTURE BANK #3.
8. NEW STRUCTURE 5702.
9. NEW STRUCTURE 5703.
10. NEW FENCING.
11. EXISTING 16" WA LOCATION NOT VERIFIED. CONTRACTOR SHALL DIG AND VERIFY.
12. NEW 2" WATER SERVICES MAINLINE CONNECTION PER CITY STD. W2.
13. NEW 2" WATER METER ASSEMBLY PER CITY STD. W4.
14. NEW WATER SERVICE LINE TO CONTROL HOUSE.
15. NEW 4" SEWER LINE TO SEPTIC TANK. STUB IE 466.00.
16. NEW SEWER SEPTIC TANK.
17. NEW SEWER SEPTIC DRAINFIELD.
18. RESERVE SEWER SEPTIC DRAINFIELD.
19. 4" CLEAN-OUT. 4" IE 465.10.
20. WEST LIMITS OF SITE GRADING.



SECTION A
SCALE: 1"=5'

SECTION B
SCALE: 1"=5'

811
Know what's below.
Call before you dig.
48 HOURS
NOTICE REQUIRED

SUBSTATION CIVIL WATER & SEWER SITE PLAN 7-28-20

REV. | DATE | REVISION COMMENTS | BY | APP

DRAWN BY: SWS
DESIGNED BY: SWS
APPROVED BY: ARR
FILE: 20-109.dwg

SPINK ENGINEERING
1045 Jadwin Ave., Suite E •Richland, WA • 509.946.1581 • www.spinkeng.com

Dryden & LaRue, Inc.

GATEWAY SUBSTATION
CITY OF RICHLAND ELECTRICAL SERVICES
RICHLAND WASHINGTON

SHEET 01 of 01
JOB# 20-109
DWG# XXX-XXX

SUBSTATION EARTHWORK

A. GENERAL

1. WORK INCLUDED: This section covers the work necessary for the earthwork, complete.

2. DEFINITIONS:

   a. Relative Compaction: “Relative compaction” is defined as the ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D 1557. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the ENGINEER.

   b. Optimum Moisture Content: “Optimum moisture content” shall be determined by the ASTM standard specified to determine the maximum dry density for relative compaction. Field moisture content shall be determined on the basis of the fraction passing the ¾-inch sieve.

   c. Prepared Ground Surface: The “prepared ground surface” is defined as the ground surface after clearing, grubbing, stripping, excavation, and scarification and/or compaction.

   d. Completed Course: “Completed course” is defined as a course or layer that is ready for the next layer or next phase of the work.

   e. Well-Graded: “Well-graded” as used in this section defines a mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters. Well-graded is used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

   f. Unclassified Excavation: “Unclassified excavation” shall mean that the nature of materials to be encountered has not been identified or described herein.

   g. Imported Material: “Imported materials” shall be materials obtained by the CONTRACTOR from sources off the site.

   h. Structural Fill: “Structural fill” shall be the fill materials as required.

   i. Earth Fill Material: “Earth fill Material” shall be the fill materials required to raise the existing grade in areas other than under structures.

   j. Standard Specifications: shall be the State of Washington, Department of Transportation Standard Specifications M41-10 most recent version, unless a specific year is referenced.

3. SUBMITTALS:

   a. Submittals shall be made in accordance with the requirements of this section.

   b. Submittals requested should be addressed to the Engineer.

   c. Submittals shall be submitted beginning no later than 10 days after Contract award, unless provided otherwise in the Specifications.

d. Submitted data shall be fully sufficient in detail for determination of compliance with the Contract Documents.

e. Review of acceptance of substitutions, schedules, shop drawings, lists of materials, and procedures submitted or requested by the CONTRACTOR shall not add to the Contract amount, and all additional costs, which may result there from, shall be solely the obligation of the CONTRACTOR.

f. The CITY is not precluded, by virtue of review or acceptance, from obtaining a credit for construction savings resulting from allowed concessions in the work or materials therefore.

g. The CITY and ENGINEER shall not be responsible to provide engineering or other services to protect the CONTRACTOR from additional costs required to obtain acceptance of submittals.

h. No equipment or material for which listings, drawings, or descriptive material is required shall be installed until the ENGINEER has on hand copies of such accepted lists and the appropriately stamped final shop drawings.

i. The review of submittals by the ENGINEER will be limited to general design requirements only, and shall in no way relieve the CONTRACTOR from responsibility for errors or omissions contained therein.

j. Submittals will be acted upon by the ENGINEER as promptly as possible, and returned to the CONTRACTOR no later than 3-5 working days after receipt. Delays caused by the need for re-submittals shall not constitute reason for an extension of Contract time.

k. Provide the following submittals:

I. Certification, test results, source, and samples for all imported materials.

II. Catalog and manufacturer's data sheets for compaction equipment.

III. Copies of permits obtained for excavation, blasting, etc., that are required by state and local governing authorities.

4. IMPORTED MATERIAL ACCEPTANCE: All imported materials specified in this section are subject to the following requirements:

a. All tests necessary for the CONTRACTOR to locate an acceptable source of imported material shall be made by the CONTRACTOR. Certification that the material conforms to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory shall be submitted to the ENGINEER for approval at least 10 days before the material is required for use. All material samples shall be furnished by the CONTRACTOR at the CONTRACTOR's sole expense. Samples shall be representative and be clearly marked to show the source of the material and the intended use on the project. Sampling of the material source shall be done by the CONTRACTOR in accordance with ASTM D 75. Notify the ENGINEER at least 24 hours prior to sampling. The ENGINEER may observe the sampling procedures. Tentative acceptance of the material source shall be based on an inspection of the source by the ENGINEER and/or the certified test results submitted by the CONTRACTOR to the ENGINEER, at the ENGINEER's discretion. Imported materials shall not be delivered to the site until the proposed source and materials tests have been tentatively accepted in writing by the ENGINEER. Final acceptance will be based on tests made on samples of materials taken from the completed and compacted course. The completed course is defined as course

or layer that is ready for the next layer or the next phase of construction. All testing for final acceptance shall be performed by the ENGINEER.

b. Gradation tests by the CONTRACTOR shall be made on samples taken at the place of production prior to shipment. Samples of the finished product for gradation testing shall be taken by the ENGINEER, if variation in gradation is occurring, or if the material appears to depart from the Specifications. Test results shall be forwarded to the ENGINEER within 48 hours after sampling.

c. If tests conducted by the CONTRACTOR or the ENGINEER indicate that the material does not meet Specification requirements, material placement will be terminated until corrective measures are taken. Material, which does not conform to the Specification requirements and is placed in the work shall be removed and replaced at the CONTRACTOR's sole expense. Sampling and testing performed by the CONTRACTOR for the CONTRACTORS own purposes shall be done at the CONTRACTOR's sole expense.

5. SHORING, SHEETING, BRACING, AND SLOPING: Install and maintain shoring, sheeting, bracing, and sloping necessary to support the sides of the excavation, to keep and to prevent any movement which may damage adjacent pavements, utilities, or structures, damage or delay the work, or endanger life and health. Install and maintain shoring, sheeting, bracing, and sloping as required by WISHA 49-17, WAC Chapter 296-155, OSHA and other applicable governmental regulations and agencies for the type of soil conditions encountered.

6. EXCAVATION SAFETY: The CONTRACTOR shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain excavation side slopes and prevent rock falls to ensure that persons working in or near the excavation are protected.

7. CODES, ORDINANCES, AND STATUTES: Contractors shall familiarize themselves with, and comply with, all applicable codes, ordinances, statutes, and bear sole responsibility for the penalties imposed for noncompliance.

8. STANDARD SPECIFICATIONS: Standard Specifications, when referenced in this section, shall mean State of Washington, Department of Transportation Standard Specifications M41-10. Parts of these Standard Specifications that are specifically referenced shall become a part of this section as though stated herein in full. In case of a discrepancy between the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

9. TOLERANCES: All material limits shall be constructed within as tolerance of 0.05 foot except where dimensions or grades are shown or specified as minimum. All grading shall be performed to maintain slopes and drainage as shown.

B. PRODUCTS

1. GENERAL: Provide all labor, materials, and equipment necessary to accomplish the work specified in this section.

2. UNCLASSIFIED EXCAVATION: Excavation is unclassified. Complete all excavation regardless of the type, nature, or condition of the materials encountered. Make own estimate of the kind and extent of the various materials to be excavated in order to accomplish the work.

3. EARTHFILL: The earthfill material shall be 5/8" minus crushed gravel placed in lifts not greater than 12 inches. Earthfill shall be a mixture of gravel, water and entrained air to assist placement of the earthfill. Earthfill shall be free from roots, organic matter, trash, debris, and other deleterious materials. Alternate fill material must be approved by Engineer.

4. STRUCTURAL FILL

   a. Gradation: ASTM D75 “Sampling Aggregates”, and ASTM C136 “Sieve Analysis”.

US Standard Sieve Sizes	Percentage Passing by Weight
3 inch	100
⅜ inch	56-100
#10	30-64
#40	9-34
#200	0-6

   b. Structural Fill shall be sand and gravel material that is well graded, and free of organics and frozen soils.

5. WATER FOR COMPACTION: Furnish as required.

6. MOISTURE CONTROL EQUIPMENT: Equipment for applying water shall be of a type and quality adequate for the work, shall not leak, and shall be equipped with a distributor bar or other approved device to assure uniform application. Equipment for mixing and drying out material shall consist of blades, discs, or other approved equipment.

7. EROSION PROTECTION: Course concrete aggregate conforming to the requirements of WSDOT Specification 9-03.1(4)c, “Concrete Aggregate AASHTO Grading No. 57.”

C. EXECUTION

1. CLEARING AND GRUBBING: Clear the site within the area of improvements. Remove the existing trees, brush, stumps, and waste material on the site. Grub out stumps and roots. Dispose of waste materials offsite in accordance with all federal, state, and local laws relating to such disposal. After completion of clearing and grubbing, get ENGINEER’s acceptance before commencing stripping.

2. STRIPPING: Prior to beginning any excavation, subgrade densification, or fill, strip the topsoil to a minimum depth of 4 inches and sufficient to remove all organic material and stockpile in the designated stockpile area. In general, topsoil shall be removed where structures are to be built, trenches dug, and roads, parking lots, walks, and similar improvements constructed within the areas presently covered with topsoil. Topsoil shall be stored clear of the construction area. Excavated materials may be placed or spread on the site as directed by the ENGINEER. Take reasonable care to prevent the topsoil from becoming mixed with subsoil. After stripping, the top 12” of the exposed subgrade beneath structural fill and foundation areas shall be proof-rolled to identify any soft areas. Soft subgrade soils shall be over excavated and replaced with dry, competent structural fill material.

3. GENERAL EXCAVATION: Perform all excavation of every description, regardless of the type, nature, or condition of material encountered, as specified, shown, or required to accomplish the construction.

4. STRUCTURAL EXCAVATION: Excavation is unclassified. Excavate for structures to the lines and grades shown or as required to accomplish the construction. Perform all excavation regardless of the type, nature, or condition of the material encountered. The method of excavation used is optional; however, no equipment shall be operated within 5 feet of existing structures or newly completed construction. Excavation that cannot be accomplished without endangering the present or new structures shall be done with hand tools.

5. LIMITS OF EXCAVATION: Excavation to the depths and widths, as shown. Allow for forms, working space, granular base, and finish topsoil as shown or required. Do not carry excavation for footings and slabs deeper than the elevation shown. Excavation carried below the grade lines shown or established by the ENGINEER shall be replaced with the same fill material as specified for the overlaying fill or backfill, and compacted as required for such overlying fill or backfill. Where the overlaying area is not to receive fill or backfill, replace the over excavated material and compact to a density not less than that of the underlying ground. Excavations under footings shall be filled with concrete of strength equal to that of the footing. Cuts below grade shall be corrected by similarly cutting adjoining areas and creating a smooth transition. Correct all over excavated areas at the CONTRACTOR's sole expense.

6. REMOVAL OF WATER: Provide and operate equipment adequate to keep all excavations and trenches free of water. Remove all water during periods when concrete is being deposited, when pipe is being laid, during the placing of backfill, and at such other times as required for efficient and safe execution of the work. Avoid settlement or damage to adjacent property. Dispose of water in a manner that will not damage adjacent property. When dewatering open excavations, dewater from outside the structural limits and from a point below the bottom of the excavation when possible. Design and operate dewatering system to prevent removal of fines from existing ground.

7. SUBGRADE DENSIFICATION: Prior to subgrade densification, grade site to provide uniform surface for the compaction equipment. Prior to foundation construction, densify the prepared ground surface with at least eight complete passes of the specified vibratory roller. The roller shall be operated at the slowest speed possible.

8. BACKFILL: Backfilling for earth fill and structure fill shall be a necessary part of, and incidental to, the structure excavation. The work of trenches, holes, or pits resulting from the removal of foundations and obstructions shall be backfilled by the Contractor. Material excavated by the work cannot be used for backfill unless directed otherwise by the Engineer.

    a. The Contractor shall fill areas left by the removal of structures and foundations. Prior to placing backfill into fill areas the Contractor shall compact the bottom of the fill areas as indicated in this section. The bottom of the fill areas shall be compacted to 95-percent of the maximum density as determined by the compaction control tests described in ASTM 1557 maximum laboratory dry density. Compact all materials by mechanical means. The Contractor shall use compacting equipment approved by the Engineer.

    b. Mechanical compaction of each lift is not required unless the in the Engineer's opinion based on reports from the testing laboratory, sub-grade or fills which have been placed are below the specified density. In no less than one week before delivery of gravel material the Contractor shall submit to the Engineer, for approval, tests results of the gravel material.

    c. Backfill around concrete structures only after the concrete has attained the specified 7-day compressive strength indicated in substation reinforced concrete specification. Remove all form materials and trash from the excavation before placing any backfill.

    d. Do not operate earth-moving equipment within 5 feet of walls of concrete structures for the purpose of depositing or compacting backfill material. Compact backfill adjacent to concrete walls with hand-operated tampers or similar equipment that will not damage the structure.

    e. Quality Control: The material shall have a compaction of at least 95 percent of modified proctor maximum dry density ASTM D-1557 or equivalent. Testing of soils compaction is to be done, as a minimum, 1) in the pit prior to placement of backfill, 2) at the top of each 12-inch lift of backfill, and 3) at ground line. Frequency and location of additional compaction testing shall be determined solely by the Engineer. All costs for the compaction testing shall be borne by the Owner. Any costs or time delays incurred by the Contractor for Owner provided compaction

testing shall be borne by the Contractor and considered incidental to the Project. The Contractor shall coordinate the site work with the Engineer to allow scheduling of the testing by the Engineer's independent testing laboratory.

9. GRANULAR BACKFILL AROUND STRUCTURES: Place hereinbefore specified GRANULAR FILL in maximum 6-inch lifts and compact each lift to not less than 95 percent of the ASTM 1557 maximum laboratory dry density.

10. FILLS NOT UNDER STRUCTURES OR FACILITIES: Place hereinbefore-specified EARTHFILL to the lines and grades shown. Place fill material in maximum 6-inch lifts and compact each lift to not less than 95 percent of the ASTM 1557 maximum laboratory dry density.

11. CONSTRUCTION OF EMBANKMENTS:

12. Use EARTHFILL as specified hereinbefore in paragraph EARTHFILL. Construct embankment to lines and cross sections shown. Deposit fill material in lifts not exceeding 6-inch depth across full width of embankment. Compact each lift to not less than 95 percent of the ASTM 1557 maximum laboratory dry density.

13. Compact full width of the embankment. Water fill material as necessary to produce specified compaction. If material is too wet for proper compaction, aerate by blading, disking, or other methods. Dress completed embankment to elevations and slopes shown.

14. ACCESS ROAD AND YARD AREA: For any area excavated outside the substation, with exception of the substation surface area extending 5 feet outside the fenced area as indicated on the Drawings, place a 6" depth of roadway gravel.

15. COMPACTION: Compact all materials by mechanical means. Flooding or jetting will not be permitted. If compaction tests indicate that compaction or moisture content is not as specified, material placement shall be terminated and corrective action shall be taken by the CONTRACTOR prior to continued placement.

16. MOISTURE CONTROL:

    a. During all compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift to fill. Maintain moisture content uniform throughout the lift. Insofar as practicable, add water to the material at the site of excavation. Supplement, if required, by sprinkling the fill. At the time of compaction, the water content of the material shall be at optimum moisture content, plus or minus 2 percentage points at a depth of 4 feet below any footing.

    b. Do not attempt to compact fill material that contains excessive moisture. Aerate material by blading, disking, harrowing, or other methods, to hasten the drying process.

17. DISPOSAL OF EXCESS EXCAVATION: Dispose of all excess excavated materials, not required for backfill or fills, outside of the area of work. Make arrangements for the disposal of the excavated material and bear all costs or retain any profit incidental to such disposal.

D. PAYMENT

1. LUMP SUM BASIS: When listed in the bid schedule substation earthwork shall be paid on a lump sum bid amount stated in the Proposal.

2. INCIDENTAL BASIS: When not listed in the bid schedule substation earthwork shall be considered incidental work.

END OF SUBSTATION EARTHWORK SECTION

Geotechnical Engineering Evaluation Report

Proposed City of Richland Gateway Substation
Richland, Washington

for
Electric Power Systems, Inc.

April 14, 2020

GeoEngineers
Earth Science + Technology

Geotechnical Engineering Evaluation Report

Proposed City of Richland Gateway Substation
Richland, Washington

for
Electric Power Systems, Inc.

April 14, 2020

GeoEngineers

523 East Second Avenue
Spokane, Washington 99202
509.363.3125

Geotechnical Engineering Evaluation Report

Proposed City of Richland Gateway Substation
Richland, Washington

File No. 2752-012-00

April 14, 2020

Prepared for:

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1.0 INTRODUCTION

This report presents the results of our geotechnical engineering evaluation for the City of Richland's (City's) proposed Gateway Substation (Substation) in Richland, Washington. The proposed Substation site is located about ½ mile east of Twin Bridges Road and about ½ mile north of State Route (SR) 240, approximately as shown in the Vicinity Map, Figure 1.

Based on our prior experience with substation projects, we anticipate the following major equipment list and corresponding foundation load estimates could be applicable to the proposed substation:

- Transmission line dead-end structures – vertical dead loads of 10 kips, lateral shear loads of 15 kips and overturning moments of 800 kip-feet.
- Transformer pad – vertical dead load of 128 kips.
- Switchgear building – vertical dead load of 46 kips.

The relative locations of proposed structures are presented in the Site Plan, Figure 2.

2.0 SCOPE OF SERVICES

The scope of services for this geotechnical evaluation was presented in our proposed Gateway Substation Geotechnical Scope sent on January 13, 2020. Written authorization of our services was provided under Electric Power System's (EPS's) Subcontract Agreement for Services (PO No. 20-0058-001), executed March 6, 2020.

The purpose of our geotechnical engineering evaluation was to provide recommendations for site preparation and fill placement, shallow and deep foundation design and construction, and stormwater management based on subsurface exploration, laboratory testing and engineering analyses. Our scope of services included:

- Reviewing in-house, publicly available maps, coordinating utility locates, and completing four borings.
- Geotechnical laboratory testing.
- Recommendations for site preparation and earthwork, foundations and seismic design for the proposed Substation.

3.0 LITERATURE REVIEW

3.1. Geologic Review

The Washington Department of Geology and Earth Resources, "Geologic Map of the Richland 1:100,000 Quadrangle, Washington" (Reidel and Fecht 1994) maps the site as "stabilized dune sand deposits (Holocene), Qds." Dune sand is deposited by wind action and typically consists of uniformly graded fine sand particles. Stabilized dune sand have enough vegetative growth on the ground surface that continued sand transport by wind is negligible.

3.2. Water Well Reports Review

We reviewed select water well reports on file with the Washington State Department of Ecology (Ecology) website for water supply and resource protection wells that are, or were, located in the vicinity of the site. The water well reports typically were completed by well drilling companies and provide limited subsurface information, such as general soil, rock and groundwater conditions. The reports do not provide important geotechnical information such as conventional soil descriptions, relative density or material properties. However, the reports sometimes provide useful supplemental information to augment site-specific geotechnical subsurface investigations and geologic descriptions. Subsurface conditions reported on several well logs completed within about a quarter-mile of the project vicinity include:

- Groundwater at depths of about 100 to 105 feet below ground surface (bgs).
- Sand overlying gravel.
- Basalt rock at a depth of 171 feet bgs.

However, the depths cited above could not be tied to a regional elevation for comparison to subsurface soil, rock and groundwater conditions at the site.

4.0 SITE CONDITIONS

4.1. General

Soil and groundwater conditions at the proposed Substation site were explored on March 9, 2020, by drilling four borings (B-1 through B-4), to depths in the range of approximately 20 to 40 feet bgs. The approximate location of the borings relative to proposed Substation structures is shown on Figure 2.

Representative soil samples from the borings were returned to our laboratory for evaluation and testing. Detailed descriptions of our site exploration and in-house laboratory testing programs for the site along with exploration logs and laboratory test results are presented in Appendix A.

4.2. Surface Conditions

The proposed Substation site is located in northern Richland, Washington approximately ½ mile east of the intersection of Twin Bridges Road with Highway 240. The site is bounded by the Richland landfill to the north and undeveloped land to the south, west and east. The majority of the site is generally level with gently rolling terrain features but the eastern quarter of the sites slopes gently downward to the east. Vegetation at the site is sparse and consists of grass, sagebrush and tumbleweeds. Photographs of the proposed Substation site at the time of our drilling activities are presented below.

Site Photo 1: Northwest portion of site looking east (near B-1)

Site Photo 2: Southwest portion of site looking east (near B-3)

4.3. Subsurface Conditions

4.3.1. Soil Conditions

From the ground surface in each boring, we encountered approximately 8 to 13 inches of topsoil. For the purposes of this report, we generally define topsoil as a fine-grained soil with an appreciable amount (generally more than about 15 percent by volume) of organic matter based on visual examination. Beneath the topsoil, subsurface conditions were somewhat consistent with the above-referenced geologic map description.

Underlying the topsoil in our borings, we encountered loose to very dense sand with varying but generally low amounts of silt and occasional zones with gravel (Group Classification – SP-SM, SP). Percent fines (silt- and clay-sized particles passing the U.S. No. 200 sieve) determinations completed on six representative samples indicate the sand has a fines content ranging from about 2 to 10 percent. The dry density of three representative samples range from about 96 to 106 pounds per cubic foot (pcf). We characterize the sand unit as having moderate strength, moderate to high permeability and low to moderate susceptibility to changes in moisture content.

4.3.2. Groundwater Conditions

We did not encountered groundwater in our borings at the time of drilling. Based on the local information available regarding the depth to the groundwater table and the high permeability of the sand unit, we do not anticipate construction activities will encounter perched groundwater.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1. General

Based on the results of our site exploration, laboratory testing and engineering analysis, we believe the proposed Gateway Substation may be designed and constructed generally as envisioned. A summary of soil conditions at the site is provided above and associated design and construction issues are presented below.

- As discussed previously, portions of the surficial sand unit containing more than 5 percent fines by dry weight are moderately moisture sensitive and could be difficult to reuse as structural fill depending on

the time of year and in-place moisture content of this unit at the time of construction. Specific recommendations for reuse of on-site soil are contained in the following sections of this report.

- The indigenous sand units are suitable for support of shallow spread footings, mat foundations and deep foundations provided the recommendations in this report are incorporated into the design and construction.

The following sections present specific geotechnical engineering recommendations for designing and constructing the proposed Gateway Substation.

5.2. Seismic Design Considerations

5.2.1. Recommended Seismic Design Parameters

We used map-based methods to develop seismic design parameters, in accordance with ASCE 7-10. The recommended seismic design parameters are presented in Table 1.

TABLE 1. RECOMMENDED SEISMIC DESIGN PARAMETERS

Seismic Design Parameters	
Site Class	D
Mapped Spectral Response Acceleration at Short Period (S_S)	0.407g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.158g
Design Peak Ground Acceleration (PGA)	**0.25g**
Design Spectral Acceleration at 0.2 second period (S_{DS})	**0.40g**
Design Spectral Acceleration at 1.0 second period (S_{D1})	**0.23g**

5.2.2. Liquefaction Potential

Liquefaction is a phenomenon that occurs in loose to medium dense, saturated granular soils during an earthquake that causes the soils to lose strength during the earthquake and can also lead to post-liquefaction settlement. Based on the absence of groundwater in our borings at the time of drilling, and our general understand of regional groundwater conditions, we consider the risk of liquefaction at the site during an earthquake to be negligible.

5.2.3. Lateral Spreading

Lateral spreading related to seismic activity typically involves lateral displacement of large, surficial blocks of non-liquefied soil when a layer of underlying soil loses strength during seismic shaking. Lateral spreading usually develops in areas where sloping ground or large grade changes (including retaining walls) are present. Based on our understanding of the subsurface conditions and the relatively level site topography it is our opinion that the risk of lateral spreading is low.

5.2.4. Surface Rupture Potential

According to the Washington State Department of Natural Resources Interactive Natural Hazards Map (accessed April 2, 2020), the closest mapped fault trace is the Rattlesnake Hills fault zone, about 2 miles southwest of the site. Based on our review, the most recent movement in this fault zone occurred between 70 and 800 thousand years ago. Based on the distance from the nearest recorded fault, and because

faults adjacent to the site are not known to be active within the Quaternary period, it is our opinion that the risk of surface rupture during the design earthquake event is low.

5.3. Site Preparation and Earthwork

5.3.1. Initial Site Preparation

We anticipate initial site preparation and earthwork operations will include clearing, stripping and grubbing, site grading and excavation for utilities and foundations. We recommend the proposed site be cleared of surface and subsurface organic matter, and roots greater than ½ inch in diameter be thoroughly grubbed for a margin of at least 3 feet around the areas of improvement. Based on our explorations, we estimate the required stripping depth for vegetation and organic matter should be minor, generally ranging from about 8 to 13 inches. Localized areas might require deeper stripping to remove brush root systems or organic matter buried by wind-blown soil. The stripped material and otherwise unsuitable soil may be placed in non-settlement-sensitive areas (e.g., areas to be landscaped, if approved by the architect) or properly disposed of off-site.

We anticipate grading will consist of a minimal amount cutting and/or filling to level the site for construction of equipment pads and structures. We estimate such cutting and/or filling will generally be on the order of 5 feet or less. In our opinion, the near-surface sand encountered within the upper approximate 8 feet of our borings may be excavated with conventional excavation equipment, such as excavators, dozers or scrapers.

The surface and near-surface sand unit encountered in our exploration and anticipated across the site includes zones that contain a moderate percentage of fines which are moisture sensitive. Based on our experience with similar soils, the optimum moisture content of the sand units likely range between about 8 and 14 percent. Laboratory moisture content testing of a representative sample of the shallow portions of the sand unit containing more than 5 percent fines (Group Classification – SP-SM) indicate an in-place moisture content at the time of drilling of about 5 percent and should be suitable for moisture conditioning.

When the moisture content of this soil is more than about 4 percent above or below the optimum moisture content, it becomes difficult to handle and compact. Accordingly, depending on the time of earthwork activities relative to weather conditions, the on-site soil could be suitable for reuse provided the contractor is able to adjust the moisture content before the soil is compacted. During dry weather, the sand should: (1) be less susceptible to disturbance; (2) provide better support for construction equipment; and (3) be more amenable to compaction. During on-going wet weather, operation of equipment on portions of the sand soil will be difficult and the required compaction criteria will be difficult or impossible to achieve.

The wet weather season generally begins in November and continues through May in eastern Washington; however, periods of wet weather may occur during any month of the year. If wet weather earthwork is unavoidable, we recommend that the following steps be taken should the near-surface soil conditions begin to deteriorate:

- The ground surface in and around the work area should be sloped so that surface water is directed away from excavations and graded so that areas of ponded water do not develop. Measures should be taken by the contractor to prevent surface water from collecting in excavations and trenches. Measures also should be implemented to remove surface water from the work area.

- Earthwork activities should not take place during periods of heavy precipitation or during freezing conditions.
- Slopes with exposed soil should be covered with plastic sheeting.
- The contractor should take necessary measures to prevent on-site soil and soil to be used as fill from becoming wet or unstable. These measures may include the use of plastic sheeting, sumps with pumps, and grading. The site soil should not be left uncompacted and exposed to moisture. Sealing the surficial soil by rolling with a smooth-drum roller before periods of precipitation should reduce the extent to which the soil becomes wet or unstable.
- Fill placement earthwork activities should not occur on frozen soil.
- Construction traffic should be restricted to specific areas of the site, preferably areas that are surfaced with working pad materials not susceptible to disturbance.
- Construction activities should be scheduled so that the length of time that soil is exposed to moisture during wet weather is reduced to the extent practical.

5.3.2. Excavation Support

Temporary cut slopes likely will be necessary during utility installation and foundation construction. In our opinion, excavations into the near-surface soil for utility trenches and foundations are slightly to moderately susceptible to sloughing and caving.

Excavations deeper than 4 feet should be shored or sloped at stable inclinations if workers are required to enter such excavations. Shoring for utility excavations must conform to provisions of Title 296 Washington Administrative Code (WAC), Part N, "Excavation, Trenching and Shoring." In our opinion, the natural sand classifies as Soil Types C as described in the WAC 296-155 Part N. Temporary slopes in Type C soil may be inclined at 1.5H:1V (horizontal to vertical) or flatter. This recommendation is based on the assumption that all surface loads are kept a minimum distance of at least half the depth of the cut away from the top of the slope. Flatter slopes will be necessary if surface loads are imposed above the cuts a distance equal to or less than one half the depth of the cut.

Regardless of the soil type encountered in excavations, shoring, trench boxes or sloped sidewalls will be required under Washington Industrial Safety and Health Act (WISHA). While this report describes certain approaches to excavation, the contract documents should specify that the contractor is responsible for selecting excavation methods, monitoring the excavations for safety, reducing temporary slope inclinations to improve stability and providing shoring, as required, to protect personnel.

5.4. Subgrade Preparation and Evaluation

After initial site preparation is complete and before placement of structural fill, soil exposed at working subgrade should be compacted to a firm condition and evaluated before placement of additional structural fill, if necessary to raise grade. We recommend the subgrade be evaluated by proof-rolling with large construction equipment during dry weather. Proof-rolling consists of two to three passes of heavy construction equipment, such as a 10-ton or larger vibratory roller, or a dump truck that is fully loaded, to identify soft, loose or pumping areas within the working subgrade. Probing should be used to evaluate the subgrade during periods of wet weather or if access is not feasible for heavy construction equipment.

The most appropriate method for evaluating soil compaction should be determined by the geotechnical engineer at the time the site work is performed. Soil which cannot be properly compacted should be excavated to firm bearing or a depth of 2 feet, whichever is less, and replaced with structural fill compacted as recommended in the following section. Additional structural fill may be placed directly on proof-compacted soil as recommended in the following sections of this report.

5.5. Structural Fill

5.5.1. General

Materials used to support equipment pads and foundations and to raise site grade are classified as structural fill for the purposes of this report. Structural fill, whether on-site or imported, should be free of debris, organic material, frozen soil or particles greater than 4 inches in dimension. Structural fill material quality varies depending upon its use as described below and in the following sections.

5.5.2. General Site Fill

Imported granular fill material used as general site fill in the substation area must be free of debris and organic contaminants. In addition, imported granular fill should consist of hard, durable crushed or angular pit or quarry rock, crushed rock, gravel and sand, or sand having a maximum particle size of 3 inches. In our opinion, material that meets these criteria includes:

- Washington State Department of Transportation (WSDOT), Standard Specifications for Road, Bridge and Municipal Construction (Standard Specifications 2018) Specification 9-03.14(2) 'Select Borrow' if earthwork is conducted during the dry season and provided the percent passing the U.S. No. 200 sieve is less 12 percent.
- WSDOT Specification 9-03.14(1) 'Gravel Borrow' if earthwork is conducted during the wet season and with the additional criteria that the percent passing the U.S. No. 200 sieve be limited to 5 percent.

The material should be placed and compacted as recommended in the "Fill Placement and Compaction" section of this report.

5.5.3. Substation Granular Fill

Substation Granular Fill may be required to meet the electrical grounding requirements in the substation area. Where specified, Substation Granular Fill should consist of hard, durable crushed or angular pit or quarry rock, crushed rock, or crushed gravel and sand, meeting the specification provided below. In addition, the gravel sized particles should have a minimum of two fracture faces. The maximum particle size should be limited to 1¼ inches within 6 inches of finish subgrade elevation. The material should be placed and compacted as recommended in the "Fill Placement and Compaction" section of this report.

TABLE 2. GRADATION SPECIFICATION FOR IMPORTED SUBSTATION GRANULAR FILL

Sieve Size	Percent Passing by Weight
4 inches	100
¾ inch	40-90*
No. 4	25-65

Sieve Size	Percent Passing by Weight
No. 40	8-35
No. 200	5-15*

Note:

*If over 8 percent is passing the No. 200 sieve, then the percent passing the ¾" sieve must be 75 percent maximum. The maximum particle size should be limited to 1¼ inches within 6 inches of finish subgrade elevation

5.5.4. Imported Aggregate Base

Aggregate Base should be used as a fine-grading material immediately under foundations. Aggregate Base should consist of imported clean, durable, crushed angular rock. Such rock should be well-graded, contain no roots, organic matter, or other deleterious materials, have a maximum particle size of 1¼ inches, and less than 5 percent passing the U.S. No. 200 sieve. An example of an approved Aggregate Base would include the WSDOT Specification 9-03.9 (Aggregates for Ballast and Crushed Surfacing). Alternatively, WSDOT Specification 9-03.14 (Borrow) is suitable for use as select granular fill, provided the fines content is less than 5 percent (based on the minus ¾-inch fraction) and the maximum particle size is 6 inches.

5.5.5. On-Site Soil

In our opinion, the sand may be reused as fill for general site grading and as trench backfill provided the contractor is able to maintain the moisture content in the soil to within about 4 percent of optimum and compact the soil to the specified minimum density. Portions of the on-site sand containing more than 5 percent fines by dry weight will be difficult to compact during wet weather or if the moisture content of the soil is less than or exceeds optimum by more than about 4 percent. Therefore, we recommend earthwork activities, to the extent possible, be performed during the drier months of the year or a construction contingency be established to import structural fill if on-site soil cannot be properly moisture-conditioned and compacted.

5.5.6. Fill Placement and Compaction Criteria

We recommend that structural fill be mechanically compacted to a firm condition. Structural fill should be placed in loose lifts not exceeding 10 inches in thickness. Each lift should be conditioned to the proper moisture content and compacted to the specified density before placing subsequent lifts. We recommend that structural fill be compacted to at least 95 percent of the maximum dry density (MDD) estimated in accordance with ASTM International (ASTM) Standard Practices Test Method D 1557 laboratory test method.

Imported gravel soil with more than about 20 percent retained on the ¾-inch sieve (e.g. – Substation Granular Fill) will be difficult, if not impossible, to test with standard density gauge equipment. Depending on the gradation of the fill material, it might be necessary to establish a procedural compaction specification instead of using a laboratory compaction standard. For example, we might recommend the compaction operation consist of multiple passes each in the north-south and east-west directions over all areas of each lift using self-propelled vibratory compaction equipment having an operating weight greater than 20,000 pounds. However, actual procedural compaction specifications should be determined at the time of fill placement by the geotechnical engineer of record. For this reason, we recommend that a representative from our firm be present during proof-rolling and/or probing of the exposed subgrade and placement of structural fill. Our representative will evaluate the adequacy of the subgrade soil and identify

areas needing further work, perform in-place moisture-density tests in the fill to evaluate if the work is being done in accordance with the compaction specifications, and advise on any modifications to procedure which may be appropriate for the prevailing conditions.

5.6. Shallow Foundation Support

5.6.1. Foundation Soil Preparation

Foundation bearing surfaces should be thoroughly compacted to a uniformly firm and unyielding condition following completion of stripping and before placing structural fill or foundation elements. The exposed subgrade soil should be evaluated by a GeoEngineers representative using either probing or proof-rolling methods. If soft or otherwise unsuitable areas are revealed that cannot be compacted to a stable and uniformly firm condition, we recommend that: (1) the subgrade soils be scarified (e.g., with a ripper or farmer's disc), aerated or otherwise moisture conditioned and recompacted; or (2) the unsuitable soils be removed to firm bearing or a maximum of 2 feet, and replaced with compacted structural fill, as needed.

We recommend that foundation bearing surface preparation, foundation excavations and structural fill placement be observed by a GeoEngineers representative to verify the procedures comply with the intent of our recommendations and the project plans and specifications.

5.6.2. Allowable Bearing Pressure

Bearing capacity is a function of several parameters, including the soil properties (density and shear strength) and footing dimensions (embedment depth and size). To assist the structural engineer to optimize foundation design, we have provided allowable bearing capacities for a range of footing widths for both continuous (strip) and isolated (square) footings. The bearing capacities provided in Table 3 assume foundations will be supported on native sand soil prepared as recommended.

TABLE 3. ALLOWABLE BEARING PRESSURES

Footing Width (feet)	Allowable Bearing Capacity (psf)	
	Square Footing	Strip Footing
1.5	N/A	3,000
2	3,000	2,500
4	4,500	1,750
6	4,500	1,500
8	3,000	N/A
12	2,000	N/A
>14	1,500	N/A

Note:
psf = pounds per square foot

Allowable bearing capacities for footing sizes between those listed can be determined by interpolating between two listed values. These recommended allowable bearing capacities are based on a 2-foot minimum embedment below proposed site grade and minimum foundation widths of 2 feet and 1½ feet for spread and continuous footings, respectively. The allowable bearing capacity may be increased by

one-third to account for short-term loads such as from wind or seismic conditions in accordance with Section 1605.3.2 of the International Building Code.

Mat foundations on the existing site soils (prepared as recommended) may be designed using an allowable soil bearing pressure of 1,500 psf.

5.6.3. Settlement

We estimate elastic settlement of spread footings and mat foundations resulting from long-term static loads should be 1 inch or less, provided they are designed and constructed in accordance with these recommendations. We estimate differential settlements of ½ inch or less between comparably loaded isolated footings or along 20 feet of continuous footing. If loose/soft or organic soil is present below footings or if foundation bearing surfaces are disturbed during construction settlements could be larger than estimated. Settlement should occur as load is applied to the foundations.

5.6.4. Modulus of Subgrade Reaction

A coefficient of subgrade reaction of 175 pounds per cubic inch (pci) may be used for structural design of mat foundations, provided the subgrade has been prepared as recommended and consists of compacted native soil or structural fill extending to such soil. This value is for a 1-foot by 1-foot square area. The coefficient of subgrade reaction for a foundation varies based on its minimum width according to the following equation:

$$k_s = k_{s1}[(B+1)/2B]^2$$

Where k_s is the coefficient of subgrade reaction, k_{s1} is the coefficient of subgrade reaction for a 1-foot by 1-foot area, and 'B' is the minimum width or lateral dimension of the mat. For mats designed and constructed as recommended, we estimate settlements of less than 1 inch resulting from long-term static loads. We estimate that differential settlement of mat foundations will be ½ inch or less over a span of 20 feet.

5.6.5. Lateral Resistance

The soil pressure available to resist lateral foundation loads is a function of the frictional resistance against the foundation base and the passive resistance which can develop on the face of below-grade elements of the structure as those elements move horizontally into the soil. For foundations bearing on structural fill consisting of compacted granular fill or native sand, an allowable lateral resistance may be computed using the parameters provided in Table 4.

TABLE 4. LATERAL EARTH PRESSURE COEFFICIENTS AND SOIL PARAMETERS

Parameter	Value
Backfill Unit Weight (γ)	125 pcf – Imported Structural Fill (Granular) 110 pcf –Native Sand
Backfill Soil Friction Angle (phi)	36° – Imported Structural Fill (Granular) 33° – Native Sand
Bearing Soil Friction Angle (phi)	33° – Native Sand

Parameter	Value
Passive Earth Pressure Coefficient (K_p) – Unfactored	3.85 – Imported Structural Fill (Granular) 3.40 – Native Sand
Coefficient of Sliding - Unfactored	0.35

These values are applicable to shallow spread footings backfilled with structural fill that extends on all sides of the foundation elements a distance equal to two times the height of that element. We recommend a factor of safety of at least 1.5 be applied to the passive soil resistance and coefficient of sliding.

5.6.6. Uplift Forces

Uplift forces on the structure will be resisted by the weight of the foundation concrete and the compacted backfill placed above it. We recommend the backfill unit weights provided in Table 4 be used to estimate uplift resistance.

5.7. Drilled Shaft Foundations

Drilled shaft foundations may be used to support the proposed dead-end structures. The vertical (downward and uplift) capacity of a drilled shaft is developed from a combination of side friction resistance and end bearing. The lateral and overturning capacity is a function of the diameter, length and flexural stiffness of the shaft, soil conditions and depth to fixity. The vertical, lateral and overturning capacities should be evaluated to determine which loads will govern the actual depth required to support the proposed loads.

5.7.1. Axial Capacities

Axial resistance of drilled shafts should be evaluated by the structural engineer for both upward and downward foundation loads. Uplift foundation loads can be resisted by side friction along the shaft perimeter. Downward foundation loads can be resisted by both side friction along the shaft perimeter and by end bearing across the shaft tip diameter.

We calculated side friction and end bearing values using the results of our subsurface exploration and laboratory testing programs, and the American Association of State and Highway Transportation Officials (AASHTO) design method for drilled shafts. We recommend ultimate (unfactored) side friction and end bearing be calculated using the parameters presented in Table 5. Ultimate side resistance within each soil unit should be calculated by multiplying the unit side friction in Table 5 by the shaft perimeter and the shaft length within the soil unit. End bearing should be calculated by multiplying the unit tip resistance provided in Table 5 by the shaft tip area.

Estimated capacity considering 0.5 and 1 inch of settlement for a 4-foot diameter is presented in Table 6.

TABLE 5. DRILLED, PERMANENTLY UNCASED SHAFT ULTIMATE AXIAL CAPACITIES

Soil Unit	Ultimate Capacity	
	Unit Side Friction (psf)	Unit End Bearing (ksf)[1]
Sand (0 to 20 feet bgs)	500	10
Sand (>20 feet bgs)	1,700	50

Note:
[1]Based on 4-foot-diameter

TABLE 6. 4-FOOT-DIAMETER DRILLED, PERMANENTLY UNCASED SHAFT SETTLEMENT CAPACITIES

Soil Unit	Capacity for 0.5" of Settlement*		Capacity for 1" of Settlement*	
	Unit Side Friction (psf)	Unit End Bearing (ksf)**	Unit Side Friction (psf)	Unit End Bearing (ksf)**
Sand (0 to 20 feet bgs)	450	3	400	6
Sand (>20 feet bgs)	1,800	16	1,700	32

Notes:

* Inadequate shaft bottom cleanout can contribute to settlements in excess of those predicted

**Drilled shaft tip settlement/capacity relationships depend are affected by shaft diameter

ASD METHODOLOGY

The ultimate capacities calculated above may be used to estimate the allowable capacity of the drilled shafts using Allowable Stress Design (ASD) methodology. We recommend the allowable axial capacity of drilled shafts be calculated by applying factors of safety of 3, 2.5 and 2 to ultimate end bearing, side friction and uplift, respectively. The allowable capacity also may exclude the weight of the shaft or any fill above the top of the shaft. The allowable capacity may be increased by one-third for short-term loads, such as those induced by wind or seismic forces.

5.7.2. Lateral Pile Resistance

For this site, we recommend deep foundation lateral and overturning resistance be evaluated using the soil parameters in Table 7.

TABLE 7. LPILE SOIL PARAMETERS

Soil Unit	Depth to Bottom of Soil Unit (feet)	LPILE Soil Type	Effective Unit Weight (pcf)	Friction Angle (phi)	Soil Modulus (k) (pci)
Sand (0 to 15 feet bgs)	15	Sand (Reese)	100	33	50
Sand (>15 feet bgs)	40	Sand (Reese)	110	36	250

Note:

pci = pounds per cubic inch

5.7.3. Installation Considerations

GeoEngineers should be present to observe drilled shaft construction to confirm recommendations presented in this report remain applicable and that foundation elements are constructed in a way such that conform to standards of construction practice.

We did not encounter groundwater in our borings. However, because of the granular nature of the sand soil at the site, sloughing and caving of excavation sidewalls is expected for uncased and un-shored excavations. For this reason, we recommend drilled shafts, be designed to include temporary or permanent casing.

We recommend that a GeoEngineers representative be present on site during shaft drilling. Our representative can confirm stratigraphy as well as check shaft bottom conditions before concrete and

reinforcement steel placement. Inadequate bottom cleanout can result in shaft settlements greater than predicted above.

6.0 LIMITATIONS

We have prepared this report for Electric Power Systems, Inc. for the proposed City of Richland Gateway Substation project located in Richland, Washington. Electric Power Systems, Inc. may distribute copies of this report to the City of Richland (City) and the City's authorized agents and regulatory agencies as may be required for the project.

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

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

7.0 REFERENCES

Reidel, S. P., and K. R. Fecht, compilers, 1994. "Geologic Map of the Richland 1:100,000 Quadrangle, Washington: Washington Department of Geology and Earth Resources Open File Report 94-8, 25 pp., 1 plate, 1:100,000 scale.

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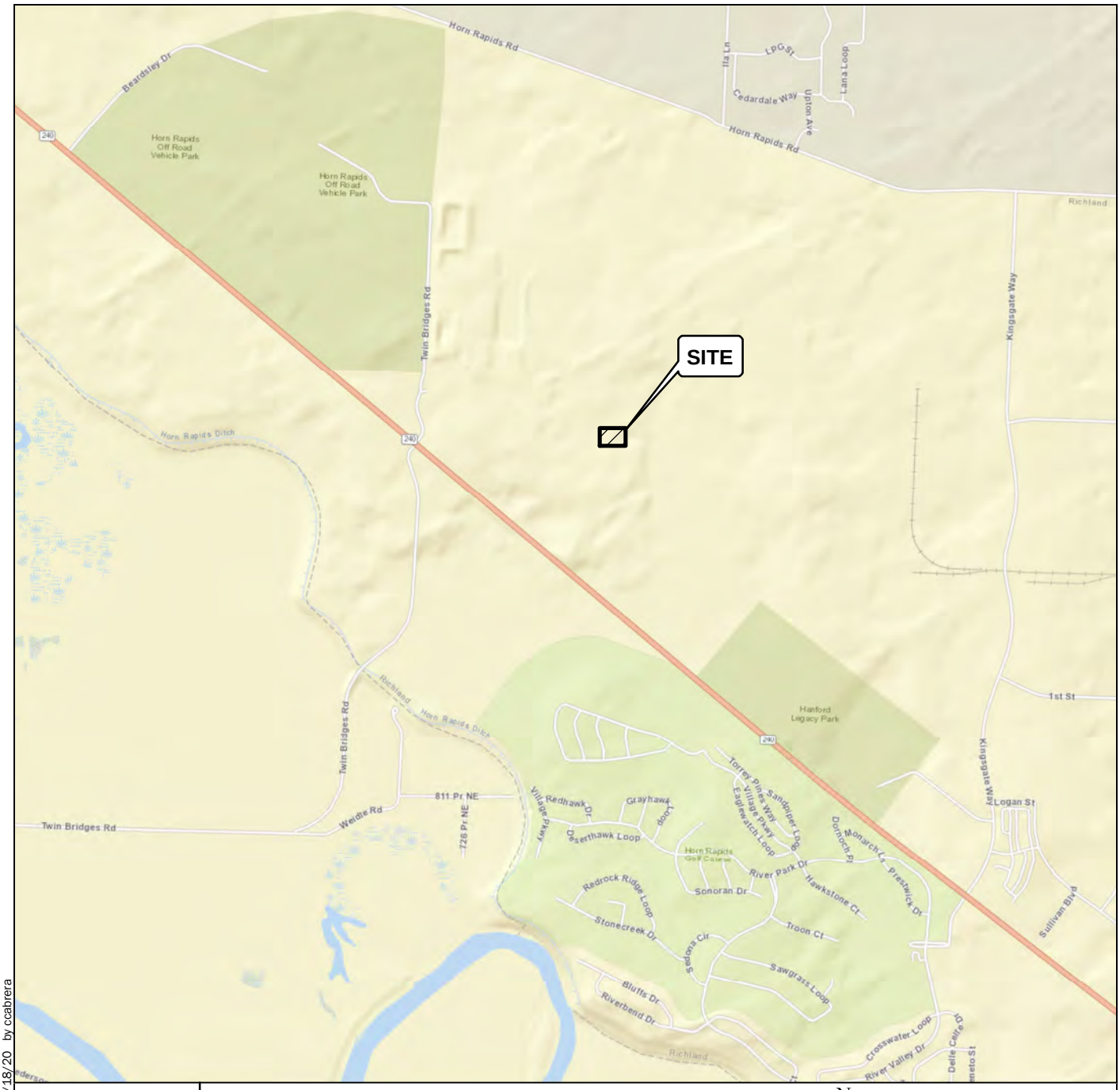

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Feet

Notes:

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

Data Source: Mapbox Open Street Map, 2016.
ESRI World Street Map.
Projection: NAD 1983 UTM Zone 11N

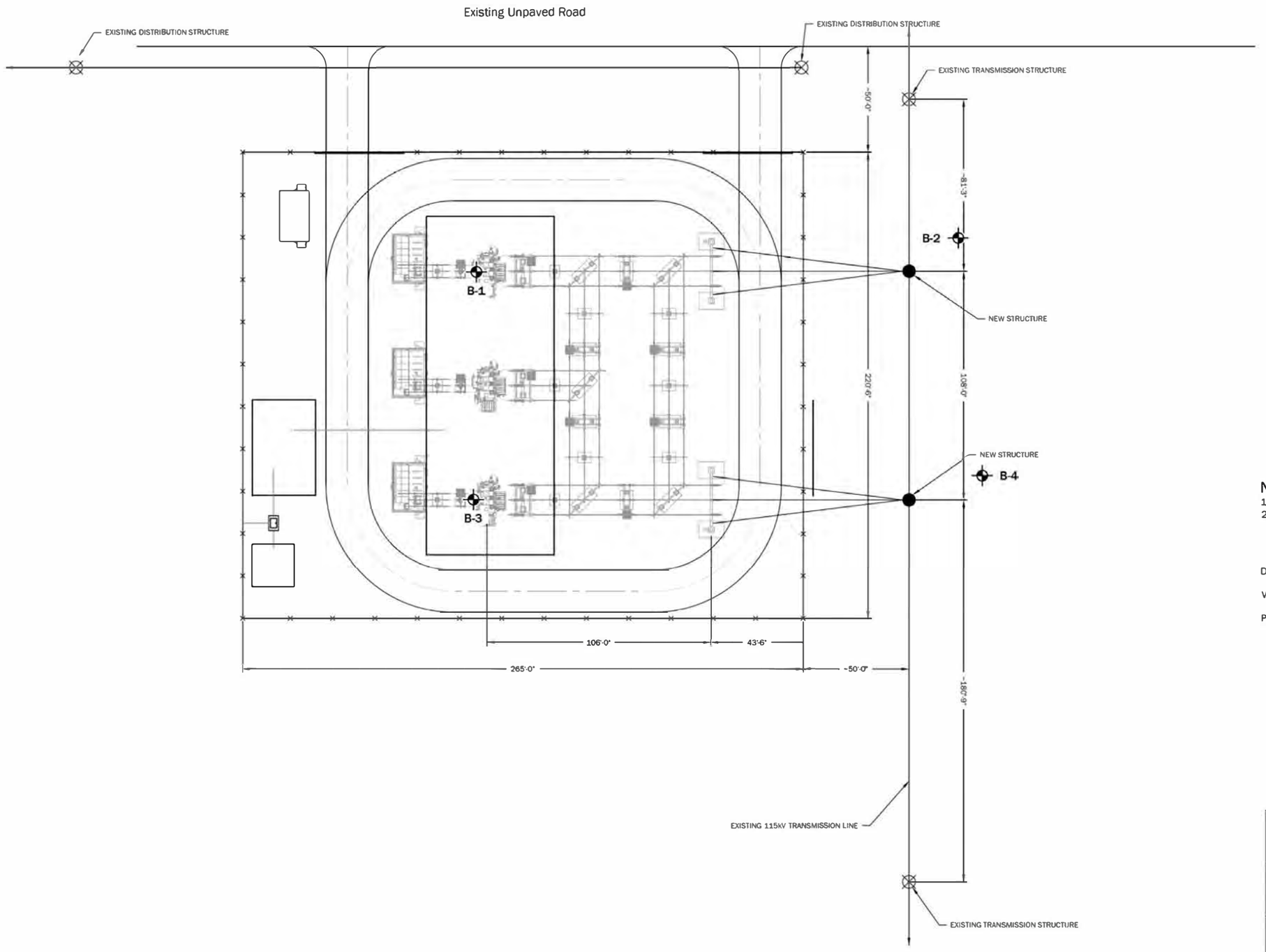
Vicinity Map

Gateway Substation
Richland, Washington

GeoEngineers

Figure 1

P:\2\2752012\GIS\MXD\2752012200_F01_VicinityMap.mxd Date Exported: 03/18/20 by ccabrera



Legend

B-1 Boring number and approximate location

Notes:

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

Data Source: Background from Electric Power Systems, Inc. dated 03/03/20.

Vertical Datum: NAVD 88.

Projection: NAD83 Washington State Planes, South Zone, US Foot.

N W E S

50 0 50
Feet

Site Plan

Gateway Substation
Richland, Washington

GeoEngineers

Figure 2

P:\12752012\CAD\00\Geotech Report\2752012200_F02_Site Plan.dwg TAB:F02 Date Exported: 03/19/20 - 14:06 by sys

APPENDIX A
Field Explorations and Laboratory Testing

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

Soil and groundwater conditions at the proposed Substation site were explored on March 9, 2020, by drilling four borings (B-1 through B-4) at the approximate locations shown in Figure 2. The borings were advanced to depths in the range of about 20 to 40 feet below ground surface (bgs) using a truck-mounted, CME-75 hollow-stem auger drill rig owned and operated by GeoEngineers.

The borings were continuously monitored by an engineer from our firm who examined and classified the soil encountered, obtained representative soil samples and maintained a detailed log of the explorations. Soil encountered in the explorations was classified in the field in general accordance with ASTM D 2488, the Standard Practice for Classification of Soils, Visual-Manual Procedure, which is summarized in Figure A-1. Logs of the borings are presented in Logs of Borings, Figures A-2 through A-5. The logs are based on interpretation of the field and laboratory data, and indicate the depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

Samples of soil encountered in the borings were obtained at approximate 2½- to 5-foot-depth intervals using either a 2-inch, outside-diameter, standard split-spoon sampler, or a 2.4-inch, inside-diameter, California-style, split-barrel sampler. The samplers were driven into the soil using a 140-pound automatic hammer, free-falling 30 inches on each blow. The number of blows required to drive the samplers each of three, 6-inch increments of penetration were recorded in the field, along with visual-manual descriptions of soil based on ASTM International (ASTM) D 2488. The sum of the blow counts for the last two, 6-inch increments of penetration, unless otherwise noted, is reported on the boring logs. The blow counts for the standard sampler are reported as the ASTM D 1586 Standard Penetration Test (SPT) N-value. Non-standard blow counts for the California-style sampler were converted to approximate N-values and are shown in the "Remarks" section of the boring logs. The conversion of non-standard penetration resistance to SPT N-values was made using the Lacroix-Horn equation (ASTM SPT-523, 1973).

Boring locations were selected based on a preliminary site plan provided by EPS and adjusted in the field to avoid overhead utilities and based on truck-mounted equipment access. The borings locations were recorded in the field using an iPad with GISPro software. The accuracy of the boring locations is based on available satellites with GPS and/or triangulation from cell towers but is generally estimated to be on the order of about +/- 15 feet. Exploration locations should be considered accurate to the degree implied by the method used.

Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further examination and testing. Representative soil samples were selected for laboratory tests to evaluate select geotechnical engineering characteristics of the site soil and to confirm or revise our field classification. Soil samples obtained from the borings were visually classified in the field and/or in our laboratory using the Unified Soil Classification System (USCS) and ASTM classification methods. ASTM test method D 2488 (Practice for Description and Identification of Soils) was used in the field to visually classify the soil samples, while ASTM D 2487 (Classification of Soils for Engineering Purposes) was used to classify the soil based on

laboratory tests results. These classification procedures are incorporated in the Log of Borings shown in Figures A-2 through A-5.

The test procedures were performed in general accordance with the applicable ASTM test procedures ("in general accordance" means certain local and common descriptive practices and methodologies have been followed). The laboratory soil testing program is summarized in Table A-1, Summary of Laboratory Testing.

TABLE A-1. SUMMARY OF LABORATORY TESTING

Standard Test Method for:	Test Method Designation	Total Tests Performed	Results Location
Laboratory Determination of Water (Moisture) Content of Soil	ASTM D 2216	6	Presented in the applicable exploration logs in the "Moisture Content, %" column.
Laboratory Determination of Density (Unit Weight) of Soil Specimens	ASTM D 2937	3	Presented in the applicable exploration logs in the "Remarks" column.
Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washington	ASTM D 1140	6	Presented in the applicable exploration logs in the "Fines Content, %" column.

A combination of pH, resistivity and soluble sulfate tests were completed as an initial appraisal of soil conditions that affect the corrosion rate of steel and ductile-iron pipe and the potential for sulfate attack on concrete. One each pH determinations (EPA 9045), soil resistivity tests (ASTM G57a) and sulfate tests (EPA 300.0) were completed on a representative sample obtained from the explorations. Results are presented in Table A-2 below.

TABLE A-2. PH/RESISTIVITY/SULFATE TEST RESULTS AND CORROSION RATING

Sample / Depth (feet)	pH	Resistivity (ohms-cm)	Sulfate (mg/Kg)	Corrosion Rating		
				Steel[1]	Ductile Iron[1]	Concrete[2]
B-1 / 1 – 2½	6.63	16,400	4.83	Mildly	Mildly	Negligible
B-3 / 3½ - 5	9.14	4,200	4.11	Very	Moderately	Negligible

Notes:

[1] Corrosion rating for stainless steel and ductile iron based on the DIPRA soil evaluation (ANSI C105/AWWA A21.5). The rating system ranges from: mildly, moderately, corrosive, very and extremely.

[2] "Attack on concrete" rating system is provided in the United States Department of Interior, Bureau of Reclamation Concrete Manual. The rating system ranges from negligible, positive, severe and very severe.

ohms-cm = ohms per centimeter

mg/Kg = milligrams per kilogram

SOIL CLASSIFICATION CHART

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

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

ADDITIONAL MATERIAL SYMBOLS

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

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

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

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

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

Laboratory / Field Tests

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

Sheen Classification

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

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

Key to Exploration Logs

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Figure A-1

Drilled Start 3/9/2020 End 3/9/2020	Total Depth (ft) 20	Logged By GLH Checked By EBD	Driller GeoEngineers	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) Undetermined Vertical Datum NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Truck Mounted CME-75	
Latitude 46.3422 Longitude -119.3361		System Datum WA State Plane South NAD83 (feet)		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Approximately 12 inches of dark brown fine to medium sand with silt and organic matter (roots) (loose, moist) (topsoil)			
		18	9		S-1 %F		SP-SM	Dark brown fine to medium sand with silt (very loose, moist)	5	10	Approximate SPT N-Value = 3
		13	9		S-2		SP	Brownish gray fine to medium sand with trace silt (loose to medium dense, moist)			
	5										
		15	14		S-3						
		18	25		S-4 MD, %F				3	2	Approximate SPT N-Value = 9 MD (DD = 96 pcf)
	10										
	15	6	15		S-5						
		16	30		S-6			Becomes dense			
	20										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-1

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-2
Sheet 1 of 1

Drilled Start 3/9/2020 End 3/9/2020	Total Depth (ft) 40	Logged By GLH Checked By EBD	Driller GeoEngineers	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) Undetermined Vertical Datum NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Truck Mounted CME-75	
Latitude 46.3422 Longitude -119.3352		System Datum WA State Plane South NAD83 (feet)		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Approximately 8 inches of dark brown fine to medium sand with silt and organic matter (roots) (loose, moist) (topsoil)			
							SP	Dark brown fine to medium sand with trace silt (loose, moist)			
	5	12	8		S-1						
	10	15	28		S-2			Becomes brown, medium dense			Approximate SPT N-Value = 11
	15	16	60		S-3			Becomes very dense			
	20	15	83		S-4						
	25	6	120/5"		S-5						Approximate SPT N-Value = 50+
							SP	Brownish gray fine to coarse sand with trace silt and occasional gravel (very dense, moist)			
	30	16	76		S-6						
	35	16	70		S-7						

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-2

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-3
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	35									
						SP	Brownish gray fine to medium sand with trace silt (dense, moist)			
		18	107	S-8 MD, %F				2	2	Approximate SPT N-Value = 41 MD (DD = 101 pcf)
	40									

Log of Boring B-2 (continued)

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-3
Sheet 2 of 2

Drilled Start 3/9/2020 End 3/9/2020	Total Depth (ft) 20	Logged By GLH Checked By EBD	Driller GeoEngineers	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) Undetermined Vertical Datum NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Truck Mounted CME-75	
Latitude 46.3419 Longitude -119.336		System Datum WA State Plane South NAD83 (feet)		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Approximately 13 inches of brown fine to medium sand with silt and organic matter (roots) (loose, moist) (topsoil)			
		14	7		S-1		SP	Grayish brown fine to medium sand with trace silt (loose, moist)			
		15	9		S-2 %F				2	2	
	5										
		14	22		S-3						Approximate SPT N-Value = 8
		15	12		S-4			Becomes medium dense			
	10										
		16	12		S-5						
	15										
		18	94		S-6 MD, %F			Becomes dense	3	3	Approximate SPT N-Value = 39 MD (DD = 106 pcf)
	20										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-3

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-4
Sheet 1 of 1

Drilled Start 3/9/2020 End 3/9/2020	Total Depth (ft) 40	Logged By GLH Checked By EBD	Driller GeoEngineers	Drilling Method Hollow-stem Auger	
Surface Elevation (ft) Undetermined Vertical Datum NAVD88		Hammer Data Autohammer 140 (lbs) / 30 (in) Drop		Drilling Equipment Truck Mounted CME-75	
Latitude 46.3419 Longitude -119.3351		System Datum WA State Plane South NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Approximately 12 inches of dark brown fine to medium sand with silt and organic matter (roots) (loose, moist) (topsoil)			
							SP	Dark brown fine to medium sand with trace silt (loose, moist)			
		9	6		S-1						
	5										
		13	17		S-2			Becomes medium dense			
	10										
							SP-SM	Dark gray fine to medium sand with silt (medium dense, moist)			
		18	35		S-3						Approximate SPT N-Value = 14
	15										
		12	50		S-4			Becomes very dense			
	20										
		15	58		S-5 %F				2	6	
	25										
							SP	Brownish gray fine to coarse sand with trace silt and occasional gravel (very dense, moist)			
		0	120/5.5"		S-6						Approximate SPT N-Value = 50+
	30										
							SP	Brownish gray fine to coarse sand with trace silt (very dense, moist)			
		15	80		S-7						
	35										

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Google Earth.

Log of Boring B-4

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-5
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample / Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	35									
		15	74	S-8						
	40									

Log of Boring B-4 (continued)

GeoEngineers

Project: Gateway Substation
Project Location: Richland, Washington
Project Number: 02752-012-00

Figure A-5
Sheet 2 of 2

APPENDIX B
Report Limitations and Guidelines for Use

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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

Read These Provisions Closely

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

Geotechnical Services are Performed for Specific Purposes, Persons and Projects

This report has been prepared for Electric Power Systems, Inc. and for the project specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this report is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the project, and its schedule and budget, our services have been executed in accordance with our Agreement with Electric Power Systems, Inc. executed March 6, 2020 and generally accepted geotechnical practices in this area at the time this report was prepared. We do not authorize, and will not be responsible for, the use of this report for any purposes or projects other than those identified in the report.

A Geotechnical Engineering or Geologic Report is based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed City of Richland Gateway Substation project located in Richland, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

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

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

- the function of the proposed structure;

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

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

Environmental Concerns are Not Covered

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

Subsurface Conditions Can Change

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

Geotechnical and Geologic Findings are Professional Opinions

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

Geotechnical Engineering Report Recommendations are Not Final

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

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

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

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

Do Not Redraw the Exploration Logs

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

Give Contractors a Complete Report and Guidance

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

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

Contractors are Responsible for Site Safety on Their Own Construction Projects

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

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as

they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

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

Topsoil

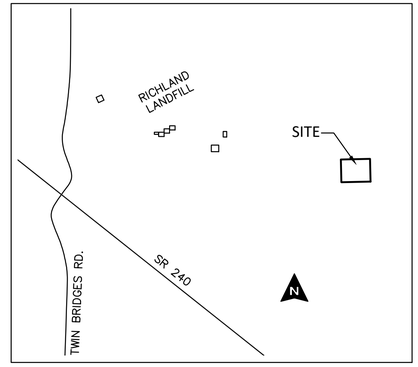
For the purposes of this report, we consider topsoil to consist of generally fine-grained soil with an appreciable amount of organic matter based on visual examination, and to be unsuitable for direct support of the proposed improvements. However, the organic content and other mineralogical and gradational characteristics used to evaluate the suitability of soil for use in landscaping and agricultural purposes was not determined, nor considered in our analyses. Therefore, the information and recommendations in this report, and our logs and descriptions should not be used as a basis for estimating the volume of topsoil available for such purposes.

Information Provided by Others

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

CITY OF RICHLAND
GATEWAY ELECTRICAL SUBSTATION

FG 467.87
FG 469.00
SS
32'
10'
(E) 16" WA
(E) GRAVEL ROAD
(E) OHP
(E) POWER POLE



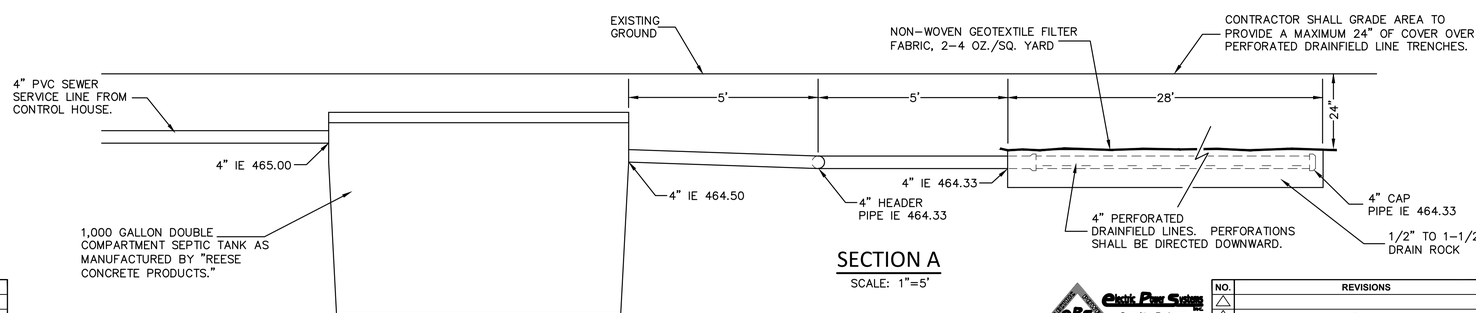
VICINITY MAP

CITY OF RICHLAND, WA
PARCEL#120081000001004
SITE LOCATED IN NE. $\frac{1}{4}$ OF THE NW. $\frac{1}{4}$ OF SECTION 20,
T. 10 N., R. 28 E., W.M.

KEYED CONSTRUCTION NOTES

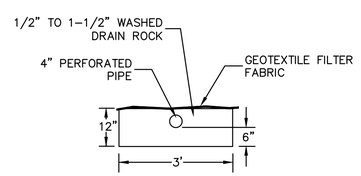
1. NEW CONTROL HOUSE.
2. NEW COMMUNICATION TOWER.
3. NEW SEPARATOR PIT.
4. NEW SWITCHGEAR BUILDING.
5. NEW BANK #1.
6. FUTURE BANK #2.
7. FUTURE BANK #3.
8. NEW STRUCTURE 5702.
9. NEW STRUCTURE 5703.
10. NEW FENCING.
11. EXISTING 16" WA LOCATION NOT VERIFIED. CONTRACTOR SHALL DIG AND VERIFY.
12. NEW 2" WATER SERVICES MAINLINE CONNECTION PER CITY STD. W2.
13. NEW 2" WATER METER ASSEMBLY PER CITY STD. W4.
14. NEW WATER SERVICE LINE TO CONTROL HOUSE. VERIFY END OF SERVICE STUB LOCATION ON CONTROL HOUSE PLANS.
15. NEW 4" SEWER LINE TO SEPTIC TANK. STUB IE 466.00. VERIFY END OF SERVICE STUB LOCATION ON CONTROL HOUSE PLANS.
16. NEW SEWER SEPTIC TANK.
17. NEW SEWER SEPTIC DRAINFIELD. CONTRACTOR SHALL GRADE AREA TO PROVIDE A MAXIMUM 24" OF COVER OVER PERFORATED DRAINFIELD LINE TRENCHES.
18. RESERVE SEWER SEPTIC DRAINFIELD.
19. 4" CLEAN-OUT. 4" IE 465.10.

0 20 40 60
SCALE IN FEET



SECTION A

SCALE: 1"=5'



SECTION B

SCALE: 1"=5'

Know what's below.
Call before you dig.
48 HOURS
NOTICE REQUIRED

ALAN R. RAINES
STATE OF WASHINGTON
31392
REGISTERED
PROFESSIONAL ENGINEER
5/6/21

NO.	DRAWING NO.	REFERENCE DRAWING TITLE
-	-	-
-	-	-
-	-	-

NO.	REVISIONS	DATE	W.O. #	ENGR.
1				
2	FINAL	05/06/21		
1	ISSUED FOR 95% REVIEW	10/28/20	-	-

Electric Power Systems, Inc. Consulting Engineers

GATEWAY SUBSTATION
WATER AND SEPTIC
UTILITY PLAN

ENERGY SERVICES Richland

DATE: 05/06/2021		WO#: -
DRAWN: SWS		PROJ JT: 20-0068
ENG'R: ARR		FILE NAME: GAT-010
SCALE: -	SHT 6 of 6	

CITY OF RICHLAND
DEVELOPMENT SERVICES DEPARTMENT
625 Swift Boulevard
Richland, WA 99352
Telephone (509) 942-7794
Fax (509) 942-7764
CI.RICHLAND.WA.US · 509-942-7390

July 14, 2021

Terra Flores
2700 Duportail St.
Richland, WA 99352

RE: Gateway Substation – Fish & Wildlife Habitat Conservation Area Report

Dear Ms. Flores:

This letter is in regards to the SEPA Checklist that was prepared for the proposed electrical substation located at 3060 Twin Bridges Road.

After review of the SEPA Checklist and associated materials it was determined that the proposed substation site may qualify as a Fish & Wildlife Habitat Conservation Area due to the site possibly containing shrub-steppe habitat.

However, after consultation with Michael Ritter, Fish & Wildlife Area Habitat Biologist, who visited the site in question, it is his professional opinion that a Fish & Wildlife Habitat Conservation Area report is not necessary due to the proposed substation site's proximity to already developed areas and the site being a mixture of shrub-steppe and cheatgrass/weeds, thus resulting in an area which does not provide functional habitat. As a result, pursuant to RMC 22.10.200.E, I am hereby waiving the requirement for the preparation of a habitat conservation area report.

A SEPA Threshold Determination of Non-Significance (DNS) will be issued shortly. Please be advised that the mandatory SEPA agency review and comment period is 14 days from the date of issuance and that no permits for construction may be issued until the end of the SEPA comment period. Furthermore, please be aware that comments received during the mandatory comment period may result in additional requirements that could extend the date in which construction permits can be issued should additional cultural or environmental concerns/issues arise.

If you have any questions regarding this letter, please feel free to contact me at (509) 942-7596 or via email at mstevens@ci.richland.wa.us .

Sincerely,

Mike Stevens
Planning Manager
City of Richland
(509)942-7596
mstevens@ci.richland.wa.us

Stevens, Mike

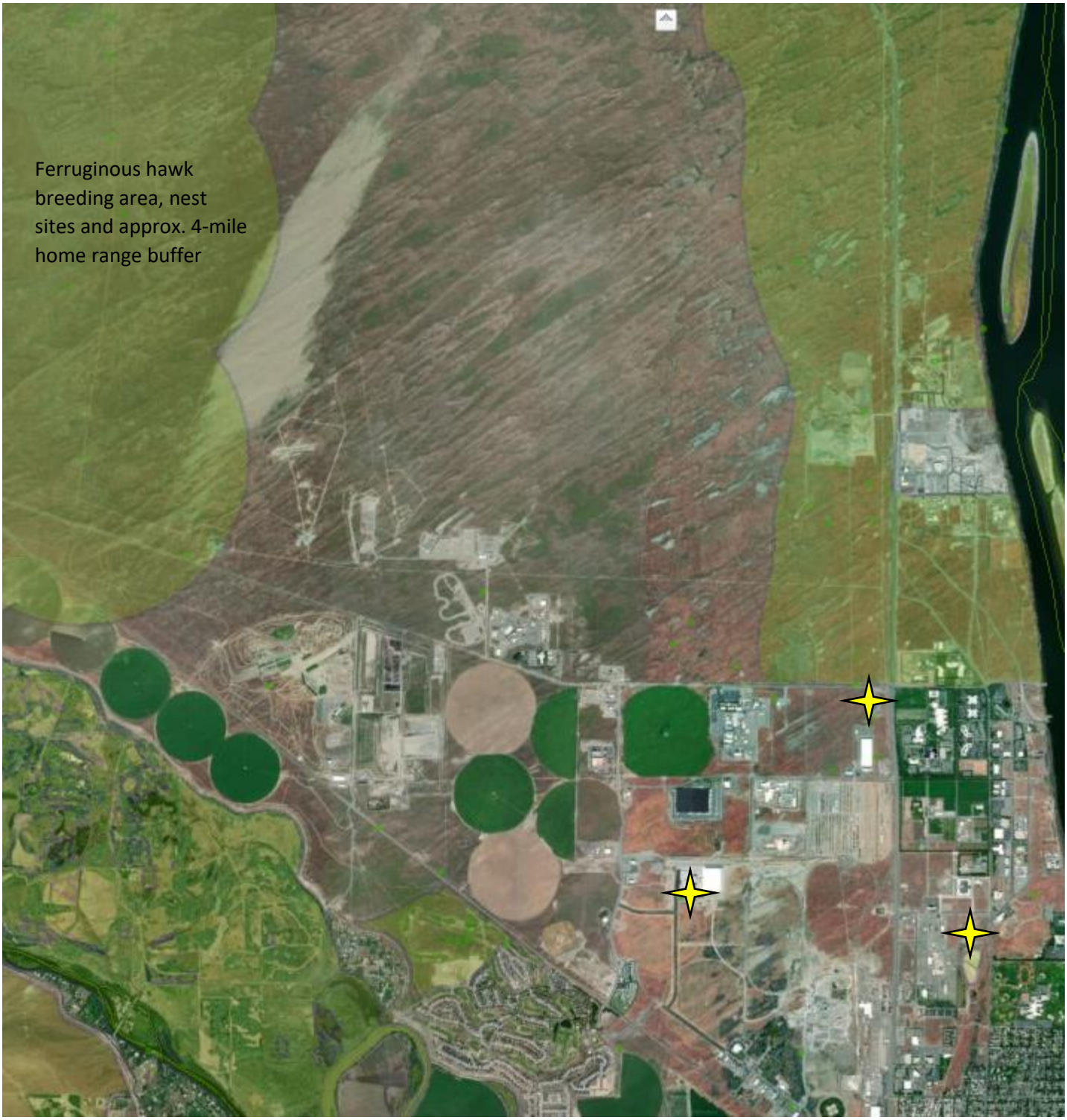
From: Ritter, Michael W (DFW) <Michael.Ritter@dfw.wa.gov>
Sent: Wednesday, July 14, 2021 11:53 AM
To: Stevens, Mike
Subject: new substation site

I took a look at the area and have identified some blue areas where I think it would be better to locate a substation, or any development: near already developed areas. The polygon on the east is flat terrain, is adjacent to a power line, and ag filed and the vegetation is almost all cheat grass and weeds. The polygon on the west is also near a powerline, roads and development but the terrain is not flat and vegetation is mostly native shrub-steppe. The middle polygon is flat, adjacent to existing development and is a mix of shrubsteppe and cheatgrass/weeds. Form a WDFW perspective, siting development near already existing development makes sense and focuses new impacts to areas that are currently developed. I do not see the need to complete a habitat or critical area report for any of these sites.

Michael Ritter
Fish and Wildlife Area Habitat Biologist
Statewide Technical Lead: Wind and Solar
Washington Department of Fish and Wildlife
2620 N. Commercial Ave
Pasco, WA 99301
509-380-3028 (cell)

Maps showing WDFW PHS species, habitats, and breeding areas relative to pending land use actions in the City of Richand. Ferruginus hawks will certainly fly outside the buffer to forage, but they are strongly linked with ground squirrels as a primary prey, but may also prey on small rodents. The PHS data base does not indicate any ground squirrel colonies associated with or adjacent to the pending land use actions, so impacts to Ferruginous hawk foraging are unlikely. Additionally, the closest pending land use actions to a buffer is approximately 3 miles, and in between there is a variety of other development, including transportation.

= Pending land use actions: Port of Benton, 3D Development, JUB Engineers. All three pending actions within the Richland city Limits.



= Pending land use actions: Port of Benton, 3D Development, JUB Engineers. All three pending actions within the Richland city Limits.