File No. EA2021-128

CITY OF RICHLAND
Determination of Non-Significance

Description of Proposal: Construction of a new 12,113 square foot hospice care center (10 bed) and associated civil improvements, such as parking, landscaping, public sewer and water, storm drainage and dry utilities.

Proponent: Knutzen Engineering
Attn: Paul Knutzen
5401 Ridgeline Dr., Suite 160
Kennewick, WA 99338

Location of Proposal: The project site is located at 1336 Spaulding Ave, Richland, WA, 99352 upon Parcel No. 130991BP4080003.

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: August 24, 2021

Signature _____

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:

   Chaplaincy Health Care – Hospice Care Center

2. Name of applicant:

   Paul Knutzen (Knutzen Engineering)

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

   5401 Ridgeline Dr Suite 160, Kennewick, WA 99338 - (509) 222-0959

4. Date checklist prepared:

   July 1, 2021

5. Agency requesting checklist:

   City of Richland

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

   Permitting in Fall 2021, Construction expecting to be complete in Summer 2022

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

   Yes, there is the potential to add an additional 8,500 sf extra wing to add more rooms; this is shown on the site plan but there are no firm dates as to timing.

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

   A geotechnical report has been prepared by Geo-Professional Innovation. File: PU20001A, prepared on March 19, 2020. A cultural resources survey has been requested and GRAM NW, Molly Swords, is working on it now, expecting completion in 45 days. A hydrology report will also be provided to addres the storm water runoff of the site

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.

   None known of at this time.

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

City of Richland Building Permit, ROW Permit, & possibly a Grading Permit (if done early) will be required by the City of Richland. An Erosivity Waiver from the Department of Ecology will be required. Washington State Department of Health permits along with local L&I permits for electrical are also required.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

    The project involves construction of a new 12,113 sf hospice care center (10-bed) and associated civil improvements, such as parking, landscaping, public sewer and water, storm drainage, and dry utilities.

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 project is located on 1336 Spaulding Ave, Richland, WA 99352, Parcel # 1-3099-1BP-4080-003, and is located in the SW ¼ of the NW ¼ of Section 30 T9N R29E, W.M.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site:

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

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

The site is mostly flat with no more than 5% slope.

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.

Per the Geotech report prepared by Geo-Professional Innovation there is approximately 0.5' – 1' of topsoil consisting of silty sand with gravel and vegetation and

organics. Beneath the topsoil, silty sand was encountered in depths ranging from 2' – 2.5', followed by poorly-graded gravel with silt, cobbles, and boulders.

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

None known of.

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.

Approximately 2.5 acres will be graded. Grading is expected to balance on-site without the import or export of materials.

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

Erosion could occur on this site but will be minimized through implementation of BMP's during construction, including silt fencing, construction entrance, ground cover, waddles, site watering for dust control, catch basin inserts and protection. All stormwater runoff will be contained and managed on site.

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

Approximately 50% of the site will be covered with impervious surfaces.

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

Dust control measures will be implemented in accordance with recommendations by the Department of Ecology and the Benton County Clean Air Authority. Measures include but are not limited to watering, lowering speed, limit of construction vehicles, and reducing the amount of dust-generating activities on windy days.

2. *Air* [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

During construction, minor amounts of dust and exhaust from equipment activity may occur. The completed project will not affect air quality.

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

None known of.

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

Dust control measures will be implemented in accordance with recommendations by the Department of Ecology and the Benton County Clean Air Authority. Measures include but are not limited to watering, lowering speed, limit of construction vehicles, and reducing the amount of dust-generating activities on windy days.

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.

The site is approximately 700 ft from where the Yakima and Columbia Rivers join at a location called Bateman Island.

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.

No.

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.

No fill or dredge will be placed or removed from surface water or wetlands.

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

No.

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

No.

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.

No.

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, city water will be available at the site.

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.

N/A.

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.

The new impervious area on site will generate stormwater runoff. The stormwater system consists of subsurface infiltration.

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

No

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

No.

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

Runoff generated from pervious surfaces will either infiltrate into underlying soils or flow to onsite collection systems. Stormwater generated from impervious surfaces will be collected and treated by a CDS unit prior to subsurface infiltration.

4. *Plants* [help]

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

X deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____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?

All native vegetation will be removed during grading, but restored upon completion.

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

None known per the Washington Department of Fish and Wildlife.

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

A very generous landscaping plan has been prepared by SPVV Landscape Architects at the Owner's request and is included with this SEPA.

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

None known.

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:
fish: bass, salmon, trout, herring, shellfish, other _____

The Townsend's ground squirrel have been spotted on or near the site according to the Washington State Department of Fish and Wildlife

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

None known per the Washington Department of Fish and Wildlife.

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

Yes, the Columbia basin is part of the Pacific Flyway.

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

None

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

None

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.

Electrical will be used for lighting and appliances. Natural gas may also be used for the completed project for heating and cooking.

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

No

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

The proposed structure will meet current building codes and energy efficient standards.

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.

No

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

None known

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Biohazardous waste as is customary in a care facility may occur during day-to-day operations.

4) Describe special emergency services that might be required.

The site will use typical emergency services provided through the City of Richland. It may be occasionally required for an ambulance to be called to transfer patients from another location to this facility.

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

Training programs for all personnel regarding awareness and safe procedures for on-site materials. Proper disposal of biohazard waste as is customary in healthcare/hospital settings. Using red biohazard bags and contracting with a company that specializes in the treatment and disposal of human biohazardous waste.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The noise level in the area is not perceived to have any adverse effect on the project. Noise is mainly generated by vehicle traffic on surrounding streets.

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.

Short term: Construction noises.
Long term: Automobile noise from traffic associated with the site.

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

Noise impacts from construction activities and ongoing operations are expected to be minimal without significant effects on the surrounding area. All operations will be in a manner with City of Richland (MC 9.16) and Washington State Maximum Environmental Noise Levels (Chapter 173-60040 WAC)

8. *Land and Shoreline Use* [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Currently the proposed property is vacant land. Nearby land uses include single family housing and Commercial businesses including Cherry Creek Mortgage, Eden Medical Center, Willamette Dental Group, Support Advocacy & Resource Center and Pacific Northwest Family Law. The proposal is not expected to affect the nearby or adjacent properties' land us since it is a permitted use in this zone.

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?

After reviewing historical aerial photos dating back to 1955 it doesn't appear to have been working farmlands.

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 existing structures on the site

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

No

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

BC - Business Commerce

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

Business Commerce

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

N/A

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

No

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

Approximately 20 people would work or reside in the completed project. 10 patients and 10 staff members including doctors & nursing staff. It is expected that the facility will frequently have people visiting patients.

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

None

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

N/A

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

The project will be permitted through the local jurisdictions in accordance with all applicable zoning ordinances.

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

N/A.

9. *Housing* [help]

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

10 rooms are proposed for patients

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

N/A

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

None

10. *Aesthetics* [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The building will be less than 24' tall at its highest point. The front of the building will be brick with a mix of stucco and cement board lap siding on the sides and back.

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

No views are expected to be obstructed.

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

Landscaping, setbacks and building façade requirements.

11. *Light and Glare* [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Parking and Building lighting would be proposed for late evening and nighttime.

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

No

c. What existing off-site sources of light or glare may affect your proposal?

None

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

All outdoor lighting will be in conformance with the City of Richland code 23.58.030 Outdoor Light Fixtures – General Requirements.

12. *Recreation* [help]

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

The ARC of the Tri-Cities and Mid-Columbia Gymnastics Academy are respectively located approximately 500' and 750' from the site. Both are facilities that provide recreational services. The site is also located 700' away from the shoreline where a boat launch and biking/walking path are located nearby. The nearby shoreline is also a popular fishing location.

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

No, the project will have no impact on existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation

opportunities to be provided by the project or applicant, if any:

None needed

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 per the Department of Archaeology and Historic Preservation WISAARD system.

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.

The site is considered in the area of the Confederated Tribes of the Warm Springs per the Department of Archaeology and Historic Preservation WISAARD system. No features or evidence of artifacts have been found however.

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.

The WISAARD system of the DAHP was used to assess potential impacts. WISAARD has the area as very high risk and recommends an Archeological Survey which is currently in progress.

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.

Upon any discovery of potential or known archaeological resources at the property prior to or during on-site construction, the developer, contractor, and/or any other parties involved in construction shall immediately cease all on-site construction, shall act to protect the potential or known historical and cultural resources area from outside intrusion, and shall notify within a maximum period of twenty-four hours from the time of discovery, City of Richland officials of said discovery.

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 would be directly accessed off SE Denver St. The site will also be accessible off Spaulding Ave by a shared driveway with Cherry Creek Mortgage.

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 nearest Ben Franklin Transit bus stop is located approximately 200' away at the intersection of Columbia Park Trail and Spaulding Ave.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The project would eliminate 17 existing parking spaces and proposed 54 new spaces for a net gain of 37 spaces.

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

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

No

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Approximately 92 vehicular trips per day would be generated. Peak traffic hours would occur in afternoon hours of the day. The ITE 9th edition trip generation manual, land use code 620 was used (Nursing Home).

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

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

Transportation impact fees will be payed as determined by the City of Richland.

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.

Yes. The site will utilize fire and police protection, as well as public transit. The employees will utilize health care and schools.

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

The completed project will provide additional tax revenue for the City and will pay impact fees for development.

16. *Utilities* [help]

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

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.

Electricity – Richland Energy Services
Natural Gas – Cascade Natural Gas
Sewer – City of Richland
Water – City of Richland
Cable – Charter Communications
Telephone/ Internet – Ziply

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: Paul Knutzen
Name of signee: Paul Knutzen
Position and Agency/Organization: Principal Engineer
Date Submitted: 7/7/2021

IRRIGATION SCHEDULE

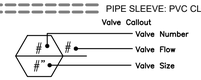
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI			DETAIL
Q T H F	RAIN BIRD 1804-U U8 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H F	RAIN BIRD 1804-U U10 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H TT TQ F	RAIN BIRD 1804-U U12 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H TT TQ F	RAIN BIRD 1804-U U15 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	GPM	RADIUS	DETAIL
1.0	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	0.99	29'	7/L-501
1.5	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	1.58	31'	7/L-501
2.0	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	2.02	32'	7/L-501

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	DETAIL
	RAIN BIRD LFV-100 1" LOW FLOW DV VALVE	
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XB-PC SINGLE OUTLET, PRESSURE COMPENSATING DRIP EMITTERS. FLOW RATES OF 0.5GPH=BLUE, 1.0GPH=BLACK, AND 2.0GPH=RED. COMES WITH A SELF-PIERCING BARB INLET X BARB OUTLET. Emitter Notes: 1.0 GPH emitters (1 assigned to each 1 gal plant) 1.0 GPH emitters (2 assigned to each 2 gal plant) 2.0 GPH emitters (1 assigned to each 3 gal plant) 2.0 GPH emitters (2 assigned to each 5 gal plant) 2.0 GPH emitters (4 assigned to each B & B, 2"Cal plant) 2.0 GPH emitters (4 assigned to each B & B, 4` to 5` TALL plant) 2.0 GPH emitters (4 assigned to each B & B, 7` to 8` plant)	9/L-501

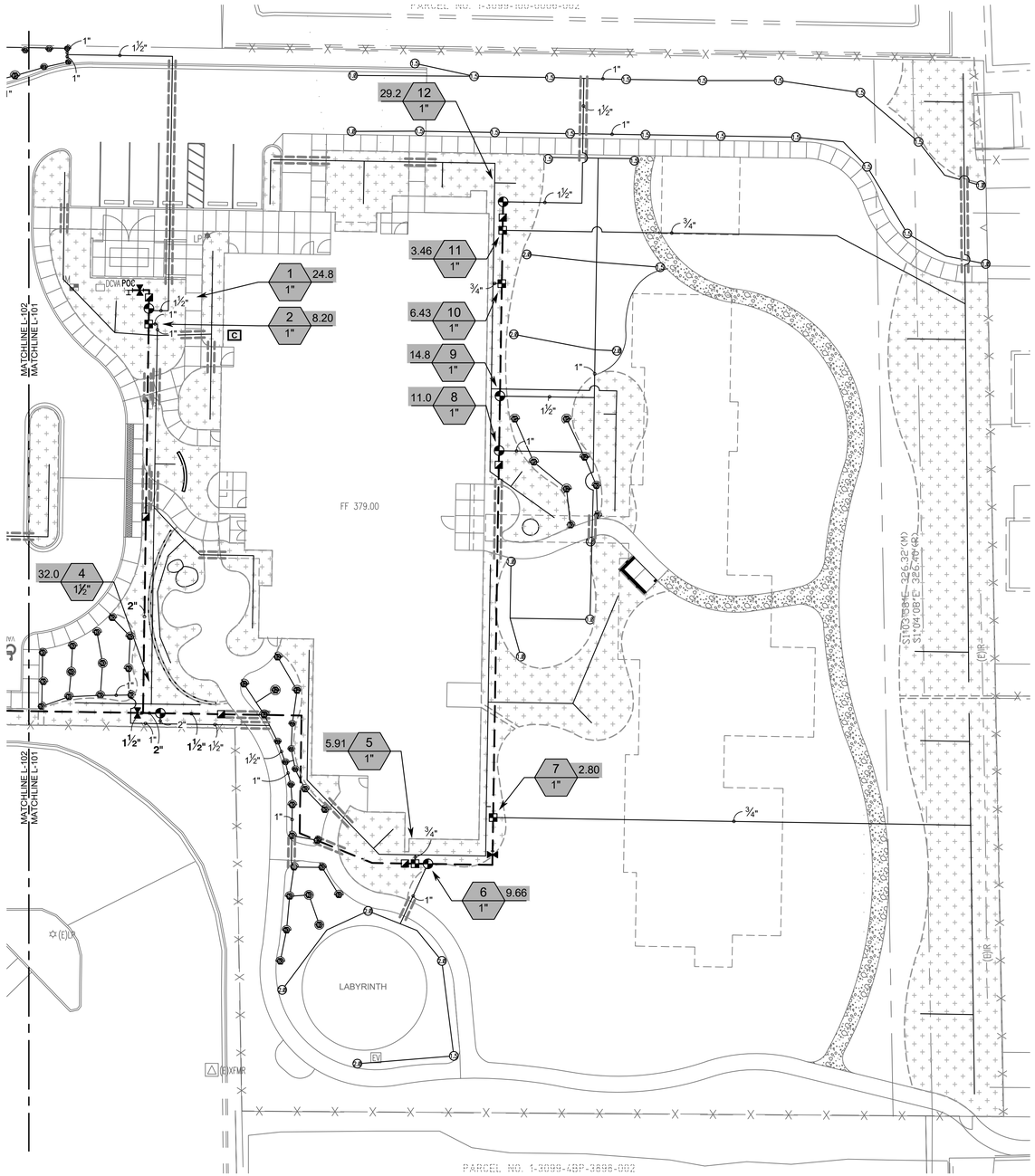
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	DETAIL
	RAIN BIRD PEB 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	/
	RAIN BIRD 44-RC 1" BRASS QUICK-COUPLING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, THERMOPLASTIC RUBBER COVER, AND 2-PIECE BODY.	6/L-501
	SHUT OFF VALVE	5/L-501
C	RAIN BIRD ESP-LXD TWO-WIRE DECODER COMMERCIAL CONTROLLER. 50 STATIONS. UV-RESISTANT, OUTDOOR-RATED, PLASTIC LOCKING WALL-MOUNTABLE CASE. AVAILABLE IN THE US MARKET, INTERNATIONAL, EUROPEAN, OR AUSTRALIAN MARKETS.	10/L-501
POC 1"	POINT OF CONNECTION 1 1/2"	
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	3/L-501
	IRRIGATION MAINLINE: PVC SCHEDULE 40	2/L-501
	PIPE SLEEVE: PVC CLASS 200 SDR 21	1/L-501

Valve Callout



IRRIGATION NOTES:

1. THE INFORMATION ON THIS SHEET IS INCOMPLETE UNLESS ACCOMPANIED BY THE CORRESPONDING SPECIFICATION SECTION(S) DEVELOPED FOR THIS PROJECT.
2. SEE SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION.
3. IRRIGATION SYSTEM MATERIALS ARE OFTEN SHOWN OUTSIDE OF LANDSCAPE AREAS FOR CLARITY. ALWAYS PLACE IRRIGATION SYSTEM MATERIALS WITHIN LANDSCAPE AREAS. LOCATE VALVE BOXES NEXT TO CURBS, PAVED SURFACES, OR IN PLANTING BEDS WHERE POSSIBLE. DO NOT LOCATE VALVES OR VALVE BOXES IN THE BOTTOM OF DRAINAGE BASINS.
4. SUPPLY IRRIGATION CONTROLLER AS SPECIFIED AND LOCATE IRRIGATION CONTROLLER AS SHOWN ON PLANS AND DETAILS. COORDINATE LOCATION AND INSTALLATION OF CONTROLLER(S) WITH GENERAL CONTRACTOR. COORDINATE ELECTRICAL SUPPLY WITH ELECTRICAL OR GENERAL CONTRACTOR.
5. IRRIGATION SYSTEM DESIGN IS BASED ON 70 LBS. OF STATIC PRESSURE AT THE SOURCE. ALL SPRAY HEADS ARE TO BE OPERATED AT 30 LBS. OF WORKING PRESSURE, ALL GEAR DRIVEN HEADS ARE TO BE OPERATED AT 45 LBS. OF WORKING PRESSURE. CONTRACTOR TO VERIFY WORKING P.S.I. AT MAXIMUM OPERATING FLOW PRIOR TO CONSTRUCTION. NOTIFY LANDSCAPE ARCHITECT OF ANY DEFICIENCIES PRIOR TO BEGINNING WORK.
6. SLEEVING SHALL BE PROVIDED UNDER ALL HARD SURFACES AND SHALL BE 4" CLASS 200 PVC FOR ALL PIPING UP TO 2.5"; AND 6" SLEEVES FOR ALL 3" AND LARGER PIPING. PROVIDE SEPARATE 2" SLEEVES UNDER ALL HARD SURFACES FOR IRRIGATION WIRING.
7. CONTRACTOR TO COMPLY WITH ALL LOCAL CODES AND ORDINANCES.
8. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES ABOVE AND BELOW GRADE PRIOR TO BEGINNING ANY WORK. UTILIZE THE LOCAL 'CALL BEFORE YOU DIG' UTILITY LOCATION SERVICES.
9. CONTRACTOR IS TO ADJUST IRRIGATION HEADS AS NECESSARY PRIOR TO SUBSTANTIAL COMPLETION, AND AGAIN AT FINAL COMPLETION.
10. COORDINATE THE INSTALLATION OF IRRIGATION SYSTEM WITH ALL OTHER TRADES.
11. CONTRACTOR TO COORDINATE IRRIGATION EQUIPMENT WITH LANDSCAPE MATERIALS TO AVOID CONFLICTS.
12. FOR ALL THREADED FITTINGS, ONLY USE JOINT SEALANTS AS APPROVED BY FITTING MANUFACTURER AND TIGHTEN FITTINGS PER MANUFACTURER'S INSTRUCTIONS, TAKING EXTREME CAUTION AGAINST OVER-TIGHTENING FITTINGS.
13. PROVIDE IRRIGATION STUBS TO NON-IRRIGATED AREAS FOR FUTURE IRRIGATION.



0 20 40 60 feet

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HOSPICE CARE CENTER

CHAPLAINCY HEALTH CARE

50% CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION

PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

IRRIGATION PLAN

L-101

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI			DETAIL
Q T H F	RAIN BIRD 1804-U U8 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H F	RAIN BIRD 1804-U U10 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H TT TQ F	RAIN BIRD 1804-U U12 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501
Q T H TT TQ F	RAIN BIRD 1804-U U15 SERIES TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2" NPT FEMALE THREADED INLET.	30			8/L-501

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI	GPM	RADIUS	DETAIL
1.0	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	0.99	29'	7/L-501
1.5	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	1.58	31'	7/L-501
2.0	RAIN BIRD 5004-PL-PC, FC-SAM-LA TURF ROTOR, 4.0" POP-UP, PLASTIC RISER. ADJUSTABLE AND FULL CIRCLE. LOW ANGLE NOZZLE AND FLOW SHUT-OFF DEVICE. WITH SEAL-A-MATIC CHECK VALVE.	45	2.02	32'	7/L-501

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	DETAIL
	RAIN BIRD LFV-100 1" LOW FLOW DV VALVE	
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XB-PC SINGLE OUTLET, PRESSURE COMPENSATING DRIP EMITTERS. FLOW RATES OF 0.5GPH=BLUE, 1.0GPH=BLACK, AND 2.0GPH=RED. COMES WITH A SELF-PIERCING BARB INLET X BARB OUTLET. Emitter Notes: 1.0 GPH emitters (1 assigned to each 1 gal plant) 1.0 GPH emitters (2 assigned to each 2 gal plant) 2.0 GPH emitters (1 assigned to each 3 gal plant) 2.0 GPH emitters (2 assigned to each 5 gal plant) 2.0 GPH emitters (4 assigned to each B & B, 2"Cal plant) 2.0 GPH emitters (4 assigned to each B & B, 4' to 5' TALL plant) 2.0 GPH emitters (4 assigned to each B & B, 7' to 8' plant)	9/L-501

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	DETAIL
	RAIN BIRD PEB 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	/
	RAIN BIRD 44-RC 1" BRASS QUICK-COUPLING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, THERMOPLASTIC RUBBER COVER, AND 2-PIECE BODY.	6/L-501
	SHUT OFF VALVE	5/L-501
C	RAIN BIRD ESP-LXD TWO-WIRE DECODER COMMERCIAL CONTROLLER. 50 STATIONS. UV-RESISTANT, OUTDOOR-RATED, PLASTIC LOCKING WALL-MOUNTABLE CASE. AVAILABLE IN THE US MARKET, INTERNATIONAL, EUROPEAN, OR AUSTRALIAN MARKETS.	10/L-501
POC	POINT OF CONNECTION 1 1/2"	
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	3/L-501
	IRRIGATION MAINLINE: PVC SCHEDULE 40	2/L-501
	PIPE SLEEVE: PVC CLASS 200 SDR 21	1/L-501

Valve Callout

Valve Number

Valve Flow

Valve Size

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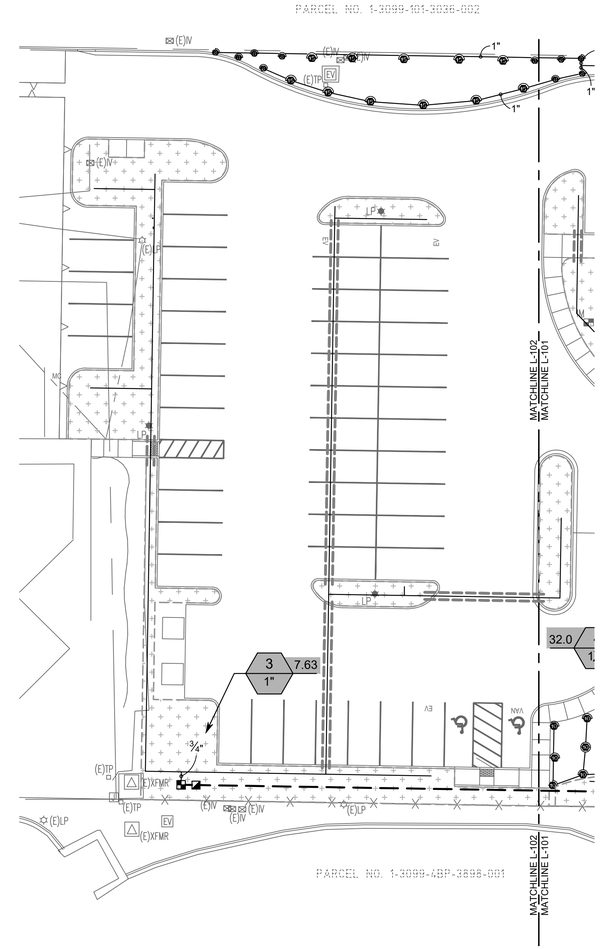

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HOSPICE CARE CENTER

CHAPLAINCY HEALTH CARE

50% CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION

PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

IRRIGATION PLAN

L-102

PLANT SCHEDULE L-201

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY	DETAIL
	APB	ACER PALMATUM `BLOODGOOD` / BLOODGOOD JAPANESE MAPLE	SINGLE STEM		8` HT.	5	13/L-502
	CFF	CARPINUS BETULUS `FRANZ FONTAINE` / FRANZ FONTAINE HORNBEAM	B & B	2"CAL	10`	2	1/L-502
	CAG	CEDRUS ATLANTICA `GLAUCA PENDULA` / WEEPING BLUE ATLAS CEDAR	B & B		4` TO 5` TALL	1	12/L-502
	CLB	CEDRUS LIBANI 'BEACON HILL' / BEACON HILL LEBANON CEDAR	B & B		8` HT.	5	12/L-502
	CNP	CHAMAECYPARIS NOOTKATENSIS `PENDULA` / WEEPING NOOTKA FALSE CYPRESS	B & B		8` HT.	6	12/L-502
	COG	CHAMAECYPARIS OBTUSA `GRACILIS` / SLENDER HINOKI FALSE CYPRESS	B & B		4` TO 5` TALL	3	2/L-502
	CLL	CUPRESSOCYPARIS LEYLANDII / LEYLAND CYPRESS	B & B		7` TO 8`	19	12/L-502
	FSP	FAGUS SYLVATICA 'PURPLE FOUNTAIN' / PURPLE WEEPING EUROPEAN BEECH	B & B	2"CAL	10`	4	13/L-502
	GSI	GLEDITSIA TRIACANTHOS INERMIS `SHADEMASTER` TM / SHADEMASTER LOCUST	B & B	2"CAL	10`	6	1/L-502
	MGS	MAGNOLIA GRANDIFLORA / SOUTHERN MAGNOLIA	B & B	2"CAL	10`	6	1/L-502
	MPP	MALUS `PRAIRIFIRE` / PRAIRIFIRE CRABAPPLE	B & B	2"CAL	10`	8	1/L-502
	PNA	PINUS NIGRA `ARNOLD SENTINEL` / ARNOLD SENTINEL AUSTRIAN BLACK PINE	B & B		8` HT.	1	12/L-502

SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE		
	BTC	BERBERIS THUNBERGII `CRIMSON PYGMY` / CRIMSON PYGMY BARBERRY	5 GAL	12	2/L-502
	EAC	EUONYMUS ALATUS `COMPACTUS` / COMPACT BURNING BUSH	5 GAL	12	2/L-502
	LIC	LAGERSTROEMIA INDICA 'CONGRABEL' / BELLINI GRAPE CRAPE MYRTLE	5 GAL	40	2/L-502
	VCP	VACCINIUM CORYMBOSUM 'PINK ICING' / PINK ICING BLUEBERRY	5 GAL	8	2/L-502
	VDC	VIBURNUM DENTATUM 'CHRISTOM' / BLUE MUFFIN ARROWWOOD VIBURNUM FEMALE	5 GAL	12	2/L-502
	VDK	VIBURNUM DENTATUM 'KLMSEVENTEEN' / LITTLE JOE ARROWWOOD VIBURNUM MALE	5 GAL	25	2/L-502

EVERGREEN SHRUB	CODE	BOTANICAL / COMMON NAME	SIZE		
	GJF	GARDENIA JASMINOIDES 'FROSTPROOF' / FROSTPROOF GARDENIA	5 GAL	19	2/L-502
	IGS	ILEX GLABRA `SHAMROCK` / SHAMROCK INKBERRY	5 GAL	61	2/L-502
	NDT	NANDINA DOMESTICA 'TWILIGHT' / TWILIGHT HEAVENLY BAMBOO	5 GAL	30	2/L-502
	PFR	PHOTINIA X FRASERI / RED TIP PHOTINIA	5 GAL	25	2/L-502
	PLO	PRUNUS LAUROCERASUS `OTTO LUYKEN` / LUYKENS LAUREL	5 GAL	26	2/L-502

ORNAMENTAL GRASSES	CODE	BOTANICAL / COMMON NAME	SIZE		
	CAK	CALAMAGROSTIS ACUTIFOLIA `KARL FOERSTER` / FOERSTER`S REED GRASS	2 GAL	31	3/L-502
	PVH	PANICUM VIRGATUM 'HEAVY METAL' / HEAVY METAL SWITCH GRASS	2 GAL	28	3/L-502

PERENNIALS	CODE	BOTANICAL / COMMON NAME	SIZE		
	CCC	CROCOSMIA X 'COLUMBUS' / CROCOSMIA	1 GAL	68	3/L-502
	DPD	DIANTHUS PLUMARIUS / DELILA MAGENTA DIANTHUS	1 GAL	45	3/L-502
	ECR	ECHINACEA X `CORAL REEF` / CORAL REEF CONEFLOWER	1 GAL	21	3/L-502

GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT	SPACING		
	ARC	AJUGA REPTANS 'CHOCOLATE CHIP' / CHOCOLATE CHIP CARPET BUGLE	1 GAL	24" o.c.	142	3/L-502
	DCP	DELOSPERMA COOPERI / PURPLE ICE PLANT	1 GAL	24" o.c.	58	3/L-502

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	DETAIL
1	LANDSCAPE EDGING	4/L-502
2	5` HT FENCE--BLACK VINYL COATED CHAIN LINK	
3	5` HT FENCE--SITE OBSCURING	
4	BASALT VENEER SITE WALL -- SEE ARCHITECTURAL	
5	WATER FEATURE	5&6/L-502
6	COURTYARD	
7	FUTURE SCULPTURE -- BY OWNER	
8	ROCK BUBBLER FOUNTAIN	11/L-502

SYMBOL	DESCRIPTION	DETAIL
	BOULDER `A`	9/L-502
	BOULDER `B`	9/L-502

SYMBOL	DESCRIPTION	DETAIL
	IRRIGATED LAWN	
	UNDISTURBED AREA	
	PERMEABLE PAVING MATRIX	14/L-502
	5/8" MINUS COMPACTED GRAVEL PATH	
	WASHED ROCK COBBLE 2" TO 6" DIA.	

0 20 40 60 feet

1" = 20'

NORTH

GENERAL PLANTING NOTES:

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3. VERIFY THAT SUB GRADE PREPARATION HAS BEEN COMPLETED TO ACCEPTABLE TOLERANCES PRIOR TO BEGINNING ANY WORK.
4. ALL WORK COMPLETED SHALL BE GUARANTEED PER SPECIFICATIONS.
5. LANDSCAPED AREAS TO RECEIVE 4" OF APPROVED TOPSOIL IN LAWN AREAS AND 8" IN ALL SHRUB PLANTING AREAS.
6. ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC IRRIGATION SYSTEM - SEE SHEET L-101 AND L-102.
7. COORDINATE WITH GENERAL CONTRACTOR FOR THE PROTECTION AND WATERING OF EXISTING PLANT MATERIAL UNTIL THE NEW IRRIGATION SYSTEM IS OPERABLE.
8. LAWN AREAS SHALL BE EDGED WITH CONCRETE MOWSTRIPS AS INDICATED IN DETAIL 4 SHEET L-502.
9. SHRUB PLANTING AREAS SHALL BE MULCHED WITH 3" OF APPROVED 3/4" TO 1-1/2" DIAMETER WASHED BASALT CHIP MULCH UNLESS OTHERWISE NOTED. GROUND COVER AREAS SHALL BE DRESSED WITH 1" - 2" OF APPROVED 3/4" TO 1-1/2" DIAMETER WASHED BASALT CHIP MULCH UNLESS OTHERWISE NOTED. FINISHED GRADE OF MULCH SHALL NOT BE ABOVE OR MORE THAN 1" BELOW ADJOINING SURFACES.
10. LAWN AREAS SHALL BE SODDED AS PER SPECIFICATIONS, AND PERMEABLE PAVING MATRIX AREAS SHALL BE SEEDED PER THE SPECIFICATIONS.
11. ALL NATIVE AREAS SHALL BE PROTECTED AND PRESERVED. ANY DISTURBANCE DUE TO CONSTRUCTION PRACTICES SHALL BE REPAIRED. REFER TO LANDSCAPE PLAN FOR LIMITS OF DISTURBANCE.
12. PLANT SYMBOLS SHALL DICTATE COUNT.
13. WHERE DISCREPANCIES ARE FOUND BETWEEN PLAN AND SPECIFICATION INFORMATION, THE MORE RESTRICTIVE OF THE TWO SHALL APPLY.
14. BOULDERS SHALL BE SOLID, NON-FRIABLE, IRREGULARLY SHAPED BASALT. 20% SHALL MEASURE 18"X18"X24", 35% SHALL MEASURE APPROXIMATELY 24"X24"X36", 30% SHALL MEASURE APPROXIMATELY 36"X36"X48", AND 15% SHALL MEASURE APPROXIMATELY 48"X48"X36".
15. BOULDERS SHALL BE BURIED 1/3 TO 1/2 THE DEPTH OF THE BOULDER, SO THEY APPEAR TO EMERGE FROM THE SOIL.

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REV	DATE	DESCRIPTION

PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

LANDSCAPE PLAN

L-201

PLANT SCHEDULE L-202

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY	DETAIL
	APC	ACER PLATANOIDES 'CRIMSON SENTRY' / CRIMSON SENTRY NORWAY MAPLE	B & B	2"CAL	10`	6	1/L-502
	CFF	CARPINUS BETULUS `FRANZ FONTAINE` / FRANZ FONTAINE HORNBEAM	B & B	2"CAL	10`	6	1/L-502
	GSI	GLEDITSIA TRIACANTHOS INERMIS `SHADEMASTER` TM / SHADEMASTER LOCUST	B & B	2"CAL	10`	3	1/L-502
SHRUBS	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**				
	BTC	BERBERIS THUNBERGII `CRIMSON PYGMY` / CRIMSON PYGMY BARBERRY	5 GAL			22	2/L-502
	LIC	LAGERSTROEMIA INDICA 'CONGRABEL' / BELLINI GRAPE CRAPE MYRTLE	5 GAL			10	2/L-502
EVERGREEN SHRUB	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**				
	IGS	ILEX GLABRA `SHAMROCK` / SHAMROCK INKBERRY	5 GAL			8	2/L-502
	JCH	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS' / HETZI COLUMN JUNIPER	10 GAL			13	2/L-502
	PLO	PRUNUS LAUROCERASUS `OTTO LUYKEN` / LUYKENS LAUREL	5 GAL			24	2/L-502
ORNAMENTAL GRASSES	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**				
	PVH	PANICUM VIRGATUM 'HEAVY METAL' / HEAVY METAL SWITCH GRASS	2 GAL			5	3/L-502
PERENNIALS	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**				
	CCC	CROCOSMIA X 'COLUMBUS' / CROCOSMIA	1 GAL			27	3/L-502
GROUND COVERS	**CODE**	**BOTANICAL / COMMON NAME**	**CONT**		**SPACING**		
	DCP	DELOSPERMA COOPERI / PURPLE ICE PLANT	1 GAL		24" o.c.	91	3/L-502

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	DETAIL
1	LANDSCAPE EDGING	4/L-502
2	5` HT FENCE--BLACK VINYL COATED CHAIN LINK	
3	5` HT FENCE--SITE OBSCURING	
4	BASALT VENEER SITE WALL -- SEE ARCHITECTURAL	
5	WATER FEATURE	5&6/L-502
6	COURTYARD	
7	FUTURE SCULPTURE -- BY OWNER	
8	ROCK BUBBLER FOUNTAIN	11/L-502
SYMBOL	**DESCRIPTION**	**DETAIL**
	BOULDER `A`	9/L-502
	BOULDER `B`	9/L-502
SYMBOL	**DESCRIPTION**	**DETAIL**
	IRRIGATED LAWN	
	UNDISTURBED AREA	
	PERMEABLE PAVING MATRIX	14/L-502
	5/8" MINUS COMPACTED GRAVEL PATH	
	WASHED ROCK COBBLE 2" TO 6" DIA.	

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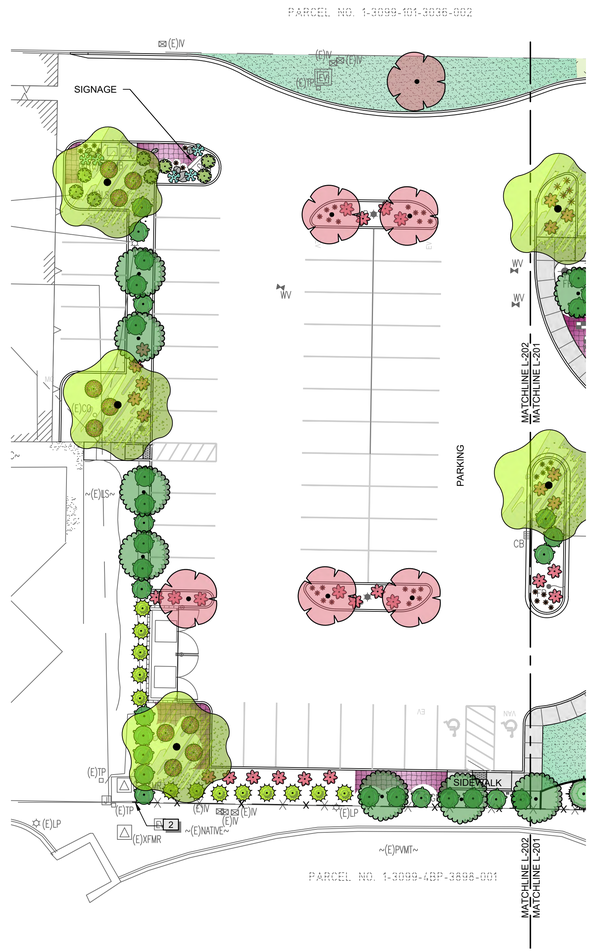
13. WHERE DISCREPANCIES ARE FOUND BETWEEN PLAN AND SPECIFICATION INFORMATION, THE MORE RESTRICTIVE OF THE TWO SHALL APPLY.
14. BOULDERS SHALL BE SOLID, NON-FRIABLE, IRREGULARLY SHAPED BASALT. 20% SHALL MEASURE 18"X18"X24", 35% SHALL MEASURE APPROXIMATELY 24"X24"X36", 30% SHALL MEASURE APPROXIMATELY 36"X36"X48", AND 15% SHALL MEASURE APPROXIMATELY 48"X48"X36".
15. BOULDERS SHALL BE BURIED 1/3 TO 1/2 THE DEPTH OF THE BOULDER, SO THEY APPEAR TO EMERGE FROM THE SOIL.



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HOSPICE CARE CENTER

CHAPLAINCY HEALTH CARE

50% CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION

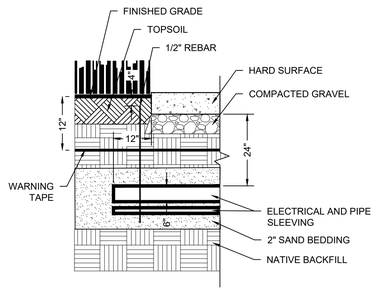
PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

LANDSCAPE PLAN

L-202

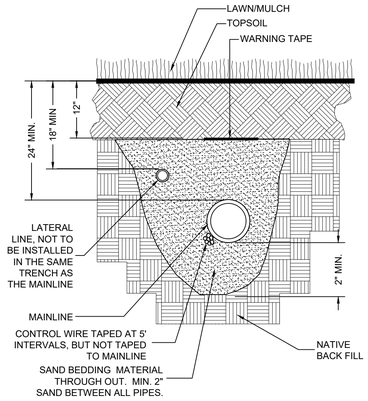


NOTES:

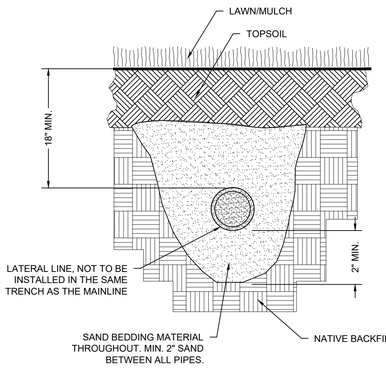
1. SLEEVE UNDER WALKS SHALL MATCH PROPOSED MAINLINE AND LATERAL DEPTHS.

2. INSTALL 1/2" REBAR ADJACENT TO SLEEVING FOR SLEEVE DETECTION.

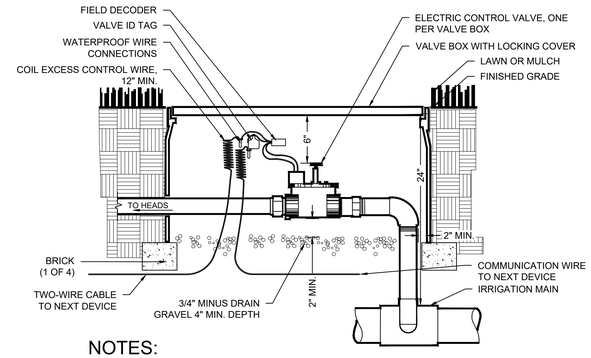
1 TYPICAL IRRIGATION SLEEVING — SPVV
NTS



2 IRRIGATION MAINLINE TRENCH — SPVV
NTS



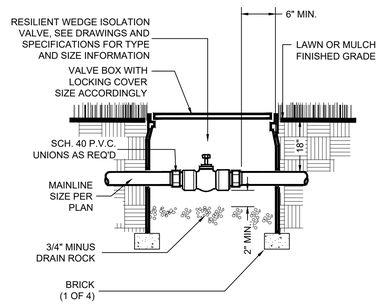
3 IRRIGATION LATERAL TRENCH — SPVV
NTS



NOTES:

1. TYPICAL ELECTRIC CONTROL VALVE VERIFY WITH VALVE SCHEDULE FOR SIZE, PRESSURE REGULATION AND TYPE.
2. PROVIDE SCHEDULE 40 UNIONS ON BOTH SIDES OF VALVE.
3. LATERAL LINE TO VALVE EXITS OUT OF THE SIDE OF THE MAINLINE.
4. ADD VALVE BOX EXTENSIONS AS NECESSARY TO MEET MINIMUM CLEARANCES.

4 TWO-WIRE DECODER VALVE — SPVV
NTS

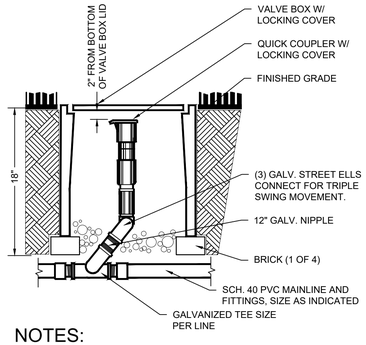


NOTES:

1. REFER TO IRRIGATION SHEET FOR LOCATIONS

2. REFER TO SPECIFICATIONS FOR INSTALLATION INSTRUCTIONS.

5 ISOLATION VALVE — SPVV
NTS

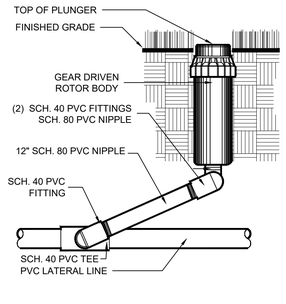


NOTES:

1. INSTALL 4" OF DRAINAGE ROCK IN THE BOTTOM OF QUICK COUPLER BOXES.

2. INSTALL LOCKING COVER ON QUICK COUPLER VALVE.

6 QUICK COUPLING VALVE IN BOX — SPVV
NTS



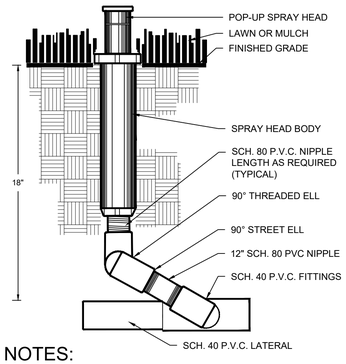
NOTES:

1. REFER TO PLANS FOR MORE INFORMATION.

2. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.

3. ADJUST ARC ACCORDINGLY TO PROVIDE 100% COVERAGE.

7 GEAR DRIVEN HEAD — SPVV
NTS

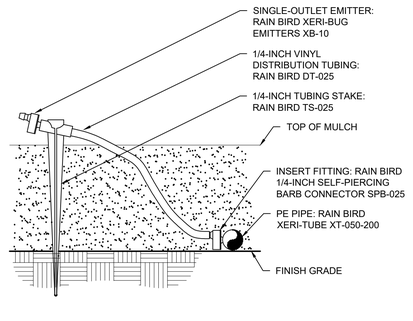


NOTES:

1. INSTALL AS PER MANUFACTURERS SPECIFICATIONS.

2. ADJUST ARC ACCORDINGLY TO PROVIDE 100% COVERAGE.

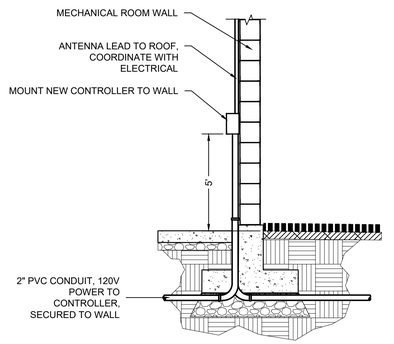
8 SPRAY HEAD — SPVV
NTS



NOTES:

1. USE RAIN BIRD BUG GUN MODEL EMA-BG TO INSERT BARB CONNECTOR DIRECTLY INTO XERI-TUBE.

9 EMITTER INTO XERI-TUBE — SPVV
NTS



NOTES:

1. REFER TO SPECIFICATIONS FOR MORE INFORMATION.

2. CONTROLLER TO BE HARDWIRED INTO SEPARATE JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR

10 INTERIOR WALL MOUNT CONTROLLER — SPVV
NTS

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HOSPICE CARE CENTER

CHAPLAINCY HEALTH CARE

50% CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION

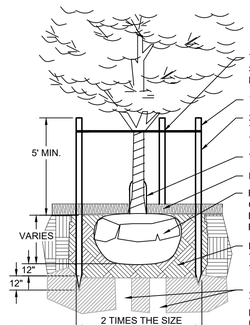
PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

IRRIGATION DETAILS

L-501

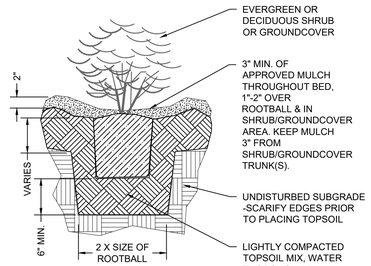


NOTES:

1. FERTILIZE W/ GRANULAR FERTILIZER PRIOR TO INSTALLATION OF MULCH.
2. CUT WIRE BASKET VERTICALLY FROM TOP TO BOTTOM A MINIMUM OF 3 PLACES.
3. REFER TO DOCUMENTATION FOR MORE INFORMATION.
4. PRIOR TO PLACEMENT REMOVE ALL NON-ORGANIC WRAPPING AND BINDING MATERIAL.

1 TREE PLANTING - STAKED W/ GUARD

NTS SPVV

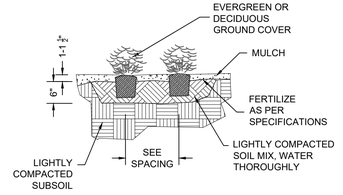


NOTES:

1. CREATE EARTHEN SAUCER WITH TOPSOIL MIX AROUND ALL PLANTS.
2. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
4. PRIOR TO PLACEMENT REMOVE ALL NON-ORGANIC WRAPPING AND BINDING MATERIALS.

2 SHRUB PLANTING

NTS SPVV

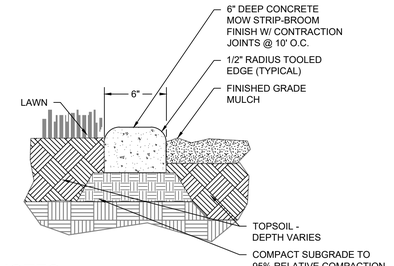


NOTES:

1. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
2. FERTILIZE W/ ORGANIC FERTILIZER PRIOR TO PLACING MULCH MATERIAL.
3. EDGING SHALL BE INSTALLED TO CREATE SMOOTH TRANSITIONS BETWEEN GRADE CHANGES.
4. PRIOR TO PLACEMENT REMOVE ALL NON ORGANIC WRAPPING AND BINDING MATERIALS.

3 GROUND COVER PLANTING

NTS SPVV

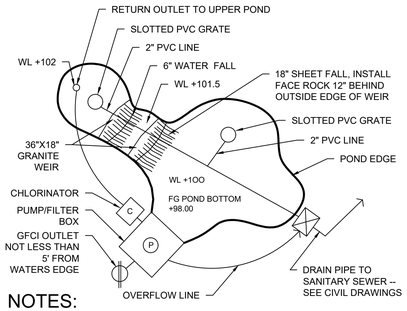


NOTES:

1. REFER TO DOCUMENTATION FOR MORE INFORMATION.
2. INSTALL 1/2" EXPANSION JOINT MATERIAL WHEN CURBING MEETS ANY OTHER HARD SURFACE AND AT 20' INTERVALS.
3. CONCRETE TO BE 3000 PSI AT 28 DAYS. SUBMIT TESTING RESULTS FOR RECORDS.

4 6" CONCRETE EDGING

NTS SPVV

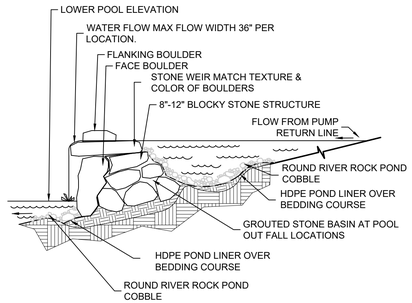


NOTES:

1. PROVIDE FILTER/PUMP BOX SIZED TO RE-CIRCULATE COMPLETE POND VOLUME EVERY HOUR.
2. PROVIDE RAINBOW CHLORINATOR OR HAYWORD CHLORINATOR.
3. CONNECT DRAIN PIPE TO SANITARY SEWER, SEE CIVIL DRAWINGS FOR INFORMATION.
4. INSTALL 45 MIL EPDM LINER & 8 OZ. FABRIC CLOTH. TAKE PRECAUTIONARY MEASURES NOT TO DAMAGE LINER WHEN PLACING BOULDERS.
5. INSTALL 2"-6" WASHED RIVER ROCK IN BOTTOM OF POND & ALONG EDGE OF POND LINER FOR CLEAN FINISHED LOOK.
6. PROVIDE GFCI OUTLET IN CONVENIENT LOCATION FOR PUMP POWER SUPPLY. COORDINATE WITH ELECTRICAL FOR INDEPENDENT CIRCUIT. INSTALL ALL ELECTRICAL WORK IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
7. INSTALL WATER SENSOR & KEEP-FILL TO ASSURE CONSISTENT WATER LEVELS, SEE IRRIGATION PLAN FOR INFORMATION.
8. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

5 WATER FEATURE SCHEMATIC

NTS SPVV

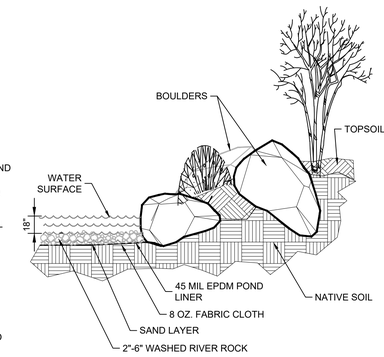


NOTES:

1. CONSTRUCT POND AS SHOWN ON PLANS. STONE WEIRS SHALL BE PLACED PLUM AND LEVEL TO PROVIDE SHEET FLOW OF WATER. ORIENT WEIR FOR BEST VISIBILITY FROM PATIO AND LIVING ROOM WINDOW.
2. SEE SCHEMATIC PLANS AND SPECIFICATIONS FOR PUMP, FILTRATION, AND CIRCULATION COMPONENTS.
3. PROVIDE WASHED, ROUND POND COBBLE IN INDIGENOUS STONE TO MATCH LANDSCAPE BOULDERS/STONE.

6 WATER FEATURE WEIR OUTFALL

NTS SPVV

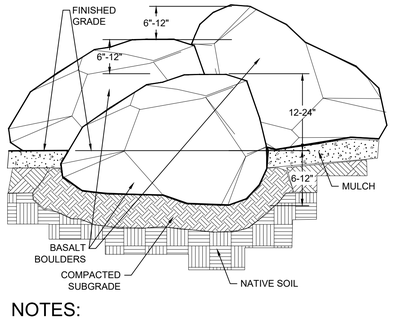


NOTES:

1. BOULDERS TO BE BURIED TO 1/3 OF THEIR DEPTH.
2. PROVIDE SUFFICIENT SOIL TO DEPTHS SPECIFIED.

7 BOULDERS AT WATER FEATURE EDGE

NTS SPVV

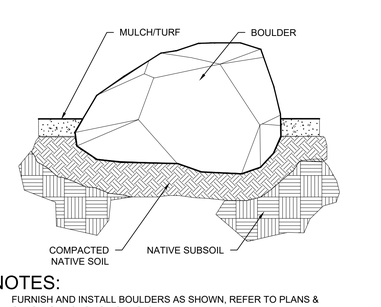


NOTES:

1. INSTALL BASALT BOULDERS RANGING IN SIZE FROM 18" WIDE X 18" WIDE X 18" DEEP TO 60" WIDE X 60" WIDE X 60" DEEP.
2. BOULDERS TO BE BURIED A MIN. OF 1/5 OF THEIR DEPTH.
3. REFER TO PLANS AND SPECIFICATIONS FOR MORE INFORMATION AND LAYOUT.
4. VARY ELEVATION DIFFERENCES BETWEEN HEIGHTS OF BOULDERS DURING PLACEMENT. CONFIRM FINAL ORIENTATION W/ ARCHITECT PRIOR TO FINAL BURIAL AND PLANT PLACEMENT.

8 BASALT BOULDER - GROUP

NTS SPVV

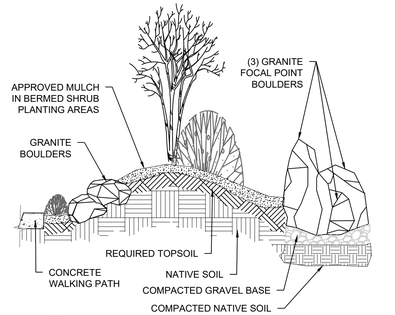


NOTES:

1. FURNISH AND INSTALL BOULDERS AS SHOWN, REFER TO PLANS & SPECIFICATIONS FOR SIZES, SHAPE AND TYPE.
2. BURY BOULDER SO 1/2 TO 2/3 OF BOULDER IS EXPOSED ABOVE FINISH GRADE.
3. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
4. TAKE CARE DURING INSTALLATION NOT TO SCRATCH OR MARR SURFACE OF BOULDER.

9 BOULDER IN LANDSCAPE

NTS SPVV

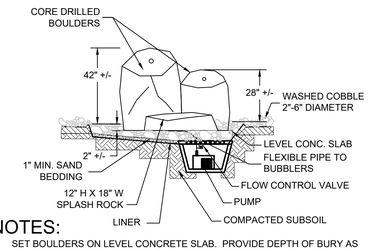


NOTES:

1. COMPACT NATIVE SOIL BENEATH FOCAL POINT GRANITE BOULDERS TO 95% PROCTOR
2. INSTALL 6" COMPACTED GRAVEL BASE UNDER FOCAL POINT GRANITE BOULDERS
3. LANDSCAPE ARCHITECT SHALL BE PRESENT WHEN PLACING FOCAL POINT BOULDERS

10 FOCAL POINT BOULDERS

NTS SPVV

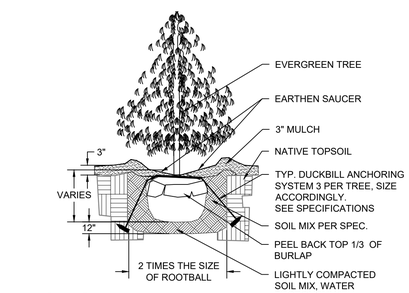


NOTES:

1. SET BOULDERS ON LEVEL CONCRETE SLAB. PROVIDE DEPTH OF BURY AS SHOWN. TAKE PRECAUTIONARY MEASURES NOT TO DAMAGE LINER WHEN PLACING STONE.
2. PLACE LINER IN EARTHEN BOWL TO COLLECT RECIRCULATED WATER PROVIDE BEDDING SAND AS NEED TO PROTECT LINER WHEN PLACING STONES.
3. LOCATE WASHED ROCK COBBLE ALONG EDGE OF LINER FOR CLEAN FINISHED LOOK.
4. PROVIDE GROUND FAULT INTERRUPTER OUTLET TO A CONVENIENT LOCATION FOR PUMP POWER SUPPLY. COORDINATE WITH ELECTRICAL FOR INDEPENDENT CIRCUIT AND INSTALL ALL ELECTRICAL WORK IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.

11 ROCK BUBBLER FOUNTAIN

NTS SPVV

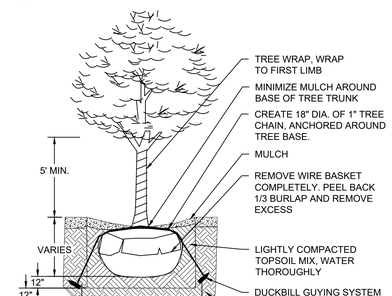


NOTES:

1. FERTILIZE W/ GRANULAR FERTILIZER PRIOR TO INSTALLATION OF MULCH.
2. CUT WIRE BASKET VERTICALLY FROM TOP TO BOTTOM A MINIMUM OF 3 PLACES.
3. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
4. PRIOR TO PLACEMENT REMOVE ALL NON-ORGANIC WRAPPING AND BINDING MATERIAL.

12 EVERGREEN TREE PLANTING

NTS SPVV

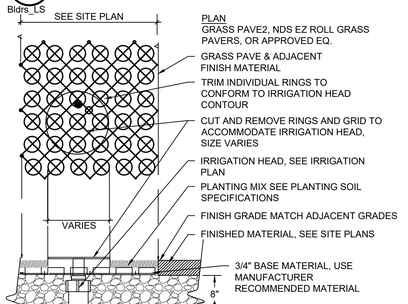


NOTES:

1. FERTILIZE W/ GRANULAR FERTILIZER PRIOR TO INSTALLATION OF MULCH.
2. CUT WIRE BASKET VERTICALLY FROM TOP TO BOTTOM A MINIMUM OF 3 PLACES.
3. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
4. PRIOR TO PLACEMENT REMOVE ALL NON-ORGANIC WRAPPING AND BINDING MATERIAL.

13 TREE PLANTING

NTS SPVV



NOTE:

1. GRASSPAVE2 NOT TO BE INSTALLED ON SLOPES GREATER THAN 20% IN PEDESTRIAN AREAS OR 5% IN FIRE LANES AND VEHICLE ACCESS ROADS.

14 PERMEABLE PAVING MATRIX

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HOSPICE CARE CENTER

CHAPLAINCY HEALTH CARE

50% CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION

PROJ. NO. 2020-010

PROJECT MANAGER AMH

DATE 6/17/21

LANDSCAPE DETAILS

L-502

GeoProfessional Innovation.

March 19, 2020
File: PU20001A

Gary Castillo
Chaplaincy Health Care
1480 Fowler Street
Richland, Washington 99352

RE: **Revised Geotechnical Engineering Evaluation**
Proposed Hospice Care Center
Chaplaincy Health Care
Denver Street
Richland, Washington

Greetings, Gary.

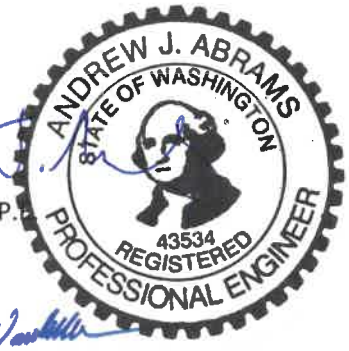
GeoProfessional Innovation Corporation (GPI) has performed the geotechnical engineering evaluation for the upcoming Hospice Care Center, to be located within the Spaulding Park near Denver Street in Richland, Washington. Our services were performed referencing our revised proposal dated January 3, 2020.

This report is revised from our original deliverable dated February 26, 2020 based on comments we received from the project design team. Herein we provide specific geotechnical recommendations for earthwork activities, shallow foundation design, concrete slab-on-grade floors, pavements, and stormwater disposal based on the conditions we encountered and observed. The geotechnical recommendations presented herein must be read and implemented in their entirety; portions or individual sections of our report cannot be relied upon without the supporting text in other pertinent sections.

Our opinion is that project construction success will depend, in part, upon designers and contractors implementing our report recommendations, adhering to good construction practices, and providing the necessary construction monitoring, testing, and geotechnical consultation to document the work has been accomplished as recommended herein.

We appreciate the opportunity to develop our professional relationship with Chaplaincy Health Care and their representative, Strategic Construction Management, on this project. Please do not hesitate to contact us if you have any questions or comments.

Sincerely,
GPI



Andrew J. Abrams, P.E.
Project Engineer

Travis J. Wambeke, P.E.
Principal

TJW/ac

Geotechnical Engineering Evaluation

Proposed Hospice Care Center
Chaplaincy Health Care
Denver Street
Richland, Washington

PREPARED FOR:

Gary Castillo
Chaplaincy Health Care
1480 Fowler Street
Richland, Washington 99352

PREPARED BY:

GeoProfessional Innovation Corporation
6 O'Donnell Road
Pullman, Washington 99163
Telephone (509) 339-2000
www.geoprocorp.com

March 19, 2020

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REPORT TABLES AND FIGURES

Geotechnical Engineering Evaluation

Proposed Hospice Care Center
Chaplaincy Health Care
Denver Street
Richland, Washington

INTRODUCTION

Our investigation's purpose was to assess subsurface conditions at the site and prepare this report outlining geotechnical considerations to assist Chaplaincy Health Care (Chaplaincy) and Strategic Construction Management (Strategic) with design and construction of the proposed Hospice Care Center, to be located within the Spaulding Park in Richland, Washington. The project area is shown on the attached Plate 1 - *Exploration Map*. The following text outlines our services, project understanding, exploration findings, geotechnical opinions and recommendations.

SCOPE OF SERVICE

1. Coordinated exploration with the Washington Utility Notification Center and Strategic prior to exploration.
2. Explored the subsurface soil conditions via 5 exploratory test pits extending 7.5 to 13 feet below the existing ground surface. Our approximate exploration locations are shown on the attached Plate 1 - *Exploration Map*.
3. Performed 1 field infiltration test to evaluate the near surface soils' infiltration characteristics.
4. Accomplished laboratory testing referencing ASTM International (ASTM) procedures to estimate soil engineering parameters.
5. Performed geotechnical engineering analysis to develop design and construction recommendations commensurate with the planned improvements.
6. Prepared and provided this electronic deliverable, summarizing our findings, opinions and geotechnical recommendations including exploration logs and laboratory test results.

PROJECT UNDERSTANDING

Existing Site Conditions

The site is located on an approximate 2.6-acre parcel situated northwest of the termination of Geneva Street. The site is undeveloped and is relatively flat with less than 3 feet of elevation change. The existing ground surface is covered by various weeds, brush, grass and some mature trees. Relatively shallow (1.0- to 3.0-feet) stockpiles of fill exist at various locations across the site surface. This fill material appeared to comprise a mixture of silt, sand, gravel and boulders. Also, some debris including wood, plastic and metal was present in these surface stockpiles. The site is surrounded by existing commercial and residential developments.

Proposed Construction

The planned hospice care center will be constructed near the center of the parcel with parking and access drives to the west. From reviewing a preliminary site plan you provided on December 16, 2019, the building will be an approximate 14,000 square-foot, single-story structure with wood framing, supported on typical shallow foundations and slab-on-grade floors. Structural loads are not developed yet; but from our experience with similar structures, we anticipate structural loads of 3 to 5 kips-per-linear-foot along perimeter footings and no more than 25 kips per on interior columns. The site will be accessed from the north along Spaulding Avenue, and the parking lot is planned to hold 37 parking stalls. We anticipate there will be no basement or below grade space within the building.

Site grading is expected to be relatively minor at less than 1- to 2-feet, outside of footing and utility alignments. Asphalt pavements will be constructed for passenger vehicle access and parking areas. Stormwater will be directed to onsite infiltration facilities for disposal. We expect franchise utilities will extend to the site from Spaulding Avenue.

FIELD EXPLORATION

We explored subsurface conditions within the planned improvement area by observing 5 exploratory test pits advanced with a CAT 320B excavator equipped with a 3-foot bucket. We coordinated exploration with Strategic and the Washington Utility Notification Center to reduce the potential for damaging existing site utilities. Test pits extended 7.5 to 13-feet below the existing ground surface. We obtained soil samples at select depths and transported them to our laboratory for subsequent testing. Test pit locations are illustrated on Plate 1. These exploration locations were established based on anticipated site and building configurations provided by Strategic and identified on-site by GPI through approximate measurement from existing site features.

While on site, we performed infiltration testing in test pit TP-20001A-1. Infiltration testing was accomplished at approximately 4 feet below the ground surface to help evaluate the near surface soils' infiltration characteristics, referencing the *Single Ring Infiltrometer Method* outlined in *Appendix 6B* of the *Washington State Department of Ecology* (Ecology) *Stormwater Management Manual for Eastern Washington*.

LABORATORY TESTING

We performed laboratory testing in reference to ASTM standards on select soil samples obtained during exploration. Laboratory testing included:

- In-situ moisture content (ASTM D2216)
- Grain size distribution (ASTM D422)
- Modified Proctor (ASTM D1557)

These laboratory test results were used in conjunction with field testing and observations to correlate soil engineering characteristics for final design.

SUBSURFACE CONDITIONS

Exploration encountered topsoil at the ground surface in each exploration, comprising silty sand with gravel containing vegetation and organics that ranged from 0.5- to 1-foot-thick. Beneath topsoil, we encountered the following primary subsurface soil units:

- **Uncontrolled Fill:** Silty Sand (SM): Brown, loose, and moist. Uncontrolled fill was encountered in test pits TP-20001A-2, 4, and 5 beneath the topsoil layer extending to depths ranging from 2.0- to 2.5-feet below the existing ground surface.

- **Alluvium:** Poorly-Graded Gravel with Silt, Cobbles, and Boulders (GP-GM): Brown-gray, medium dense to dense, and moist. Alluvial gravel was encountered in each test pit beneath topsoil or uncontrolled fill extending to termination depths.

We did not encounter bedrock nor groundwater within our exploration extents. To obtain additional subsurface information, we researched well logs within the project site vicinity published on the Washington Department of Ecology (WDOE) website. These well logs indicate basalt bedrock in the area is likely located greater than 50-feet below the existing ground surface while the groundwater table may be within the upper 50-feet. Groundwater tables and soil moisture conditions may fluctuate with seasonal variations in precipitation, infiltration, and irrigation.

GEOTECHNICAL RECOMMENDATIONS

Earthwork

Site Stripping/Test Pit Remediation

We recommend topsoil containing vegetation and organics be removed from beneath the proposed buildings, hardscapes, and all structural fill areas. We estimate a topsoil stripping depth of 0.8-feet at the ground surface. However, stripping depth can vary in isolated locations due to thicker surface vegetation and other factors. Specifically, we anticipate stripping depths to remove vegetation will be deeper around trees, brush and other substantial vegetation. Extend stripping laterally at least 5 feet outside of planned improvement areas. Soil containing vegetation and organics should be disposed off-site or may be reused on-site for landscaping, but it may not be re-used as structural fill.

Exploratory test pit locations must be identified at the onset of construction. Where test pits underlie the planned building, or other critical site aspects, loose test pit backfill must be removed and replaced with *Structural Fill.*

Uncontrolled Fill Removal/Remediation

We encountered uncontrolled fill ranging from 2.0- to 2.5-feet below the ground surface within the planned improvement area. Uncontrolled fill has the potential to settle below new structures, pavement and other improvements and can negatively impact their performance. Therefore, where uncontrolled fill is encountered in foundation excavations and interior slabs, completely remove it to expose undisturbed native soil, and replace it with compacted soil or aggregate per the *Structural Fill* and *Foundation Design* report sections where necessary to achieve foundation bearing elevations. Excavated uncontrolled fill may be reused for backfilling over-excavations, provided it is processed to meet the *Structural Fill* report section requirements.

Removing uncontrolled fill beneath all site improvements may be an unacceptable financial burden to the project. Therefore, Chaplaincy may elect to accept the risk of differential performance and leave uncontrolled fill in-place beneath exterior, lightly-loaded, at-grade improvements such as pavements, hardscapes and landscaping. These risks include differential settlement, misalignment, ongoing maintenance and premature replacement. In the following sections, we provide recommendations to help reduce, but not eliminate these risks where uncontrolled fill is left in place beneath exterior, at-grade improvements.

Excavation Characteristics

We anticipate site soil may be excavated using conventional excavation techniques. However, gravel alluvium contains boulders requiring large equipment with mechanical thumbs to manipulate and remove them. Carefully plan and implement temporary excavations to be sloped, shored, or braced in accordance with the *Washington Industrial Safety and Health Act* (WISHA) regulations and local code. Our exploration suggests site soil is type “C” soil when it remains dry. Therefore, provisions should be made to allow temporary excavations of any type to be sloped back to at least 1.5H:1V (horizontal to vertical) during dry conditions. However, temporary construction slopes can vary depending on soil type and consistency as well as moisture conditions and must be evaluated on a case-by-case basis during construction by the contractor.

Construction vibrations can cause excavations to slough or cave. We do not recommend stockpiling materials adjacent to or within 10-feet of excavations, which may cause a surcharge and contribute to excavation instability. Ultimately, the contractor is solely responsible for site safety and excavation configurations factoring in water infiltration, construction access, adjacent loading, and other factors that contribute to excavation stability.

Plan excavations with water collection points and utilize conventional sumps and pumps to remove nuisance water from runoff, seeps, springs, or precipitation. If site soil excavations are not immediately backfilled, they may degrade when exposed to runoff and require over-excavation and replacement with granular fill. We recommend construction activities and excavation backfilling be performed as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic.

Establishing Subgrades

Following site stripping, excavation to achieve planned grades, and prior to placing structural fill or concrete, subgrades must be achieved using the methods described below:

- Building Foundation & Slab Subgrades:
  - Remove uncontrolled fill and any surficial soil to expose coarse gravel alluvium beneath all foundations and interior slabs.
  - Scarify, moisture condition, and compact the exposed subgrade referencing the *Structural Fill* report section. We expect coarse gravel alluvium will be too coarse for testing per ASTM D1557, and therefore, compaction must be documented via visually observing compaction methods and results, i.e. developing a method specification as outlined in the *Coarse Soil* report section.

- All other subgrades:
  - Native or fill soil that has been scarified at least 0.7-feet below the subgrade elevation, moisture-conditioned and recompacted to 92% of the soil's maximum dry density per ASTM D1557.

The near-surface silty sand is moisture sensitive and susceptible to disturbance when moist or wet. Disturbance will negatively impact the soil's performance below foundations, slabs, pavements, and other improvements. Disturbed soil shall not be allowed below any structure and especially at foundation and slab subgrades. The contractor should begin final subgrade preparations at the furthest point from the excavation access point and work toward the excavation exit to load transport vehicles. After preparing subgrades, it is the contractor's sole responsibility to protect subgrades from degradation, freezing, saturation, or other disturbance.

Our opinion is careful construction and earthwork procedures are critical to achieving adequate subgrade preparation and reducing over-excavation. Specifically, these procedures could include, but are not limited to, carefully staging equipment and/or stockpiles, routing construction equipment away from subgrades, and implementing aggressive site drainage procedures to help reduce saturating subgrades during wet weather conditions.

Structural Fill Criteria

Place and compact all fill for this project as structural fill. Site soil (excluding topsoil containing vegetation and organics, or soil containing debris) may be re-used as *Structural Fill* provided it meets the requirements in Table 1. Various imported fill materials will also be required throughout construction. Material requirements for structural fill reference the latest *Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction* (WSDOT Standards). Project structural fill products are described in Table 1.

Table 1: Structural Fill Specifications and Allowable Use

Soil Fill Product	Allowable Use	Material Specifications
General Structural Fill (SF-1)	• Site grading • Backfilling over-excavations • Interior and exterior foundation stemwall backfill	• Soil classified as GM, GW, GC, SP, SM, or SW according to the USCS. • Maximum particle size must be less than 0.5-feet
Granular Structural Fill (SF-2)	• Backfilling over-excavations • Temporary haul roads • SF-1 applications	• Soil meeting requirements stated in Section 9-03.14(2) – *Select Borrow* in the WSDOT Standards. • Soil may not contain particles larger than 0.5-feet in diameter. • Coarse gravel alluvium from the site is suitable for re-use as *Granular Structural Fill* but may require processing to remove oversized particles.
Crushed Surfacing (CS-1)	• Slab support aggregate • Backfilling over-excavations • SF-1 and SF-2 applications	• Crushed gravel and sand mixtures meeting requirements stated in Section 9-03.9(3) – *Crushed Surfacing* in the WSDOT Standards, including base and top course.
Unsatisfactory Soil	• NONE	• Soil classified as CL, ML, MH, OH, CH, OL, or PT may not be used at the project site. • Any soil containing more than 3 percent (by weight) of organics, vegetation, wood, metal, plastic or other deleterious debris or substances. • Excess moisture, or lack of moisture does not render a soil unsatisfactory. Contractors must attempt moisture conditioning to achieve near-optimum conditions (i.e. wetting or drying) prior to soil disposal. Alternatively, contractors may elect to remove and replace over-optimum soil prior to moisture conditioning at no expense to Chaplaincy.

Site Soil Re-Use

On-site soil will likely require processing to meet the requirements in Table 1, which may include moisture conditioning and sorting to remove isolated organics, debris or oversized particles. Based on our site exploration and laboratory testing, site soil is expected to be below-optimum moisture content, and will require significant wetting prior to effective re-compaction as *Structural Fill*. Earthwork contractors must understand and plan for the time required to process soil to meet the report requirements.

Difficulty achieving required compaction may impact construction costs, schedules, and other project aspects. Allowing time and space (i.e., lay-down area) to process excavated site soil and facilitate proper moisture conditioning is critical if the contractor plans to re-use site soil as structural fill. Proper moisture conditioning can help reduce excessive compaction efforts and the need to import soil or aggregate.

Compaction

Place *Structural Fill* only over approved subgrades. Never place S*tructural Fill* over uncontrolled fill or frozen, saturated, or soft subgrades that are not reviewed and approved by the project geotechnical engineer. *Structural Fill* products must be moisture conditioned to near optimum moisture content and placed in maximum 1-foot-thick, loose lifts. This lift thickness requires compaction equipment with energy rating at least

5 tons. If smaller or lighter compaction equipment is used, reduce the lift thickness to meet the compaction requirements presented in Table 2.

Table 2: Required Compaction for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement[1]
Native subgrades below the building foundations	Coarse gravel alluvium	N/A[2]
Uncontrolled fill subgrades in exterior hardscapes	Existing site soil	92%
All structural fill placed for site grading, foundation/slab construction, trench backfilling, stemwall backfill	General or Granular Structural Fill	95%
Concrete slab and pavement support aggregate	Crushed Surfacing	95%

1. Relative compaction requirement compared to the maximum dry density of the soil as determined by ASTM D1557 (Modified Proctor).
2. Where subgrade soil is too coarse for testing per ASTM D1557, apply a method specification for compaction, per the *Coarse Soil Compaction* report section.

Coarse Soil Compaction

Any material with greater than 30 percent retained above the ¾-inch sieve is too coarse for Proctor density testing. Coarse granular structural fill products are often known locally as "pit-run" or "shot-rock". However, such coarse material may be used as *General* and G*ranular Structural Fill*. Compact coarse fill using a "method specification" developed during construction, based on the material characteristics and the contractor's means and methods. A method specification exists in *Section 2-03.3(14) "Rock Embankment Construction"* of the latest edition of the *WSDOT Standards*. It is common that method specifications are developed during construction, specific to the materials and conditions encountered. At a minimum, GPI recommends coarse granular fill be placed in maximum 1.5-foot-thick lifts and compacted with 5 complete passes of a 10-ton, vibratory or grid roller. Vibratory rollers must have a dynamic force of at least 30,000 pounds per impact per vibration, and at least 1,000 vibrations per minute. Coarse fill must be compacted to a dense, interlocking, and unyielding surface. GPI must review the soil and aggregate material planned for fill use and monitor compaction effort full time during construction.

Compaction Documentation

Successful earthwork activities are important to the project's long-term performance. Retaining experienced earthwork contractors is the first step in having confidence that earthwork will be performed in reference to this report's requirements. Providing the necessary testing and engineering verification of earthwork activities is the second step. We strongly recommend retaining GPI to provide this continuity by performing testing, observation and consultation throughout earthwork-related project activities. If GPI is not retained, the firm retained to verify design-specified subgrade conditions, soil bearing units, and compaction shall become the geotechnical engineer-of-record (GER) retained for construction. The criteria below outline the minimum testing and observation frequencies to implement during earthwork and foundation construction.

1. Site Stripping and Test Pit Backfill Remediation – Site stripping confirmed by the GER retained for construction to confirm conditions required by design. Test pit backfill compaction observed by engineer or GeoProfessional to confirm *Structural Fill* conditions are achieved.

2. Mass Grading/Structural Fill Placement – 1 compaction test every 2,500 sf, per fill lift, minimum 3 tests per testing event.

3. Foundation, Slab, and Pavement Bearing Surfaces – Bearing surface conditions verified by an experienced geotechnical engineer to confirm conditions as required by design. Additionally, and as applicable pending materials encountered, 1 compaction test every 100 linear feet (lf) of continuous foundations (+2 per column) and 2,000 sf for slab/pavement areas, or a minimum of 4 tests per alignment/area.

4. Foundation Stemwall Backfill – 1 compaction test every 100 lf of wall or minimum 3 tests per wall line (interior and exterior), whichever results in the greater number of tests, per fill lift.

5. Utility Trench Backfill (within the building footprint) – 1 compaction test every 100 lf of trench and minimum 3 tests per utility alignment, whichever results in the greater number of tests, per each fill lift.

6. Pavement Construction - 1 compaction test every 5,000 sf, per paving lift, minimum 3 tests per testing event. 1 laboratory test suite on a bulk sample of hot mix asphalt per each day's paving, including oil content, gradation and maximum theoretical (Rice) specific gravity.

Earthwork Seasonality/Wet Weather Considerations

Once the subgrade elevation is achieved, it is the contractor's responsibility to protect the soil from degrading under construction traffic, freezing and/or wet weather. Initial footing excavations should not be completed within 24 hours of expected precipitation. Footing or slab concrete placement should never be attempted following a significant precipitation event and the subgrade should never be allowed to freeze prior to concrete or fill placement. The condition of the subgrade and careful construction procedures are critical to foundation and slab stability and the long-term performance of the structure.

When construction is attempted before soil can dry after precipitation or during wet periods of the year (November through April), earthwork at the subgrade elevation should be completed by low pressure, track-mounted equipment that spreads and reduces vehicle load. Work should not be performed immediately after rainfall or until soil can dry to below optimum moisture content. Time for proper moisture conditioning during dry weather is critical to reducing excessive over-excavations and the need to import *Granular Structural Fill*.

Geotextiles

Geotextile separation fabric or geogrid reinforcement are not required for any specific project aspect (except foundation drains, see *Site Drainage* report section). However, geotextiles can aid constructability and help improve persistently soft subgrades encountered during construction. If they are utilized, geosynthetics shall meet the minimum requirements in *WSDOT Standards Section 9-33.2(1) – Table 3*, and the minimum properties shown in *Table 3* below:

Table 3: Geotextile Specifications

Geotextile Type	Potential Applications	Minimum Material Specifications
Non-Woven Geotextile	• Foundation drains • Subgrade separation • Over-excavations	• Grab tensile strength: 300 pounds (ASTM D4632) • Puncture resistance: 600 pounds (ASTM D6241) • Apparent opening size: US Sieve #40 (ASTM D4751) • Permittivity: 0.1 seconds^{-1} (ASTM D4491)
Triaxial or Biaxial Geogrid	• Gravel-surfaced site access roads • Construction access roads • Persistent soft subgrade conditions	• 93 percent junction efficiency (GRI-GG2-05) • 6.5 kg-cm/degree Aperture Stability (U.S. Army Corp of Engineers Ref. 3.3.1.2000) • Minimum Radial Stiffness of 15,075 lb/ft at 0.5% Strain (ASTM D6637)

If utilized, apply geotextiles directly on approved subgrades, taut, free of wrinkles, and over-lapped at least 1-foot. Consult GPI to review geotextile applications or other subgrade improvement alternatives if desired.

Foundation Design and Construction

The information below is based on the anticipated foundation loading conditions and provides shallow foundation design and construction recommendations for Chaplaincy, Strategic and their design team. If foundation loading conditions change, or construction plans change from those described herein, please notify GPI so we can make appropriate changes to our design recommendations.

Shallow Foundation Design Criteria

Based on the anticipated loading conditions, we recommend bearing shallow foundations directly on dense, compacted native gravel alluvium subgrades prepared per the *Establishing Subgrades* report section requirements, or *Granular Structural Fill* placed over dense native gravel subgrades. Foundation construction is illustrated in Plate 2, Foundation Schematic. Shallow foundation design must incorporate the following criteria and the current IBC edition:

1. Allowable bearing pressure: 4,000 psf. This requires:
   a. Bearing on compacted native gravel soil, or *Granular Structural Fill* atop dense native gravel.
   b. Frost protection embedment depth: 2-feet below finished exterior surface.
   c. Thickened slab footings should be avoided due to their propensity for cracking at the transition between section thicknesses.

2. Anticipated static vertical settlement tolerances (**to be verified by structural design**):
   a. Total settlement: 1.0 inch
   b. Differential settlement: 0.5 inches in 30-foot, horizontal span

3. Lateral load resistance:
   a. Foundation base friction coefficient:
      i. 0.5 for foundations cast on compacted gravel subgrades
      ii. Reduce friction by 2/3 for precast elements
   b. Lateral passive resistance is available on foundation sides at 300 pounds per cubic foot (pcf) equivalent fluid pressure (EFP). This requires:
      i. 3/4 inches of lateral movement to mobilize full passive pressure.
      ii. Drained conditions within stemwall backfill via a perimeter foundation drain.

Seismic Site Class

GPI utilized site soil and geologic data, the project location, the *American Society of Civil Engineers* (ASCE) *Standard 7-16 - Minimum Design Loads for Buildings and Other Structures* to establish a Seismic Site Class "C" at the project site. Site Class C was assigned as the dense gravel soil conditions are expected to persist within the upper 100 feet below the ground surface.

We recommend seismic design reference the parameters provided in Table 4, based on the soil conditions and project location. The risk-targeted maximum considered earthquake (MCE_R) spectral response acceleration parameters provided in Table 4 have been modified from a Site Class B to a Site Class C (standard acceleration coefficients for Site Class B multiplied by the Site Class Factors for Site Class C). The design spectral acceleration parameters provided in Table 4 are equal to 67 percent of the Risk Targeted MCE_R acceleration parameters.

Table 4: Seismic Response Criteria (ASCE 7-16)[1] – Proposed Hospice Care Center

Period (seconds)	Standard Acceleration Coefficients for Site Class B (g)[2]	Site Factor for Site Class C	MCE_R Spectral Acceleration Parameters for Site Class C (g)[3]	Design Spectral Acceleration Parameters for Site Class C (g)
0.0 (Peak)	PGA = 0.185	F_{PGA} = 1.215	PGA_M = 0.224 ($PGA*F_{PGA}$)	-
0.2(Short)	S_S = 0.418	F_a = 1.3	S_{MS} = 0.543 (F_a*S_S)	S_{DS} = 0.362 (⅔ S_{MS})
1.0	S_1 = 0.159	F_v = 1.5	S_{M1} = 0.239 (F_v*S_1)	S_{D1} = 0.159 (⅔ S_{M1})

1. Values for location Latitude 46.236646° and Longitude -119.23392°.
2. Acceleration coefficients based on 2% probability of exceedance in 50 years.
3. Values for an ASCE Risk Category III

Concrete Slab-On-Grade Floors

We recommend concrete slab-on-grade floors be supported by a minimum 0.5-foot of *Crushed Surfacing* meeting the requirements shown in Table 1. This assumes soil subgrades will be prepared beneath slabs per the *Earthwork* report section. Slabs must be designed for the anticipated use, traffic, and equipment or storage loading conditions. Based on correlations to our field and laboratory test results, if our recommendations are followed, we recommend concrete slab design utilize an allowable modulus of subgrade reaction (k) of 210 pounds per cubic inch (pci). To realize the estimated subgrade modulus, uncontrolled fill must be removed, drained conditions must exist with a minimum 0.5-feet of *Crushed Surfacing* provided over the compacted subgrade soil. Higher subgrade modulus values are available with thicker *Crushed Surfacing* sections, or geotextile reinforcement beneath the slab-on-grade floors.

Moisture Protection

Interior floor slabs may be susceptible to moisture migration caused by subsurface capillary action and vapor pressure. Moisture migration through floor slabs can break down a floor covering, its adhesive, or cause various other floor covering performance problems. Specifically, GPI has observed various projects where inadequate vapor protection caused significant damage to moisture-susceptible flooring systems. Often, these moisture problems were associated with either no moisture protection below the slab or, alternatively, with improperly sealed sub-slab penetrations that allowed vapor migration and damage to the flooring system. Plumbing penetrations are notoriously problematic for under-slab vapor protection.

Where floor coverings or other moisture sensitive building features are not planned, moisture vapor retarders

may be omitted. Where floor coverings or moisture sensitive features are planned, install vapor retarders atop the prepared C*rushed Surfacing* layer, prior to slab section construction. Vapor retarders must consist of thick, puncture-proof polyethylene sheeting. An example of this material is Stego Wrap™, a 15-mil retarder.

Form stakes, piping, or other sub-slab penetrations must never penetrate the vapor retarder. Carefully design and construct any vapor retarder penetrations to reduce vapor transport through such penetrations. Even if these recommendations are used, water vapor migration through the concrete floor slab is still possible. Floor coverings should be selected accordingly and, when practical, flooring manufacturers should be consulted regarding moisture barriers, their location and product warranties. Manufacturer's recommendations should be strictly followed. Where vapor retarders are utilized, the flooring and concrete slab contractors, as well as the plastic sheeting manufacturer, should be consulted regarding additional slab cure time requirements and/or the potential for slab curling.

Asphalt Pavement Section Design

The following pavement section design recommendations are provided referencing the *American Association of State Highway and Transportation Officials* (AASHTO) *Guide for Design of Pavement Structures* (1993). GPI assumed traffic loading and design parameters based on the provided information, typical flexible pavement design criteria in the Central Washington area, results from laboratory testing, and the subsurface conditions. Based on correlations to laboratory testing, soil type, and experience with the site subgrade soil in the area, the subgrade soil is estimated to have a resilient modulus of 8,000 psi, provided the subgrade is compacted as recommended in the *Earthwork* report section. The following tables present the preliminary design parameters and references, as well as resulting flexible pavement section design recommendations.

Table 4: Pavement Design Parameters

Design Parameter	Value Used	References
Reliability (R)	85%	Assumed
Standard Deviation (S)	0.45	AASHTO 1993
Initial Serviceability (PSIi)	4.2	Typical Eastern Washington area values
Terminal Serviceability (PSIz)	2.2	Typical Eastern Washington area values
Traffic Loading	40,000 ESALS[1]	Estimated Heavy Duty Traffic Loading: • 64,000-lb GVW (refuse truck, 3 axles), o 1 cycle per week • 40,000-lb GVW (delivery truck, 2 axles), o 5 cycles per week • 12,000-lb GVW (service truck, 2 axles) o 5 cycles per week
	15,000 ESALS[1]	Estimated Heavy Duty Traffic Loading: • 6,000-lb GVW (passenger car, 2 axles) o 37 vehicles cycled 3x daily
Design Life	20 years	Typical eastern Washington area value
Resilient Modulus (Mr)	8,000 psi[2]	Based on Mr correlations to soil type
Asphalt Layer Coefficient (a1)	0.42	Figure 2.5 AASHTO 1993
Top Course Layer Coefficient (a2)	0.12	Figure 2.6 AASHTO 1993
Top Course Drainage Coefficient (m2)	0.9	Table 2.4 AASHTO 1993 for “fair” drainage, 5 percent saturation

1. Equivalent Single Axle Loads (ESALs)
2. Pounds per square inch (psi)

The above traffic loads for the pavement section are based on an anticipated 5 percent growth factor over a 20-year pavement design life. Note the pavement design assumes *no construction traffic*. Significant pavement damage can occur after just a single pass with heavily loaded construction equipment. Based on the above pavement design parameters, Table 5 provides the flexible pavement design section recommendations.

Table 5: Flexible Pavement Design

Pavement Section Material	Recommended Thickness (feet)		Material Specifications
	Light Duty Pavement	Heavy Duty Pavement	
Asphalt Concrete	0.21	0.25	Hot-mix asphalt (HMA) conforming to *Section 5-04,* latest WSDOT Standards edition. HMA should consist of ½ -inch to ¾ -inch-minus nominal aggregate size.
Crushed Surfacing	0.50	0.67	Must conform to *Section 9-03.9(3) - Crushed Surfacing,* latest WSDOT Standards edition.

We recommend the pavement structures be planned such that the light-duty asphalt section exists only where light passenger vehicles will access the parking areas. Any location that will be accessed by refuse or maintenance trucks, fire apparatus, or other heavy truck traffic should be planned for heavy-duty asphalt pavement section. The above sections also assume *no construction traffic* will access pavements. Significant pavement damage can occur after just a single pass with heavily loaded construction equipment.

Pavement Maintenance and Drainage

Crack maintenance should be accomplished on all pavement surfaces every 3 to 5 years to reduce the potential for surface water infiltration into the underlying pavement subgrade. Surface and subgrade drainage are extremely important to the performance of the pavement section. Therefore, the subgrade, crushed surfacing, and paved surfaces should slope at no less than 2 percent to an appropriate stormwater disposal system or other appropriate location that does not impact adjacent buildings or properties. This applies to gravel-surfaced roadways as well.

Pavement performance will depend upon achieving adequate drainage throughout the section and especially at the subgrade. Water ponding at the pavement subgrade surface can induce heaving during the freeze-thaw process, which can readily damage pavement. Chaplaincy should annually review pavement surface performance to help identify and address any pavement maintenance issues. Slurry seal applications are a common maintenance procedure for owners of asphalt pavement systems. If desired for pavement maintenance or preservation, we provide recommendations for slurry seal applications in the following items.

1. Cleaning: ensure that cracks are thoroughly clean, dry, and free of all loose and foreign material when filling with crack sealant material. Use a hot compressed air lance to dry and warm the pavement surfaces within the crack immediately prior to filling a crack with the sealant material. Do not overheat pavement. Flame dryers are not allowed.

2. Sand Slurry: for cracks greater than 1 inch in width, fill with sand slurry by thoroughly mixing the components and pour the mixture into the cracks until full. Add additional CSS-1 cationic emulsified asphalt to the sand slurry as needed for workability to ensure the mixture will completely fill the cracks. Strike off the sand slurry, flush with the existing pavement surface, and allow the mixture to cure.

3. Hot Poured Sealant: for cracks less than 1 inch in width, fill with hot poured sealant by applying the material in accordance with these requirements and the manufacturer's recommendations. Confine hot poured sealant material within the crack. Clean any overflow sealant from the pavement surface.

Site Drainage Considerations

Runoff from precipitation or snowmelt must be routed away from planned improvements to the maximum extent practical and must not be allowed to infiltrate beneath or be diverted towards foundations, exterior flatwork, or slab subgrades. Where infiltration occurs, reduced performance should be expected. Convey runoff or water migrating along the ground surface away from planned improvements by an appropriately designed series of catch basins, ditches, swales, or other surface water management procedures.

We recommend the ground surface outside all structures be sloped at least 5 percent away for a minimum of 10-feet to rapidly convey surface water or roof runoff away from foundations. Site grades beyond 10-feet from structures should slope at least 2 percent away and toward acceptable areas, as determined via our recommendations and site grading design. *Americans with Disabilities Act* (ADA) hardscapes may not meet the above site grading recommendations adjacent to structures. We recommend ADA-pertinent hardscapes be sloped away from structures to the maximum extent practical. We recommend elastomeric sealant be considered between exterior hardscapes and foundation stemwalls to reduce moisture infiltration at joints near building structures. Well-designed site drainage and careful final grading will help limit moisture infiltration beneath the building, which will help reduce impacts from frost heave, vapor intrusion to interior spaces, and help improve long-term performance of structures. Provide roof gutters and downspouts, however never connect them to the foundation drains.

Foundation Drainage

Maintaining uniformly drained conditions is critical to long-term building performance and to help route water away footings to reduce settlement risk. Therefore, we require installing foundation drains in perimeter foundation alignments as shown on Plate 2 - *Foundation Schematic*. We recommend installing foundation drains at the lowest bearing elevation around the structure's perimeter. Foundation drains should never connect to roof drains and should daylight to a disposal area at least 50 horizontal feet away, and 2 vertical feet down-gradient of the planned foundations.

The site is in a relatively dry climate and is underlain primarily by coarse gravel and sand deposits. Under these conditions, other facility owners in the area sometimes choose to omit foundation drains from the planned construction. Even under these conditions, GPI recommends foundations drains be installed. Such drains can reduce potential impacts to the planned building associated with surface water from precipitation, over-irrigation, or other factors.

Infiltration Testing

GPI accomplished infiltration testing in test pit TP-20001A-1 referencing the *Single Ring Infiltrometer Method* outlined in *Appendix 6B* of the Ecology *Stormwater Management Manual for Eastern Washington.* The infiltration test was performed in the poorly-graded gravel with silt, cobbles, and boulders at approximately 4-feet below the existing ground surface, yielding an unfactored falling head infiltration rate of 15-inches per hour.

Actual infiltration rates encountered during or after construction could vary significantly. This is due to the fine-grained silt within each soil unit "plugging" the voids in the otherwise porous gravel alluvium. This is a common factor (among others) which can drastically reduce infiltration rates. Our experience is that infiltration facility performance is highly dependent on construction procedures. Extreme care must be taken to prevent construction traffic from traversing infiltration facility subgrades, or fine-grained soil (i.e. silt) from

contaminating subgrades. Compacting or "plugging" infiltration facility subgrades with fines will greatly reduce or preclude their ability to allow infiltration.

Prudent engineering judgment must be used when selecting an infiltration rate for designing stormwater disposal facilities. We recommend the project civil designer apply a safety factor to the measured infiltration rate, based on their engineering judgment and design intent. Safety factors for infiltration facilities in various regional municipalities typically range from 2 to 4. GPI recommends a minimum safety factor of 4 be applied to infiltration rates for stormwater management facility design. Groundwater elevations must be factored into stormwater design in order to meet the WDOE stormwater disposal to groundwater separation requirements.

Once project specifications are developed, clear language must be incorporated into the Earthwork, Landscaping, Utility Construction, and other related specification sections to communicate the importance of this issue. Further, GPI recommends performing an infiltration test using design head elevations and the ring infiltrometer method at the conclusion of construction to verify design infiltration rates.

ADDITIONAL RECOMMENDED SERVICES

Geotechnical Design Continuity

We base this report's information on our exploration results, observations, and communications with Strategic. The site layout, building configuration, final floor elevation, loading conditions, drainage measures, and many other aspects can significantly alter our opinions and design recommendations. Therefore, it is critical that GPI provide geotechnical continuity throughout final planning and design for the proposed construction as individual aspects become available during design development phases.

Geotechnical Observation During Construction

We recommend Chaplaincy retain GPI to provide continuity through construction observation and testing to document our report recommendations have been followed. Providing these services during construction is a critical part of completing the geotechnical design process. Having GPI staff review earthwork and foundation construction will help to identify potential problems, thus allowing the contractor to proactively remedy them and reduce the potential for errors and omissions. If a firm other than GPI is selected, they must issue Chaplaincy a letter stating they will implement the recommendation in this report as the geotechnical engineer of record for construction.

EVALUATION LIMITATIONS

This geotechnical engineering report has been prepared to assist in planning, design, and construction for the upcoming proposed Hospice Care Center, to be located within the Spaulding Park near Denver Street in Richland, Washington. Our scope does not include an engineering evaluation for deep foundations, shoring, underpinning, retaining walls, dewatering systems, concrete section design, landscaping, or soil nutrient analysis. Variation in subsurface conditions may exist between or beyond our explorations, which can necessitate changes to the geotechnical recommendations in this report. Also, changes to the planned improvements from that described herein can drastically affect our recommendations. If the improvement plans change from those described herein, we must be notified so that we may make modifications to our recommendations with respect to the modified improvements.

If unforeseen conditions are encountered during earthwork, GPI must be afforded the opportunity to review our recommendations and provide necessary consultation, revision, or modifications to information contained herein. Subsurface conditions may vary from the locations explored and the extent of variation may only be

known at the time of construction. Where variations occur, it is critical GPI be afforded the opportunity to modify our report to reflect the site conditions exposed. This acknowledgment is in lieu of all warranties either express or implied. Specifically, uncontrolled fill deposits can change drastically in short lateral distances. If GPI is not retained to observe conditions exposed during construction, we cannot be responsible for project impacts associated with varying site conditions, or extrapolations of the information in this report.

This report was prepared for the exclusive use of Chaplaincy, Strategic, and their other design team members, for the specific project referenced herein. GPI cannot be held responsible for unauthorized duplication or reliance upon this report or its contents without written authorization. The geotechnical recommendations provided herein are based on the premise that an adequate program of tests and observations will be conducted by GPI during construction in order to verify compliance with our recommendations and to confirm conditions between exploration locations.

The following accompany this report:

Plate 1:	Exploration Map
Plate 2:	Foundation Schematic
Appendix A:	Unified Soil Classification System (USCS) and Exploration Logs
Appendix B:	Laboratory Test Results

LEGEND

TP-20001A-1	Approximate test pit location observed by GPI on January 22, 2020.
(3.4)	Approximate depth of uncontrolled fill observed (feet).
N.E.	Not Encountered

EXPLORATION MAP
Proposed Hospice Care Center
Spaulding Park
Richland, Washington

GeoProfessional Innovation.

PU20001A	PLATE 1

Reference: Base image from Google Maps, 2018. No Scale Intended

Foundation Construction

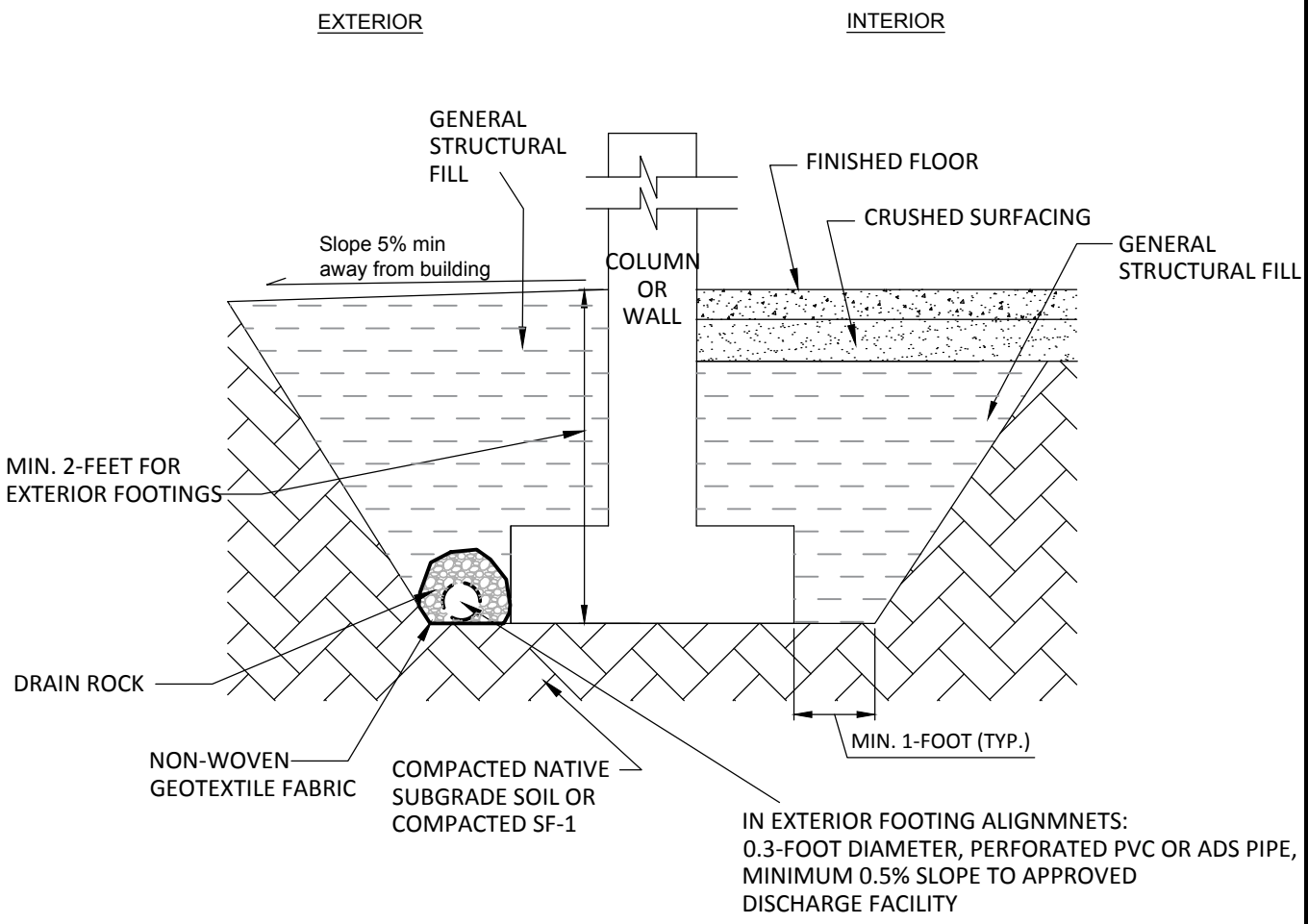
A. Excavate the subgrade to the planned foundation bearing elevation to expose dense native gravel

B. Prepare the exposed subgrade referencing the *Earthwork* report requirements. Geotechnical engineer retained for construction to verify subgrades.

C. In exterior (perimeter) foundation alignments, place 0.3-foot diameter, perforated PVC or ADS pipe at lowest possible elevation to maintain gravity drainage, with positive slope towards daylight or approved discharge facility. Cover pipe with drain rock and wrap with geotextile fabric.

D. Backfill over-excavations with general structural fill (SF-1), placed and compacted referencing the *Structural Fill* report section.

This drawing is intended for shallow foundations supporting isolated columns or walls. Foundation stemwall height will vary. This is not a structural detail.



FOUNDATION SCHEMATIC
Proposed Hospice Care Center
Spaulding Park
Richland, Washington

NOT TO SCALE

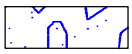
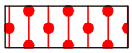
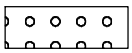
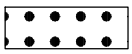
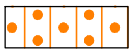
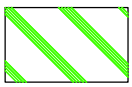
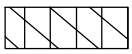
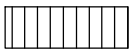
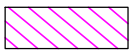
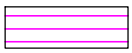
GeoProfessional Innovation

PU20001A	PLATE: 2
DRAWN BY: JBM	CHECKED BY: AJA

APPENDIX A

Unified Soil Classification System (USCS) Exploration Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
				GP	POORLY-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
		GRAVEL WITH FINES		GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES.
				GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES.
	SAND	CLEAN SAND		SW	WELL-GRADED SAND, GRAVELLY SAND.
				SP	POORLY-GRADED SAND, GRAVELLY SAND.
		SAND WITH FINES		SM	SILTY SAND, SAND-SILT MIXTURES.
				SC	CLAYEY SAND, SAND-CLAY MIXTURES.
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILT, SANDY OR CLAYEY SILT.
				CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, SANDY OR SILTY CLAY.
				CL-ML	INORGANIC MIXED CLAY AND SILT.
				OL	ORGANIC SILT AND CLAY OF LOW PLASTICITY.
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILT, MICA- CEOUS SILT, PLASTIC SILT.
				CH	INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY.
				OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY.
				PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

BORING LOG SYMBOLS

STANDARD 2 INCH OD SPLIT SPOON SAMPLE

CALIFORNIA MODIFIED 3 INCH OD SPLIT SPOON SAMPLE

ROCK CORE

SHELBY TUBE 3 INCH OD UNDISTURBED SAMPLE

TEST PIT LOG SYMBOLS

GRAB BAG SAMPLE

BG

BULK SAMPLE

BK

RING SAMPLE

RG

GROUNDWATER SYMBOLS

GROUNDWATER AFTER 24 HOURS

GROUNDWATER AT TIME OF EXPLORATION

GROUNDWATER AT THE END OF EXPLORATION

GeoProfessional Innovation®

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
TOPSOIL - SILTY SAND WITH GRAVEL, (SM) brown, loose, moist	0.0	SM								Vegetation and organics encountered to 0.8-feet BGS.
ALLUVIUM - POORLY-GRADED GRAVEL WITH SILT, COBBLES, AND BOULDERS, (GP) brown-gray, medium dense to dense, moist	2.5	GP		BK	7.9					Infiltration test performed at approximately 4.0-feet BGS. Unfactored Falling Head Infiltration Rate= 15 inches/hour
	5.0									
	7.5									
	10.0									
Test Pit Terminated at 12.5 Feet.	12.5									Test pit loosely backfilled with site soil.

Client: Chaplaincy Health Care	**Test Pit Number:** TP-20001A-1	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: Proposed Hospice Care Center	**Date Excavated:** 01-22-2020		
Backhoe: CAT 320B	**Bucket Width:** 3'		
Depth to Groundwater: N.E.	**Logged By:** AJA/BM		Sheet 1 Of 1

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
TOPSOIL - SILTY SAND WITH GRAVEL, (SM) brown, loose, moist	0.0	SM								
UNCONTROLLED FILL - SILTY SAND, (SM) brown, loose, moist		SM		BK						Vegetation and organics encountered to 0.5-feet BGS. ASTM D1557: Modified Proctor Maximum dry Density = 115.0 pcf Optimum Moisture Content = 12.0%
ALLUVIUM - POORLY-GRADED GRAVEL WITH SILT, COBBLES, AND BOULDERS, (GP) brown-gray, medium dense to dense, moist	2.5	GP								
	5.0									
	7.5									

Test Pit Terminated at 7.8 Feet.

Test pit loosely backfilled with site soil.

Client: Chaplaincy Health Care	**Test Pit Number:** TP-20001A-2	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: Proposed Hospice Care Center	**Date Excavated:** 01-22-2020		
Backhoe: CAT 320B	**Bucket Width:** 3'		
Depth to Groundwater: N.E.	**Logged By:** AJA/BM		Sheet 1 Of 1

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
TOPSOIL - SILTY SAND WITH GRAVEL, (SM) brown, loose, moist	0.0	SM								Vegetation and organics encountered to 0.8-feet BGS.
ALLUVIUM - POORLY-GRADED GRAVEL WITH SILT, COBBLES, AND BOULDERS, (GP) brown-gray, medium dense to dense, moist	2.5	GP								
	5.0									
	7.5									

Test Pit Terminated at 8.4 Feet.

Test pit loosely backfilled with site soil.

Client: Chaplaincy Health Care	**Test Pit Number:** TP-20001A-3	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: Proposed Hospice Care Center	**Date Excavated:** 01-22-2020		
Backhoe: CAT 320B	**Bucket Width:** 3'		
Depth to Groundwater: N.E.	**Logged By:** AJA/BM		Sheet 1 Of 1

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
TOPSOIL - SILTY SAND WITH GRAVEL, (SM) brown, loose, moist	0.0	SM								
UNCONTROLLED FILL - SILTY SAND, (SM) brown, loose, moist		SM								Vegetation and organics encountered to 0.5-feet BGS.
ALLUVIUM - POORLY-GRADED GRAVEL WITH SILT, COBBLES, AND BOULDERS, (GP) brown-gray, medium dense to dense, moist	2.5	GP		BG						
	5.0									
	7.5									
	10.0									
	12.5									

Test Pit Terminated at 12.9 Feet.

Test pit loosely backfilled with site soil.

Client: Chaplaincy Health Care	**Test Pit Number:** TP-20001A-4	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: Proposed Hospice Care Center	**Date Excavated:** 01-22-2020		
Backhoe: CAT 320B	**Bucket Width:** 3'		
Depth to Groundwater: N.E.	**Logged By:** AJA/BM		Sheet 1 Of 1

USCS Description	Depth (ft)	U.S.C.S. Class	Symbol	Sample Type	% Passing No. 200 Sieve	Dry Density (pcf)	Moisture Content (%)	Pocket Pen. (tsf)	Atterberg Limits LL PI	Remarks Note: BGS = Below Ground Surface
TOPSOIL - SILTY SAND WITH GRAVEL, (SM) brown, loose, moist	0.0	SM								Vegetation and organics encountered to 1.0-feet BGS.
UNCONTROLLED FILL - SILTY SAND, (SM) brown, loose, moist		SM								
ALLUVIUM - POORLY-GRADED GRAVEL WITH SILT, COBBLES, AND BOULDERS, (GP) brown-gray, medium dense to dense, moist	2.5	GP		BG						
	5.0									
	7.5									

Test Pit Terminated at 8.0 Feet.

Test pit loosely backfilled with site soil.

Client: Chaplaincy Health Care	**Test Pit Number:** TP-20001A-5	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: Proposed Hospice Care Center	**Date Excavated:** 01-22-2020		
Backhoe: CAT 320B	**Bucket Width:** 3'		
Depth to Groundwater: N.E.	**Logged By:** AJA/BM		Sheet 1 Of 1

APPENDIX B

Laboratory Test Results

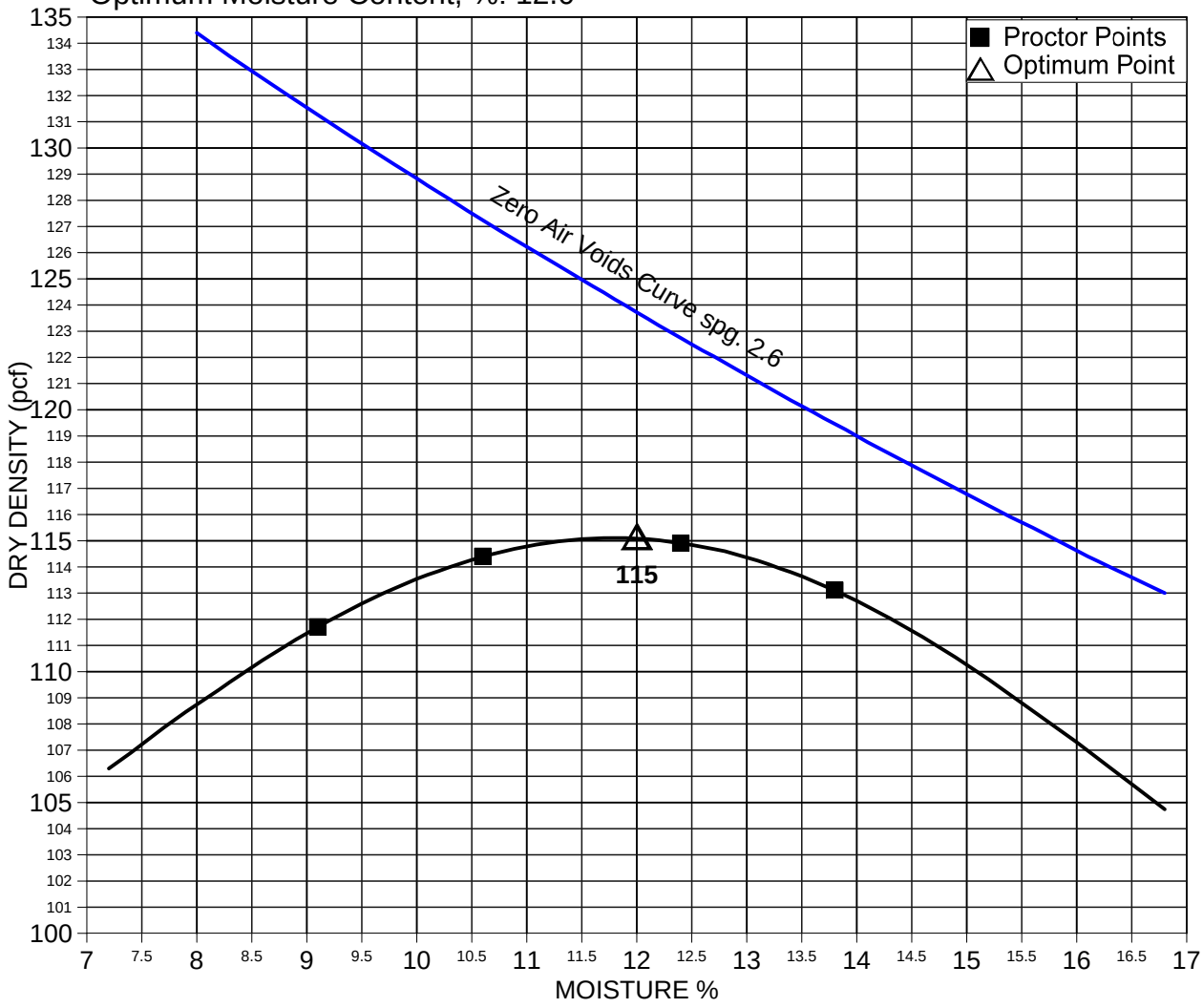
MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D 1557
Method C

GRADING ANALYSIS

SCREEN SIZE	% PASSING	AS TESTED
3/4 Inch	98	100
3/8 Inch	95	95
No. 4	93	93

Project: Proposed Hospice Care Center
Client: Chaplaincy Health Care
File Name: PU20001A
Lab Number: PUL20-0010B
Sample Location: TP-20001A-2 @ 1.0 - 2.0 feet BGS
Sample Description: Silty Sand (SM)
Date Tested: 1/23/2020 By: JP
Rammer Type: Manual

Maximum Dry Density, pcf : 115.0
Optimum Moisture Content, %: 12.0



Reviewed By: _____

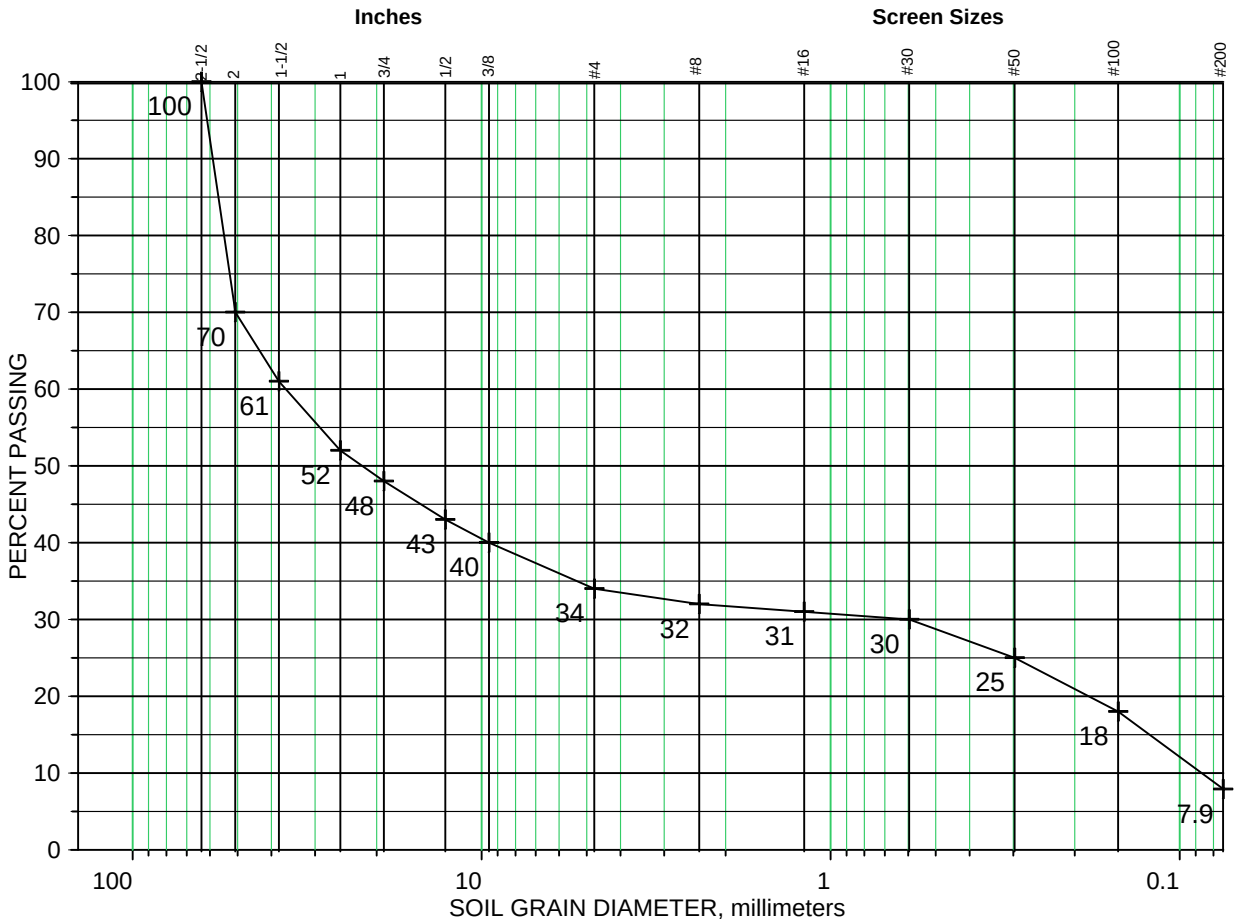
GeoProfessional Innovation.

GRADATION ANALYSIS

ASTM D6913

Project: Proposed Hospice Care Center
Client: Chaplaincy Health Care
File: PU20001A
Sample No: PUL20-0010A
Sample Location: TP-20001A-1 @ 3.0 - 4.0 feet BGS
Description: Poorly-Graded Gravel with Silt and Sand (GP-GM)
Date tested: 1/23/2020 By: JP

Cobbles	Gravel		Sand		
	Coarse	Fine	Coarse	Medium	Fine



Reviewed by: _____

GeoProfessional Innovation.