File No. EA2020-118

CITY OF RICHLAND
Determination of Non-Significance

Description of Proposal: Construction of a cardlock/truck fueling station and installation of underground fuel tanks. Approximately 4,200 cubic yards of cut and 2,200 cubic yards of fill will occur to prepare the site for the proposed construction.

Proponent: Coleman Oil
Attn: LCR Construction (Lee Petty)
2524 Robertson Drive
Richland, WA 99352

Location of Proposal: The project site is located at 2451 Logan Street, Richland, WA 99352.

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 19, 2020

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

1. Name of proposed project, if applicable: Coleman Oil- Fuel Station, Richland, W

2. Name of applicant: LCR Construction

3. Address and phone number of applicant and contact person:
Lee Petty, 2524 Robertson Dr., Richland, WA 99354

4. Date checklist prepared: 8/11/2020

5. Agency requesting checklist: LCR Construction

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

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? Possibly in the future, depending on volume of customers
If yes, explain.
The owner might add a C store at a later date. Approximately 2,000sf of convenience store.

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

No specific environmental info has been prepared for this proposal. An erosion control plan will be included in the construction documents. We are installing 2 underground fuel tanks.

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.

City Site plan review

10. List any government approvals or permits that will be needed for your proposal, if known.
Building permit from City of Richland, City site plan review

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.)

Development of +/- 3.5 acres of land for a new cardlock, truck fueling station. Installation of underground fuel tanks, concrete, asphalt and canopy.

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.

2451 LOGAN STREET, RICHLAND, WA.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

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

b. What is the steepest slope on the site (approximate percent slope)?
3%

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.
SANDY SILTS

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

None anticipated, we have developed an adjacent lot with no unstable soils

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.

We anticipate to grade the area similar to existing contours, the 3.5 acres of developed land will be graded to allow for development with no major cut or fill locations. All material will come from onsite or adjacent lots. Approximately 4,200 cys of cut and 2,200 cys of fill.

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

Wind erosion/ fugitive dust is possible. We will install the necessary temporary erosion control measures during construction.

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

68%

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

Hydroseed or grass areas not covered by pavement or buildings

2. Air

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.

Construction vehicle emissions from construction equipment during construction. Truck vehicle emissions

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

None known

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

NONE

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including

year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

NO

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described
waters? If yes, please describe and attach available plans. 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. None

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:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No, groundwater will not be withdrawn for drinking or other purposes. We do anticipate encountering ground water during the excavation and placement of the underground fuel tanks. We plan to install temporary “wells” for pumping down the groundwater during tank placement. The ground water will be discharged onsite. The temporary wells will be removed after tank placement and backfilling is complete.

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.

No waste will be discharged into the ground. The project will tie into the existing city sanitary sewer system.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

We anticipate storm water runoff which will be collected in an underground storm system onsite

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:

Surface and ground water will absorb into the landscaping areas which will include storm ponds. There will also be underground infiltration systems which will tie into the underground storm system.

4. **Plants**

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

____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?

WILD GRASS

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

None known

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

Landscaping is not designed yet.

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

Puncture vine might be in the area

5. **Animals**

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.

-No animals have been observed onsite. Coyotes have been seen in the area along with hawks.

Examples include:

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

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

None

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

Richland lies within the Pacific Flyway

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

OBSERVE AND NOTIFY IF ANY ARE SEEN

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

None known

6. **Energy and Natural Resources**

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.

Electric energy will be used for heating the buildings. The design and construction will meet or exceed the requirements of the Washington State Energy Code.

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? Energy-efficient building materials will be used on the buildings

List other proposed measures to reduce or control energy impacts, if any:

none

7. **Environmental Health**

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?
The fueling station does pose a risk of fire and explosion, chemicals, etc. All safety protocols will be followed for fuel installation, signage, distance and safety as required by Washington State Department of Ecology.

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

None known, undeveloped site

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, undeveloped site

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

During construction, common construction materials, epoxy's and compounds will be present during construction, including diesel fuel and gasoline, motor oil. All chemicals will be handled in accordance with their MSDS requirements

4) Describe special emergency services that might be required.

EMS, Fire, Police

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

none

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? No noise exists onsite. The adjacent roads have traffic

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 equipment and construction work. Excavators, graders, trucks during site work activities. Building noise-hammers, generators, etc during construction work.

Work hours are 7:00- 4:00

Once the project is complete the noise level should be minimal, truck traffic mainly.

3) Proposed measures to reduce or control noise impacts, if any: Perform work during normal work hours.

8. **Land and Shoreline Use**

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

The land is zoned for commercial use. It is undeveloped. Three of the adjacent lots are undeveloped. The proposed project will not affect the adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?
No, the site has not been used for farmlands or forest.

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:

Not anticipated

c. Describe any structures on the site.
There are no known structures on site. It is undeveloped land.

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

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

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

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

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?
0. Cardlock operation will not be staffed, just maintained occasionally by employees.

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

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

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
None.The proposal would keep the same zoning designation, which would be in line with the projected land use.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
None. This project should not impact agricultural or forest lands.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
0. not a housing project

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

c. Proposed measures to reduce or control housing impacts, if any:
no impacts anticipated

10. **Aesthetics**

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

Maximum height is 19'6", which is the canopy over the fueling islands. The canopy will be metal. The small restroom and mechanical room will be CMU with metal roof.

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

The project should not alter or obstruct any views in the vicinity.

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

The design could use some native plants in the landscaping. The project will not change the elevations of the existing land with large imports or exports of material.

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly
occur? The proposed project will have parking lot lighting and some exterior lights on the buildings. These would come on at dusk. They will not be high impact lighting. There should be no glare during the day from the proposed buildings. The lighting will be directed downwards and not produce glare off of the site.

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

No, there are no adjacent structures that would be affected by the light or glare. The lighting at night would cast downward so it should not be a safety hazard. This project is not close to a major road. The highway is far enough away the lights should not affect it.

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

None, there are no structures or projects off-site or nearby.

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

-All lights will be installed per code, the lighting will be directed downward. The proposed building materials do not cause glare.

12. **Recreation**

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

There is on recreation in the immediate vicinity. There is a walking path within a mile of the project, golf course and baseball field within 2 miles.

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

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
No impact-

13. **Historic and cultural preservation**

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.
None known

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.
None known.

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.
Notice of application and SEPA will be publicly advertised. If encountered any evidence will follow the

c. 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**.**
No loss or disturbance anticipated

14. **Transportation**

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 road accessing the site is already constructed, Logan St. Logan street ties into Robertson Dr, which connects to HWY 240. An existing traffic signal is already at the intersection.

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?

No, public transit does not service this area yet.

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

There are no parking spaces designed into project. No spaces are being eliminated

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). ___

NO IMPROVEMENTS ARE ANTICIPATED TO EXISTING ROADS.

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

The project is not in the vicinity of water, rail or air transportation. Building materials may be delivered to the suppliers by these modes of transportations, but not directly to the project.

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?

The project is mainly for truck fueling. Logan St, the road accessing this site, is the main road traveled to Lineage Logistics, which is a truck delivery/storage freezer facility. It is not known what time the peak volume will happen.No data or transportation models have been made.

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.

None anticipated, none known in the area.

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

We do not believe the proposed project will affect the existing traffic conditions. There is a stoplight at the nearest main intersection.

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No, the project should not increase the need for public services in the area.

b. Proposed measures to reduce or control direct impacts on public services, if any.
The project will not impact public services.

16. **Utilities**

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

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

The project will use electric service, city water, and sanitary sewer system. Water and sanitary sewer have already been stubbed out to the site. Minimal effort is needed to connect the proposed utilities. They should all be onsite, no cutting into existing roads is needed.

C. Signature

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

Signature: _____

Name of signee _____

Position and Agency/Organization _____

Date Submitted: _____

COMMUNITY DEVELOPMENT DEPARTMENT

THIS APPLICATION WAS REVIEWED BY THE PLANNING DIVISION OF THE COMMUNITY DEVELOPMENT DEPARTMENT. ANY COMMENTS OR CHANGES MADE BY THE DEPARTMENT ARE ENTERED IN THE BODY OF THE CHECKLIST AND CONTAIN INITIALS OF THE REVIEWER

Reviewer Signature Date

D. supplemental sheet for nonproject actions

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

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

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

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

There could be minimal fuel emissions to air.

Proposed measures to avoid or reduce such increases are:

The facility will be built to code and follow regulations by Washington State Department of Ecology

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

NO AFFECT

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

NA

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

NA

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

NA

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

NONE

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

5. How would the proposal be likely to affect land and shoreline use, including whether it
would allow or encourage land or shoreline uses incompatible with existing plans?
NO AFFECT

Proposed measures to avoid or reduce shoreline and land use impacts are:

NA

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

NA

Proposed measures to reduce or respond to such demand(s) are:

NA

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.
NA

REC'D 7-13
DUE 8-3
CUST 8-5

Application for Commercial Building Permit

PROJECT NAME / OWNER NAME			
Owner's or Tenant's Mailing Address / City / State / Zip Coleman Oil			Phone Number 208-791-0882
Fax Number	Cell Number 208-791-0882		EMail Terry.otte@colemanoil.com
Property Owner (if different from project owner) Same			Phone Number —
Property Owner's Current Address / City / State / Zip —			
Project Contact Name & Company Terry Otte, Coleman Oil	Contact Number 208-791-0882		EMail Terry.otte@colemanoil.com
ADDRESS OF PROPERTY 2451 LOGAN ST			
Tax Parcel # 1270820000001030	Subdivision	Lot	Block
Lender Information – required for projects over $5000 in valuation per RCW 19.27.095 If a lender or bond company is not loaning monies on this project, please check here: ☐			
LENDING INSTITUTION – Name / Address N/A			Phone Number
Description of project: (fully explain what work will take place, what the spaces or rooms will be used for and any special industrial process that will be used or materials that will be stored) Truck fuel card lock station. 6 dispensers. Small restroom + Mech room			
			Proposed # of tenant spaces
Your estimate of the construction cost of the project: (please note that the City's valuation may differ) $ 1,100,000			p/carrie $980,000 w/out canopy
CONTRACTOR LCR Construction			City Business License - **Required prior to permit issuance** ☐ Yes ☐ No
Address/City/State/Zip 2524 Robertson Dr., Richland WA 99354			Phone Number 509-987-2747
Fax Number 509-491-3823	Cell Number 509-987-2747		EMail lcrlpetty@gmail.com
ARCHITECT of Record N/A	St License #	Phone Number	Fax Number
Address/City/State/Zip		EMail	
ENGINEER of Record JUB Engineers	St License # 37991	Phone Number 509-783-2144	Fax Number
Address/City/State/Zip 2810 W. Clearwater, Kennewick, WA 99336		EMail dmoore@jub.com	
DETAILED PROJECT INFORMATION (please fill in all that apply)			
Main Level area (sf): 180 SF RR	Upper Level area (sf):	Basement Level area (sf):	Other Level(s) area (sf):
Exterior covered areas (sf):	Height of bldg. (total): 12'	# of parking spaces:	City of Richland Zoning District:
Is work on the following being done:	Plumbing: ☒ Yes ☐ No	Mechanical: ☒ Yes ☐ No	Fire sprinkler system: ☐ Yes ☒ No
Basic construction type (wood frame, steel, concrete, etc., explain): Conc Block building with metal roof	**FOR OFFICE USE ONLY** **Permit #** 20-01707 **Initials** nw		

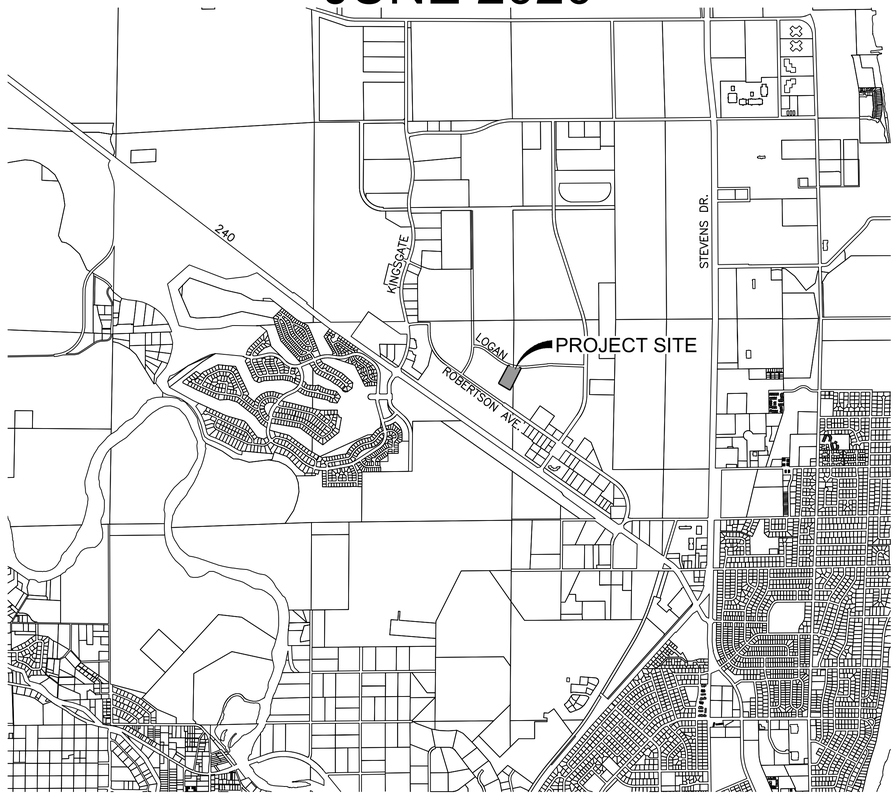
☐ I understand that this permit application is valid for 180 days. If the permit is not obtained within 180 days, all submittal documents will be discarded.

Signature of Owner or Authorized Agent

6-22-2020
Date

COLEMAN OIL

LOGAN ST.
RICHLAND, WA
JUNE 2020



VICINITY MAP

Sheet List Table

Sheet Number	Sheet Title
C-001	COVER SHEET
C-002	GENERAL NOTES AND SYMBOLS
C-010	TEMPORARY EROSION AND SEDIMENT CONCTROL
C-101	SITE LAYOUT PLAN
C-102	GRADING AND DRAINAGE PLAN
C-103	UTILITY PLAN
C-502	DETAILS
C-501	DETAILS

UTILITY CONTACTS

WATER/SEWER/STORM
CITY OF RICHLAND:
505 Swift Blvd.
Richland, WA. 99351
Jason Reathaford
(509) 942-7742

POWER
RICHLAND ENERGY SERVICES:
P.O. Box 190
Richland, WA. 99352
Kelly Hill
(509) 942-7416

CABLE TELEVISION
CHARTER CABLE:
639 N. Kellogg St.
Kennewick, WA. 99336
Tyler Chappell
(509) 222-2665

TELEPHONE
FRONTIER COMMUNICATIONS:
4916 W. Clearwater Ave.
P.O. Box 6390
Kennewick, WA. 99336
Shawn McVay
(509) 735-5318

GAS
CASCADE NATURAL GAS:
200 N. Union St.
Kennewick, WA. 99336

BASIS OF BEARINGS:

WASHINGTON STATE SOUTH ZONE, US SURVEY FEET, NAD 83(2011) PER THE SURVEY RECORDED IN VOLUME 1 OF SURVEYS AT PAGE 4756. SUPPLEMENTAL TIES WERE MADE TO THE CITY OF RICHLAND GPS CONTROL NETWORK, GPS TIES WERE MADE TO 1030, 1031 AND 1028 CONTROL POINTS. PROJECTED TO GROUND AT POINT 1031.

BASIS OF ELEVATION:

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
CMBC POINT NO. 1031, ELEV=365.29'

J-U-B ENGINEERS, INC.

2810 West Clearwater Avenue, Suite 201, Kennewick, WA 99336
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PROJECT NO. 30-20-033

J-U-B ENGINEERS, INC.
2810 W. Clearwater Ave.
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DARRAL S. MOORE
STATE OF WASHINGTON
37991
REGISTERED
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

COLEMAN OIL
RICHLAND, WA

COVER SHEET

FILE : 30-20-033_C-001
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/5/2020

SHEET NUMBER:
C-001

Plot Date:6/5/2020 9:11 AM Plotted By: Darral Moore
Date Created:4/23/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMANOIL\DESIGN\CAD\SHEET\30-20-033_C-001.DWG

CITY OF RICHLAND STANDARD NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST REVISION OF THE CITY OF RICHLAND STANDARD SPECIFICATIONS AND DETAILS AND THE CURRENT EDITION OF THE STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION. PLEASE CONFIRM THAT YOU HAVE THE LATEST SET OF STANDARD SPECS AND DETAILS BY VISITING THE CITY'S WEB SITE.
2. UTILITY MATERIAL PIPING MATERIALS
   WATER: DUCTILE IRON CLASS 50 PER COR STDS
   STORM: PVC, ASTM D3034–SDR35
   SEWER: SDR35–PVC
3. ANY WORK WITHIN THE PUBLIC RIGHT–OF–WAY, UTILITY EASEMENT OR INVOLVING THE CONSTRUCTION OF PUBLIC INFRASTRUCTURE WILL REQUIRE THE APPLICANT TO OBTAIN A RIGHT–OF–WAY PERMIT PRIOR TO CONSTRUCTION. A PLAN REVIEW AND INSPECTION FEE IN THE AMOUNT EQUAL TO 5% OF THE CONSTRUCTION COSTS OF THE WORK THAT WILL BE ACCEPTED AS PUBLIC INFRASTRUCTURE OR WITHIN THE RIGHT–OF–WAY OR EASEMENT WILL BE COLLECTED BY THE CITY AT THE TIME THE PERMIT IS ISSUED. A STAMPED, ITEMIZED ENGINEERS ESTIMATE (OPINION OF PROBABLE COST) SHALL BE USED TO CALCULATE THE 5% FEE.
4. ONCE THE PLANS HAVE BEEN ACCEPTED BY THE CITY, A PRE–CONSTRUCTION CONFERENCE WILL BE REQUIRED PRIOR TO THE START OF ANY WORK WITHIN THE PUBLIC RIGHT–OF–WAY OR EASEMENT. CONTACT THE CIVIL AND UTILITY ENGINEERING DIVISION AT 942–7500 OR 942–7742 TO SCHEDULE A PRE–CONSTRUCTION CONFERENCE.
5. WHEN CONSTRUCTION IS SUBSTANTIALLY COMPLETE A PAPER SET OF "RECORD DRAWINGS" SHALL BE PREPARED BY A LICENSED SURVEYOR AND INCLUDE ALL CHANGES AND DEVIATIONS. PLEASE REFERENCE THE PUBLIC WORKS DOCUMENT "RECORD DRAWING REQUIREMENTS AND PROCEDURES" FOR COMPLETE DESCRIPTION OF THE RECORD DRAWING PROCESS. AFTER APPROVAL BY THE CITY OF THE PAPER COPY, A MYLAR COPY OF THE RECORD DRAWINGS SHALL BE SUBMITTED ALONG WITH A CAD COPY OF THEM. THE ELECTRONIC AS BUILT RECORD DRAWINGS SHALL BE SUBMITTED IN A AUTOCAD FORMAT COMPATIBLE WITH THE CITY'S STANDARD CAD SOFTWARE. ALL FINAL PUNCHLIST ITEMS SHALL BE COMPLETED OR FINANCIALLY GUARANTEED PRIOR TO RECORDING FINAL PLAT.
6. NO WORK ON THIS PROJECT SHALL COMMENCE UNTIL THE CITY OF RICHLAND RIGHT–OF–WAY CONSTRUCTION PERMIT HAS BEEN ISSUED.
7. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
8. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL BE LICENSED BY THE STATE OF WASHINGTON AND BONDED TO DO WORK IN THE PUBLIC RIGHT–OF–WAY.
9. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL HAVE A CURRENT CITY OF RICHLAND BUSINESS LICENSE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CONSTRUCTION DEFICIENCIES FOR A PERIOD OF ONE–YEAR FROM THE DATE OF ACCEPTANCE BY THE CITY OF RICHLAND.
11. THE CONTRACTOR SHALL BE REQUIRED TO CALL 1–800–424–5555 OR "811" A MINIMUM OF TWO WORKING DAYS PRIOR TO COMMENCING ANY EXCAVATION ACTIVITIES TO DETERMINE FIELD LOCATIONS OF ALL UNDERGROUND UTILITIES.
12. ANY CHANGES OR MODIFICATIONS TO THE PROJECT PLANS SHALL FIRST BE APPROVED BY THE CITY ENGINEER OR HIS REPRESENTATIVE.
13. THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS ARE APPROXIMATELY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE ASSOCIATED WITH THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
14. THE FACE OF CURB SHALL BE STAMPED AT ALL UTILITY CROSSINGS, MAIN LINES AND SERVICE LINES AS FOLLOWS:
    "S" – SEWER "I" – IRRIGATION "G" – GAS
    "W"– WATER "C"– CONDUITS "D" – STORM DRAIN
15. ALL FIRE HYDRANTS AND GUARD POSTS SHALL BE PAINTED OSHA SAFETY YELLOW, QUICKSET ENAMEL NO. 3472 HYDRANT YELLOW AS MANUFACTURED BY FARWEST PAINT MANUFACTURING COMPANY OR APPROVED EQUAL.
16. FIRE HYDRANTS AND STREET LIGHTS SHALL BE INSTALLED AT 2–FEET BEHIND THE BACK OF SIDEWALK TO THE FACE OF EQUIPMENT WHERE THE SIDEWALK IS ADJACENT TO THE CURB AND 6–FEET BEHIND THE BACK OF CURB WHERE THE SIDEWALK IS NOT ADJACENT TO THE CURB UNLESS OTHERWISE NOTED ON THE PLANS.
17. ANY DAMAGED OR BADLY DETERIORATED CONCRETE CURB, GUTTER AND SIDEWALK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE REMOVED AND REPLACED. THIS INCLUDES ANY CURB DAMAGED BY CONSTRUCTION EQUIPMENT DURING THE PROJECT.
18. 2–INCHES OF CRUSHED GRAVEL SHALL BE PLACED AND COMPACTED BENEATH ALL SIDEWALKS PRIOR TO PLACEMENT OF CONCRETE.
19. A MINIMUM HORIZONTAL SEPARATION OF TEN–FEET SHALL BE MAINTAINED BETWEEN WATER MAINS AND SEWER MAINS AND SERVICE LINES. WATER MAINS SHOULD CROSS OVER THE TOP OF SEWER MAINS WITH A MINIMUM VERTICAL SEPARATION OF 18–INCHES. ANY CROSSING WITH A VERTICAL SEPARATION OF LESS THAN 18" OR ANY CROSSING IN WHICH THE WATER MAIN CROSSES BELOW THE SEWER MAIN SHALL BE IN ACCORDANCE WITH WASHINGTON STATE DEPARTMENT OF ECOLOGY STANDARDS. PRESSURIZED SEWER MAINS SHALL NOT CROSS OVER POTABLE WATER MAINS IN ANY CASE. IF A MINIMUM VERTICAL SEPARATION OF 12" CANNOT BE MAINTAINED BETWEEN MAINLINE PIPES, CDF OR CONCRETE SHALL BE USED AS BACKFILL IN PLACE OF NATIVE SOILS OR GRAVEL.
20. RESIDENTIAL SEWER SERVICES SHALL SHALL EXTEND 10–FEET BEYOND THE EDGE OF ROADWAY INTO THE LOT. THE END SHALL BE MARKED WITH MARKER POST INSTALLED 4–FEET ABOVE GROUND IN ACCORDANCE WITH CITY STANDARD DETAILS.
21. RESIDENTIAL WATER SERVICES SHALL BE 1–INCH IN DIAMETER AND SHALL EXTEND 10–FOOT BEYOND THE EDGE OF ROADWAY THROUGH THE CURB STOP. THE END SHALL BE MARKED WITH A MARKER POST INSTALLED 4–FEET ABOVE GROUND IN ACCORDANCE WITH CITY STANDARD DETAILS.

SITE LAYOUT NOTES

1. ALL DIMENSIONS SHOWN ON THESE PLANS AND ANY EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCY SHALL WARRANT IMMEDIATE ATTENTION OF ENGINEER TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION
2. SOIL STERILIZATION (WEED KILLER) SHALL BE APPLIED TO TOP OF ROCK IN AREAS TO BE PAVED THE SAME DAY AS PAVING WORK. KEEP 2–FOOT MIN. CLEAR OF EXISTING AND PROPOSED LANDSCAPE AREAS. APPLY AT MANUFACTURER'S RECOMMENDED RATE TO ASSURE 3–INCH MIN. PENETRATION.
3. ALL SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD AND THE STATE SIGN FABRICATION MANUAL.
4. ALL CEMENT CONCRETE PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 5–05 OF THE WSDOT STANDARD SPECIFICATIONS.
5. CONTRACTOR SHALL SUBMIT A JOINT LAYOUT PLAN AND DRAWINGS SHOWING TYPE OF REINFORCEMENT AND PLACEMENT OF REINFORCEMENT FOR CEMENT CONCRETE PAVEMENT.
6. CONTRACTOR SHALL SUBMIT A CONCRETE MIX DESIGN A MINIMUM OF 15 WORKING DAYS PRIOR TO START OF ANY PLACEMENT TO OWNER'S REPRESENTATIVE.
7. PAINT FOR PAVEMENT MARKINGS SHALL BE EITHER LOW VOC SOLVENT BASED OR LOW VOC WATERBORNE MEETING THE REQUIREMENTS OF SECTION 9–34 OF THE WSDOT STANDARD SPECIFICATIONS.

SITE CLEARING AND EARTHWORK NOTES

1. CONTRACTOR SHALL PROVIDE COMPACTION AND TESTING TO PROPERLY GRADE THIS SITE.
2. PRIOR TO THE START OF GRADING, ALL EXISTING ORIGINAL MATERIAL, DEBRIS, RUBBLE, ASPHALT PAVEMENT, ETC., SHALL BE REMOVED FROM THE SITE TO THE SATISFACTION OF THE OWNER AND OWNER'S REPRESENTATIVE.
3. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, THEY SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER'S ENGINEER PRIOR TO PROCEEDING.
4. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES, PUBLIC AND PRIVATE, AT ALL TIMES DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING AND/OR EXPORTING ALL MATERIAL AS REQUIRED TO PROPERLY GRADE THIS SITE TO THE FINISHED ELEVATIONS SHOWN HEREON IN ACCORDANCE WITH THE APPROVED PLANS AND THE GEOTECHNICAL REPORT RECOMMENDATIONS PREPARED BY GPI DATED OCTOBER 3, 2019.
6. GENERAL SITE FILL SHALL BE SCREENED OR PROCESSED TO REMOVE ALL ORGANIC MATERIAL, AND A MAX. 6" DIA. PARTICLE SIZE.
7. ALL FILL SHALL BE TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD PRIOR TO PLACEMENT.
8. ALL FILL MATERIAL SHALL BE PLACED IN LIFTS AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEERING EVALUATION AS PREPARED BY GPI DATED OCTOBER 3, 2019.
9. ALL FILL MATERIAL PLACED ABOVE EXISTING GROUND SURFACE SHALL BE COMPACTED TO A MINIMUM OF 95% OF MAX. DRY DENSITY PER ASTM D1557.
10. ALL EXCAVATION SHALL BE CONSIDERED UNCLASSIFIED.
11. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL BY LICENSED BY THE STATE AND BONDED TO DO WORK IN THE PUBLIC RIGHT–OF–WAY.
12. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL HAVE A CURRENT CITY BUSINESS LICENSE.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CONSTRUCTION DEFICIENCIES FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY CITY AND/OR OWNER.
14. THE CONTRACTOR SHALL BE REQUIRED TO CALL 811 A MINIMUM OF TWO BUSINESS DAYS PRIOR TO COMMENCING ANY EXCAVATION ACTIVITIES TO DETERMINE FIELD LOCATIONS OF ALL UNDERGROUND UTILITIES.
15. ANY CHANGES OR MODIFICATIONS TO THE PROJECT PLANS SHALL FIRST BE APPROVED BY THE ENGINEER OF RECORD AND CITY ENGINEER OR HIS REPRESENTATIVE.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OFF–SITE CLEANUP OF ANY DISCHARGE OF CONSTRUCTION RELATED STORMWATER AND SILT LADEN MATERIAL.
17. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY CONSTRUCTION WATER FOR DUST CONTROL AND FOR COMPACTION PURPOSES.
18. ALL DISTURBED AREAS SHALL BE HYDRO–SEEDED WITH A DRYLAND GRASS SEED MIX WITH TACKIFIER. CONTRACTOR SHALL BE RESPONSIBLE TO RE–ESTABLISH VEGETATION ON ALL DISTURBED AREAS. CONTRACTOR SHALL PROVIDE TEMPORARY WATER AS NECESSARY TO PROVIDE SEED GERMINATION. TACKIFIER SHALL BE IN ACCORDANCE WITH WSDOT STND SPECIFICATION 9–14.4(7).

TESTING

1. CONTRACTOR SHALL PROVIDE MATERIAL TESTING BY A CERTIFIED TESTING LABORATORY. MATERIAL TEST REPORTS SHALL INCLUDE CLASSIFICATION IN ACCORDANCE WITH ASTM D2487 OF EACH SOIL MATERIAL PROPOSED FOR FILL AND BACKFILL AND LABORATORY COMPACTION CURVE ACCORDING TO ASTM D1557 FOR EACH SOIL MATERIAL PROPOSED FOR FILL AND BACKFILL.
2. CONTRACTOR SHALL ADHERE TO THE TESTING AND INSPECTION REQUIREMENTS AS NOTED IN THE CITY PERMIT.
3. CONTRACTOR SHALL PROVIDE COMPACTION TESTING IN ACCORDANCE WITH ASTM D 1557, D2167, D2922 AND D 3017. FREQUENCY OF TESTING SHALL BE AS FOLLOWS:
   A. ONE (1) TEST PER 500 S.Y. OF AREA PER CONSTRUCTED LIFT
   B. TESTS SHALL BE EVENLY SPACED WITH A MINIMUM OF 2 TESTS LOCATED WITHIN 3–FT OF EDGE OF ANY EMBANKMENT
4. WHEN COMPACTION TEST FAILS, CONTRACTOR SHALL REMOVE WORK, REPLACE AND RETEST AT NO ADDITIONAL COST TO OWNER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE COMPACTION TESTING REQUIREMENTS.

GENERAL NOTES

1. ALL EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT LOCATIONS PROVIDED BY THE CONTRACTOR. DISPOSAL SITES SHALL BE IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.
2. AT COMPLETION OF PROJECT, CONTRACTOR SHALL NOTIFY OWNER AND/OR OWNER'S REPRESENTATIVE FOR FINAL PUNCHLIST WALKTHROUGH. FINAL PUNCHLIST ITEMS SHALL BE COMPLETED NO LATER THAN 3 WEEKS AFTER FINAL PUNCHLIST WALKTHROUGH.
3. PRIOR TO FINAL PROJECT ACCEPTANCE, THE CONTRACTOR SHALL CLEAN ALL UNDERGROUND STRUCTURES INCLUDING BUT NOT LIMITED TO MANHOLES, CATCH BASINS, SEWER PIPE AND STORM DRAINAGE. UNDERGROUND STRUCTURES SHALL BE CLEANED TO REMOVE ALL DEBRIS AND/OR SEDIMENT.
4. CONTRACTOR SHALL USE "REQUEST FOR INFORMATION" PROCEDURE FOR REQUESTING INFORMATION. RFI SHALL BE SUBMITTED TO THE OWNER AND/OR OWNER'S REPRESENTATIVE. NO PLAN CHANGES AND/OR CHANGE ORDERS WILL BE ACCEPTED UNLESS THEY ARE CLEARLY DOCUMENTED.
5. CONTRACTOR SHALL SUBMIT SUBMITTALS AND SHOP DRAWINGS TO OWNER AND/OR OWNER'S REPRESENTATIVE FOR APPROVAL OF ALL MATERIALS PRIOR TO INSTALLATION. CONTRACTOR SHALL PROVIDE ADEQUATE TIME TO ALLOW FOR REVIEW/APPROVAL OF SUBMITTALS AND SHOP DRAWINGS.
6. CONTRACTOR SHALL PROVIDE ALL MEANS, METHODS, LABOR AND MATERIALS NECESSARY TO CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
7. CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION STAKING FOR VERTICAL AND HORIZONTAL CONTROL. ALL CONSTRUCTION STAKING SHALL BE COMPLETED UNDER THE SUPERVISION OF A P.L.S. LICENSED IN THE STATE.
8. WHERE SPECIFICATIONS CONFLICT, THE STRICTER SHALL OVERRULE.
9. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL BE LICENSED BY THE STATE OF WASHINGTON AND BONDED TO DO WORK IN THE PUBLIC RIGHT–OF–WAY.
10. THE CONTRACTOR AND ALL SUB–CONTRACTORS SHALL HAVE A CURRENT CITY OF RICHLAND BUSINESS LICENSE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CONSTRUCTION DEFICIENCIES FOR A PERIOD OF 1–YEAR FROM THE DATE OF ACCEPTANCE BY THE CITY OF RICHLAND AND THE OWNER.

SITE UTILITY NOTES

1. ALL WORK AND MATERIALS SHALL BE IN COMPLETE ACCORDANCE WITH THE LATEST REVISION OF CITY STANDARDS AND SPECIFICATIONS AND ALL OTHER GOVERNING AGENCY'S STANDARDS.
2. THE CONTRACTOR SHALL OBTAIN AND HAVE AVAILABLE COPIES OF THE APPLICABLE GOVERNING AGENCY STANDARDS AT THE JOB SITE DURING THE RELATED CONSTRUCTION OPERATIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE BEST RECORDS AVAILABLE AND ARE SUBJECT TO A DEGREE OF UNKNOWN VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT ENGINEER TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.
4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH AND CONTACT ALL OF THE APPROPRIATE UTILITIES INVOLVED PRIOR TO CONSTRUCTION.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND CONTACT THE INSPECTOR 24 HOURS IN ADVANCE OF BACKFILLING ALL CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING UTILITIES WITHIN THE CONSTRUCTION AREA WHETHER SHOWN OR NOT SHOWN ON THE PLANS.
7. ALL SITE UTILITIES SHALL STOP AT 5' FROM BUILDING FACE. ALL UTILITIES SHALL BE CAPPED AND MARKED AT SURFACE WITH DEPTH NOTED.
8. WHERE DIRECTED BY THE CITY THE CONTRACTOR SHALL PLACE TRAFFIC CONTROL DEVICES, THE PLACEMENT AND TYPE OF WHICH SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
9. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO SURFACING INCLUDING BUT NOT LIMITED TO SEWER, WATER, TELEPHONE, POWER, AND CABLE TELEVISION.
10. ALL PAVEMENT CUTS TO CONNECT UTILITIES SHALL BE REPAIRED IN CONFORMANCE WITH THE CITY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS.
11. CONTRACTOR IS RESPONSIBLE FOR APPLYING FOR AND OBTAINING ALL PERMITS AND ASSOCIATED FEES EXCEPT FOR PLAN REVIEW.
12. CONTRACTOR SHALL COORDINATE W/ ALL UTILITIES FOR TRENCHING REQUIREMENTS. UTILITY LOCATIONS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL COORDINATE ACTUAL LOCATIONS WITH THE UTILITIES AT THE TIME OF CONSTRUCTION. CONTRACTOR AND UTILITIES SHALL COORDINATE LOCATION OF EQUIPMENT TO AVOID CONFLICTS.
13. CONTRACTOR SHALL COORDINATE PRIVATE UTILITY WORK AND CONFORM TO THE REQUIREMENTS OF UTILITY COMPANIES. PROVIDE MIN. 48 HOURS NOTICE TO UTILITY COMPANIES PRIOR TO UTILITY TRENCH EXCAVATION.
14. DOMESTIC WATER MAINS SHALL BE CL 50 D.I. WITH 48" MINIMUM OF COVER.
15. SANITARY SEWER PIPING SHALL BE PVC ASTM D3034, SDR 35.
16. UTILITY TRENCHES SHALL BE BACKFILLED AND COMPACTED WITH IMPORTED AND/OR EXISTING ON–SITE STRUCTURAL FILL.
17. ALL UTILITY STUBS SHALL BE CAPPED AND MARKED WITH WOOD OR METAL POST WITH INVERT ELEVATION, SIZE AND TYPE OF UTILITY NOTED ON POST.
18. PROVIDE TESTING IN ACCORDANCE WITH THE CITY OF RICHLAND STANDARD SPECIFICATIONS TO INCLUDE BUT NOT LIMITED TO BACTERLOGICAL TEST, HYDROSTATIC TEST AND BACKFLOW ASSEMBLY TEST.
19. DISENFECT AND FLUSH THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE CITY OF RICHLAND STANDARD SPECIFICATIONS.
20. DOUBLE CHECK VALVE ASSEMBLY SHALL MEET THE REQUIREMENTS OF THE CITY OF RICHLAND STANDARD SPECIFICATIONS. COORDINATE WITH CITY CREWS FOR CROSS CONNECTION INSPECTION.
21. CONTRACTOR SHALL PROVIDE SHORING AND TRENCH SAFETY SYSTEMS IN ACCORDANCE WITH SECTION 7–08.3(1)A AND 7–08.3(1)B OF THE WSDOT STANDARD SPECIFICATIONS.
22. CONTRACTOR SHALL PROVIDE DEWATERING AS NECESSARY TO INSTALL UNDERGROUND UTILITIES IN A DRY TRENCH. IF NECESSARY, CONTRACTOR SHALL PREPARE AND SUBMIT A DEWATERING PLAN TO THE CITY OF RICHLAND AND TO THE OWNER 15 WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
23. ABOVE GROUND AND UNDERGROUND UTILITIES ARE SHOWN PER OBSERVED EVIDENCE AND RECORD INFORMATION AND MAY NOT REPRESENT ALL SUCH UTILITIES EXISTING ON SITE. LOCATIONS AND SIZES ARE APPROXIMATE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED UNDERGROUND UTILITIES.

LINE LEGEND

LINE DESCRIPTION	PROPOSED LINE	EXISTING LINE
OVERHEAD POWER	OHP	OHP
UNDERGROUND POWER	UP	UP
OVERHEAD TELEPHONE	OHT	OHT
UNDERGROUND TELEPHONE	UT	UT
NATURAL GAS	G	G
STORM DRAIN	SD	SD
ROOF DRAIN	RD	RD
SANITARY SEWER	SS	SS
INDUSTRIAL SEWER	IS	
WATER	W	W
IRRIGATION	IRR	IRR
PROPERTY LINE	P/L	P/L
RIGHT OF WAY	R/W	R/W
PERMANENT EASEMENT	P/E	P/E
FENCE	X	X
ROAD CENTERLINE		
ROAD ASPHALT	EP	EP
ROAD GRAVEL	EG	EG

LEGEND

SYMBOL DESCRIPTION	EXISTING SYMBOL & BLOCK NAME	PROPOSED SYMBOL & BLOCK NAME	SYMBOL DESCRIPTION	EXISTING SYMBOL & BLOCK NAME	PROPOSED SYMBOL & BLOCK NAME
BOLLARD			VAULT	V	V
FLAGPOLE	F	F	FIRE HYDRANT		
MAIL BOX	M	M	WATER METER		
SIGN			IRRIGATION VALVE BOX	I	I
TREE (SHRUB)			CLEANOUT		
TREE (CONIFEROUS)			CATCH BASIN		
TREE (DECIDUOUS)			ELEC. TRANS.	E	E
TELE. PEDESTAL	T	T	POWER POLE		
GUY WIRE			STREET LIGHT		
MANHOLE			CAP		
VALVE					

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STATE OF WASHINGTON
37991
REGISTERED
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	BY	APP.
	REVISION			

COLEMAN OIL
RICHLAND, WA

GENERAL NOTES AND SYMBOLS

FILE : 30-20-033_C-002
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/4/2020

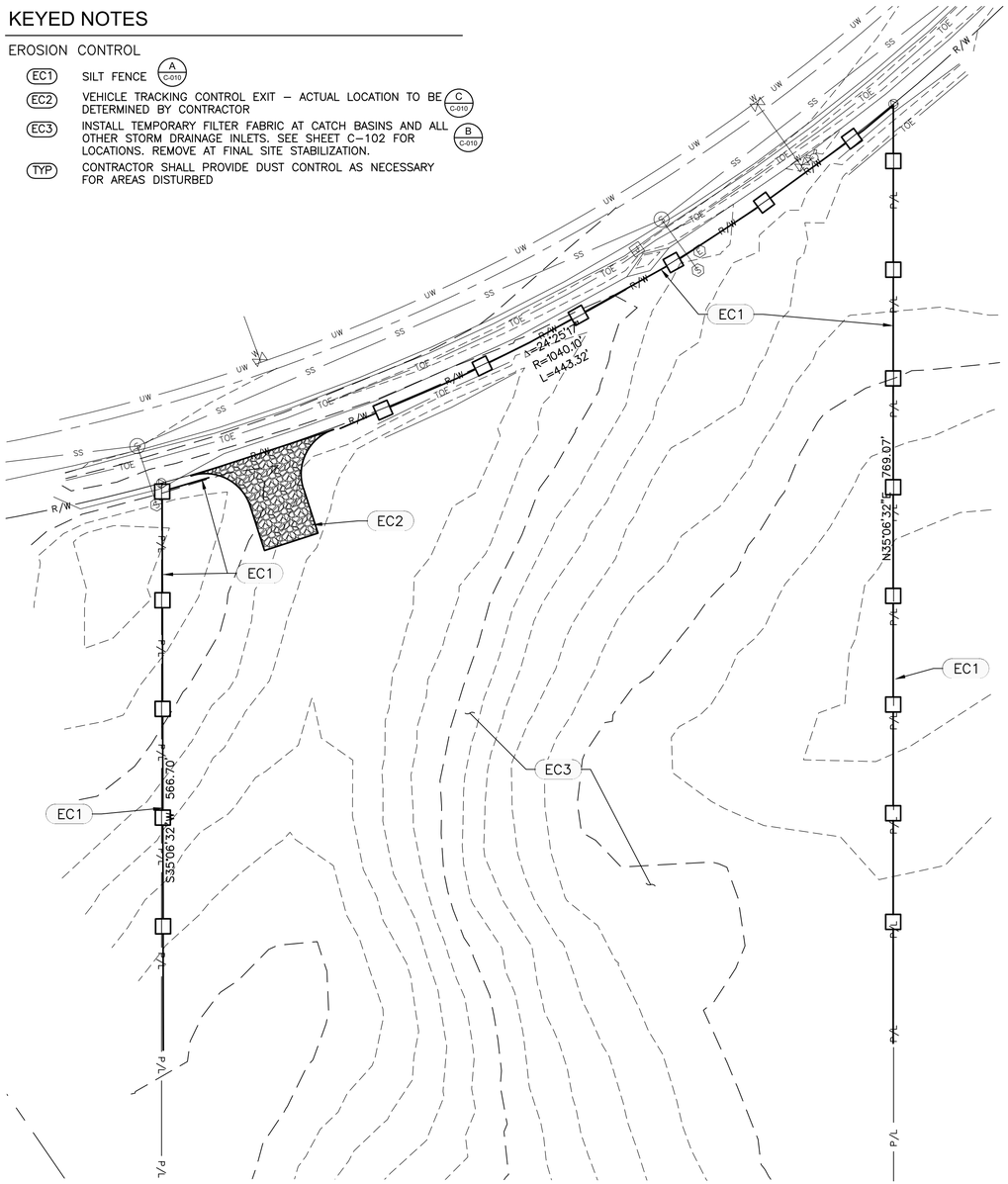
SHEET NUMBER:
C-002

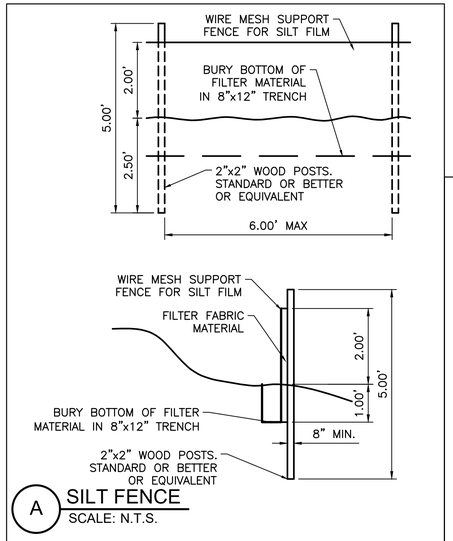
Plot Date:6/5/2020 9:04 AM Plotted By: Darral Moore
Date Created:6/4/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMANOILDESIGN\CAD\SHEET\30-20-033_C-002.DWG

KEYED NOTES

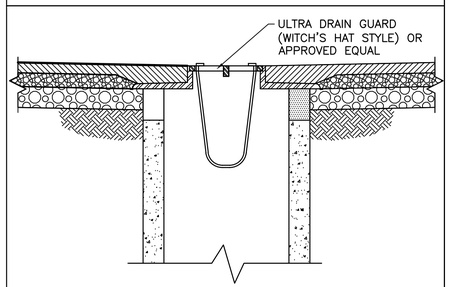
EROSION CONTROL

- (EC1) SILT FENCE (A C-010)
- (EC2) VEHICLE TRACKING CONTROL EXIT – ACTUAL LOCATION TO BE DETERMINED BY CONTRACTOR (C C-010)
- (EC3) INSTALL TEMPORARY FILTER FABRIC AT CATCH BASINS AND ALL OTHER STORM DRAINAGE INLETS. SEE SHEET C–102 FOR LOCATIONS. REMOVE AT FINAL SITE STABILIZATION. (B C-010)
- (TYP) CONTRACTOR SHALL PROVIDE DUST CONTROL AS NECESSARY FOR AREAS DISTURBED

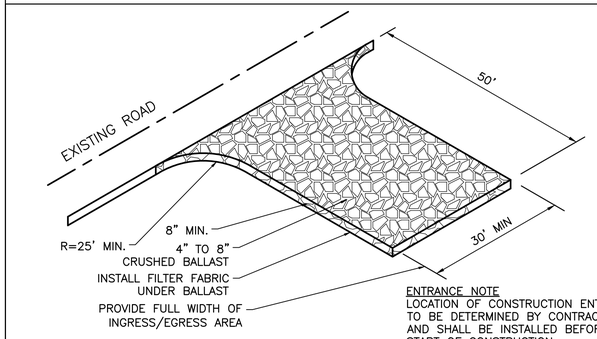




A SILT FENCE
SCALE: N.T.S.



B TEMPORARY INLET FILTER
SCALE: N.T.S.



ENTRANCE NOTE
LOCATION OF CONSTRUCTION ENTRANCE TO BE DETERMINED BY CONTRACTOR AND SHALL BE INSTALLED BEFORE START OF CONSTRUCTION.

1. THE TEMPORARY CONSTRUCTION ENTRANCE SHOULD BE CLEARED OF ALL VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL. ANY DRAINAGE FACILITIES REQUIRED BECAUSE OF WASHING SHOULD BE CONSTRUCTED ACCORDING TO NOTE #4 IN THIS PLAN. IF WASH RACKS ARE USED, THEY SHOULD BE INSTALLED ACCORDING TO MANUFACTURES SPECIFICATIONS.
2. GRAVEL SHALL BE CRUSHED BALLAST ROCK, 8" TO 12" IN DEPTH AND INSTALLED TO THE SPECIFIED DIMENSIONS AT THE ENTRANCE.
3. THE GRAVEL BALLAST ROCK SHALL BE 4" TO 8" IN DIAMETER AND PLACED ACROSS THE FULL WIDTH OF VEHICULAR INGRESS AND EGRESS AREA. THE LENGTH OF ENTRANCE SHALL BE A MINIMUM OF 50 FEET.
4. IF CONDITIONS ON THE SITE ARE SUCH THAT MOST OF THE MUD IS NOT REMOVED FROM VEHICLE TIRES BY CONTACT WITH GRAVEL, THEN THE TIRES MUST BE WASHED BEFORE VEHICLES ENTER ONTO A PUBLIC ROAD. WASH WATER MUST BE CARRIED AWAY FROM ENTRANCE TO A SETTLING AREA TO REMOVE SEDIMENT. A WASH RACK MAY ALSO BE USED TO MAKE WASHING MORE CONVENIENT AND EFFECTIVE.
5. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2" STONE, AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAY OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.

C TEMPORARY VEHICLE TRACKING CONTROL
SCALE: N.T.S.

TESC NOTES

1. THE TEMPORARY EROSION CONTROL SYSTEM SHALL BE INSTALLED PRIOR TO ALL OTHER CONSTRUCTION.
2. ALL CLEARING LIMITS AND/OR EASEMENTS SETBACKS, SENSITIVE/CRITICAL AREAS AND THEIR BUFFERS, SIGNIFICANT TREES AND DRAINAGE COURSES SHALL BE CLEARLY STAKED AND MARKED AS SHOWN ON PLANS.
3. PROPERTIES ADJACENT TO THE PROJECT SITE THAT ARE SUBJECT TO POTENTIAL EROSION CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION THROUGH THE USE OF SILT FENCE, WATTLES, OR OTHER BMP SELECTED BY THE CONTRACTOR.
4. ALL STORM DRAIN INLETS MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED WITH TEMPORARY INLET SEDIMENT CONTROL TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM. THE INSERT SHALL BE INSPECTED REGULARLY, CLEANED WHEN NECESSARY, AND REMOVED AT COMPLETION OF CONSTRUCTION.
5. WHEREVER CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED ROADS, A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED (SEE DETAIL) TO MINIMIZE THE TRANSPORT OF SEDIMENT (MUD) ONTO THE PAVED ROAD. IF SEDIMENT IS TRANSPORTED ONTO A ROAD SURFACE, THE ROADS SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. A MINIMUM OF ONE (1) ON–SITE STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED.
6. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.
7. ALL POLLUTANTS OTHER THAN SEDIMENT THAT OCCUR ON–SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORM WATER OR THE SITE.
8. ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED BY THE CONTRACTOR AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED USE.
9. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES, INCLUDING BUT NOT LIMITED TO SILT FENCING, SEDIMENT PONDS/TRAPS, DIVERSIONS SWALES, CHECK DAMS, SEDIMENT BARRIERS, FILTER FABRIC, MULCH, AND SEEDING, AS CONDITIONS REQUIRE. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR PREVENTING SILT–LADEN RUNOFF FROM DISCHARGING FROM THE PROJECT SITE. FAILURE BY THE CONTRACTOR AND/OR OWNER CAN RESULT IN A FINE.
11. AT NO TIME SHALL CONCRETE, CONCRETE BY–PRODUCTS, VEHICLE FLUIDS, PAINT, CHEMICALS, OR OTHER POLLUTING MATTER BE PERMITTED TO DISCHARGE TO THE TEMPORARY OR PERMANENT DRAINAGE SYSTEM, OR TO DISCHARGE FROM THE PROJECT SITE.
12. AT ALL TIMES OF THE YEAR, THE CONTRACTOR SHALL HAVE SUFFICIENT MATERIALS, EQUIPMENT AND LABOR ON–SITE TO STABILIZE AND PREVENT EROSION FROM ALL DENUDED AREAS WITHIN 12–HOURS AS SITE AND WEATHER CONDITIONS DICTATE. CONTRACTOR SHALL PROVIDE DUST CONTROL, AS NECESSARY, TO BE COMPLIANT WITH ALL LOCAL AND STATE CLEAN AIR/DUST CONTROL POLICIES. THE SPRAYING OF WATER ON DRY AREAS SHALL BE USED TO CONTROL DUST. CONTRACTOR SHALL SUPPLY ALL THE NECESSARY WATER FOR DUST CONTROL.
13. CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE ALL ADJACENT PROPERTIES TO THEIR ORIGINAL CONDITION DUE TO ANY CONSTRUCTION RELATED ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.
14. NONCOMPLIANCE WITH EROSION CONTROL REQUIREMENTS, WATER QUALITY REQUIREMENTS AND CLEARING LIMITS VIOLATIONS MAY RESULT IN REVOCATION OF PROJECT PERMITS AND PLAN APPROVAL AND BOND FORECLOSURES.
15. PRIOR TO ANY SITE CONSTRUCTION, INCLUDING CLEARING, LOGGING OR GRADING, THE SITE CLEARING LIMITS SHALL BE LOCATED AND FIELD IDENTIFIED BY THE PROJECT SURVEYOR (OR PROJECT ENGINEER) AS REQUIRED BY THESE PLANS.
16. ALL SITE WORK MUST BE PERFORMED IN ACCORDANCE WITH CURRENT CITY ADOPTED INTERNATIONAL BUILDING CODE.
17. STOCKPILES ARE TO BE LOCATED IN SAFE AREAS AND ADEQUATELY PROTECTED BY TEMPORARY SEEDING AND MULCHING. HYDROSEEDING IS PREFERRED.

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

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STATE OF WASHINGTON
37991
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PROFESSIONAL ENGINEER

NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

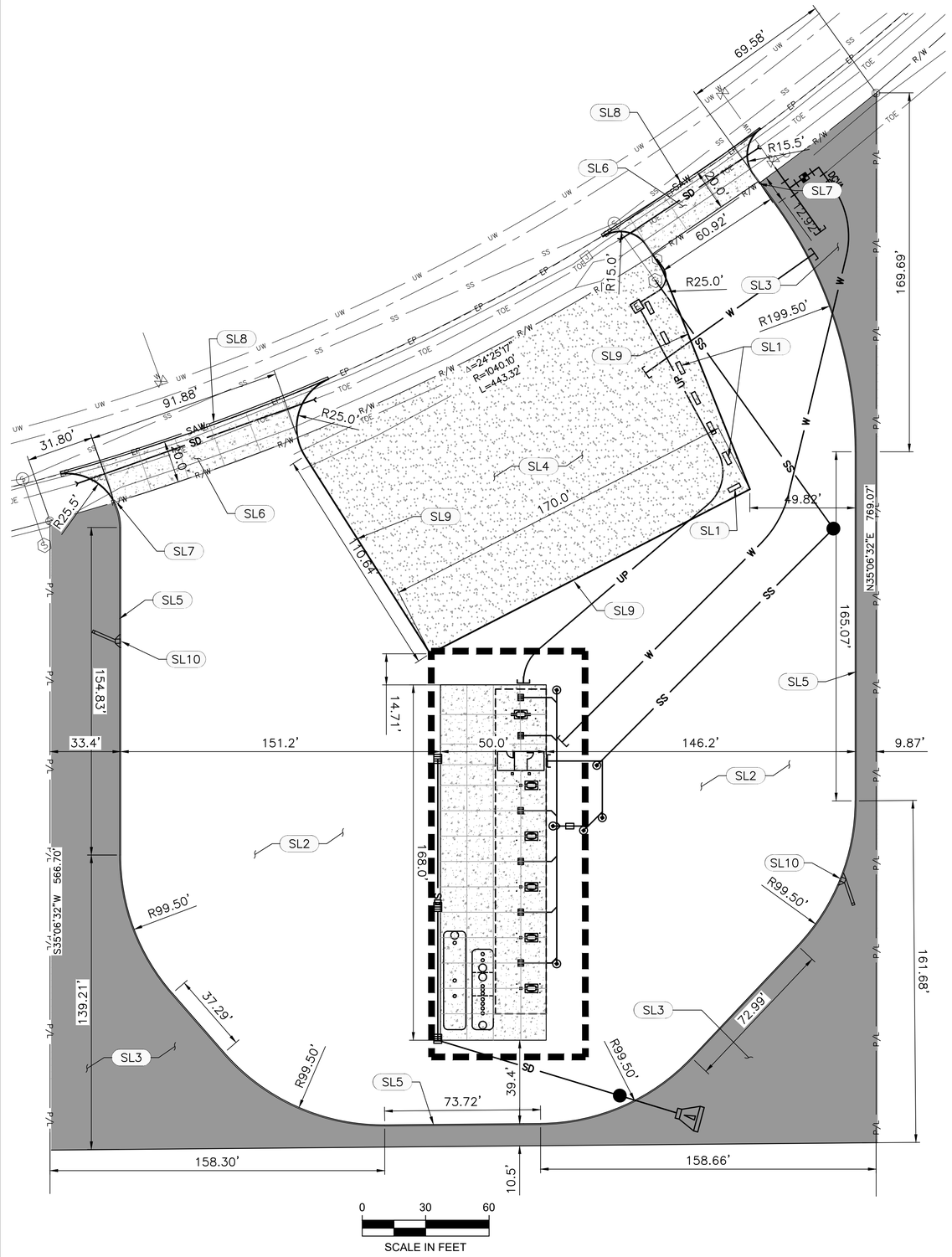
COLEMAN OIL
RICHLAND, WA

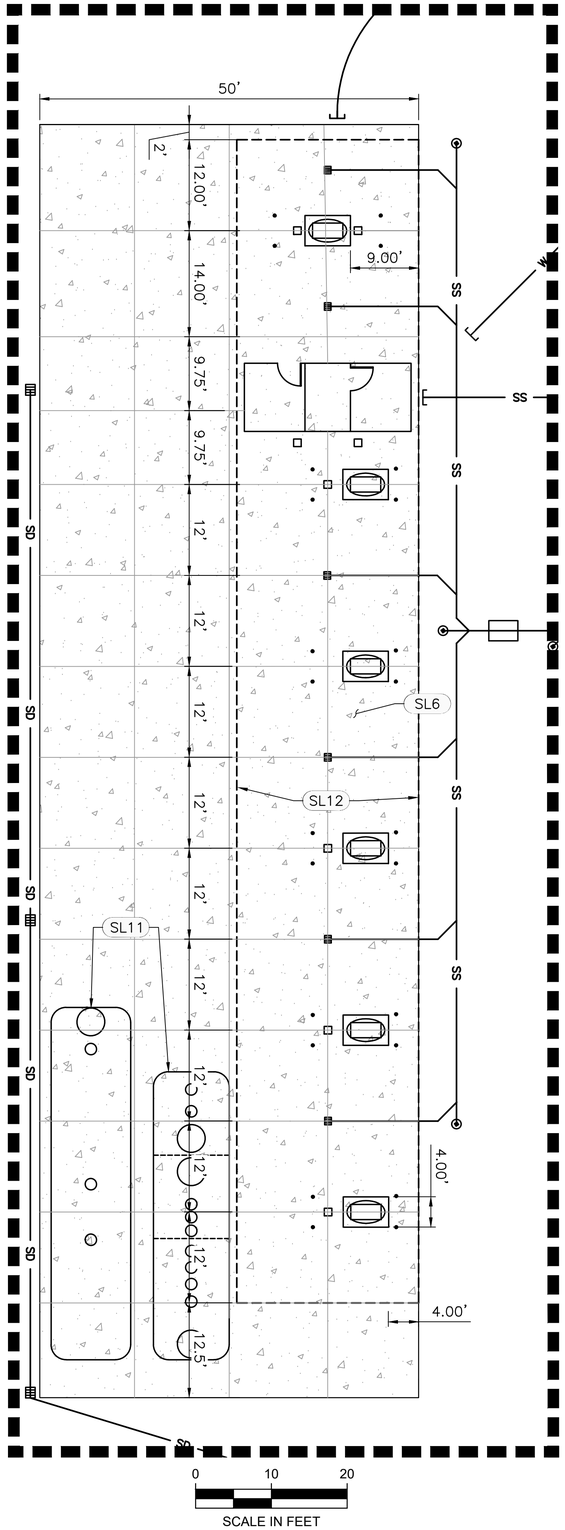
TEMPORARY EROSION AND SEDIMENT CONCTROL

FILE : 30-20-033 C-010
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/5/2020

SHEET NUMBER:
C-010

Plot Date:6/5/2020 3:19 AM Plotted By: Darral Moore
Date Created:5/13/2020 \\JUB.COM\CENTRAL\CLIENTS\WALGRONS\CONSTRUCTIONPROJECTS\30-20-033_COLEMANOILDESIGN\CAD\SHEET\30-20-033_C-010.DWG





KEYED NOTES

SITE LAYOUT

- (SL1) ECOLOGY BLOCKS (5) ALONG EDGE OF ASPHALT. PROVIDE 8–FT SPACING BETWEEN ECOLOGY BLOCKS.
- (SL2) ASPHALT PAVEMENT (1/C-501)
- (SL3) LANDSCAPE AREA. SEE PLANS BY OTHERS.
- (SL4) 3" CSTC PER WSDOT 9.03.9(3) FOR FUTURE BUILDING AREA.
- (SL5) CONCRETE BARRIER CURB (1/C-501)
- (SL6) CONCRETE PAVEMENT (9/C-501) (10/C-501)
- (SL7) END CURB
- (SL8) SAWCUT 1–FT IN EXISTING EDGE OF ASPHALT TO PROVIDE A CLEAN/SMOOTH EDGE OF ASPHALT. MATCH TO EXISTING.
- (SL9) EDGE OF ASPHALT
- (SL10) DRAINAGE CURB CUT. SEE SHEET C–102. (5/C-501)
- (SL11) UNERGROUND FUELING TANKS. SEE PLANS BY OTHERS FOR DETAILS. REFER TO SHEET C–102 FOR GRADING DETAILS TO ESTABLISH RIM ELEVATIONS.
- (SL12) FUELING OVERHEAD CANOPY. REFER TO PLANS BY OTHER FOR DETAILS.

NOTES:

1. REFER TO PLANS AND SPECIFICATIONS BY OTHERS FOR FUELING RELATED FACILITIES, CANOPY, BUILDING, TRASH ENCLOSURE, ELECTRICAL, AND TELECOMMUNICATIONS.

SITE AREA SUMMARY

IMPERVIOUS: 2.4 AC
PERVIOUS: 1.1 AC
TOTAL: 3.5 AC

– LANDSCAPE REFER TO PLANS BY OTHERS

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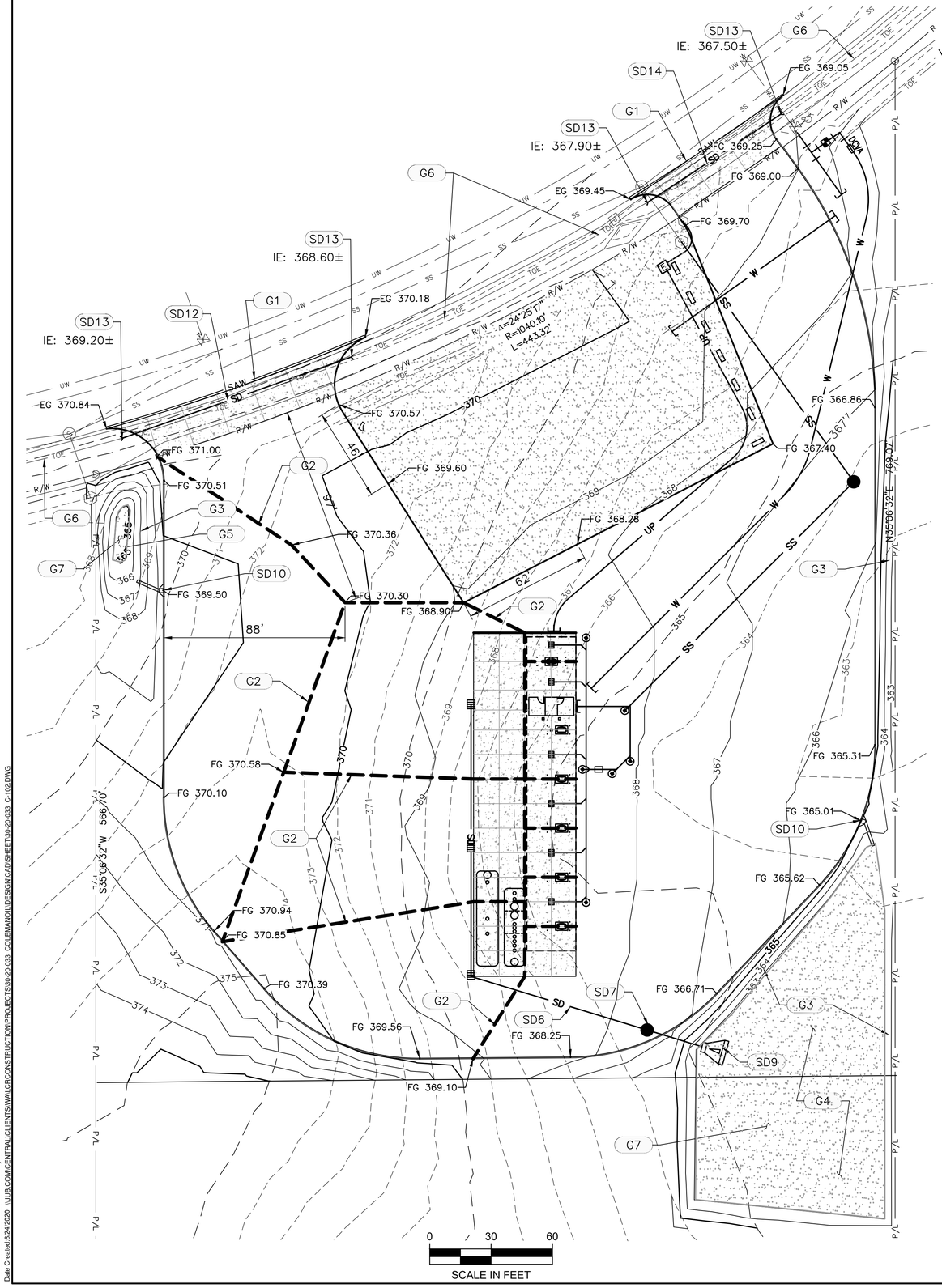
RICHLAND, WA

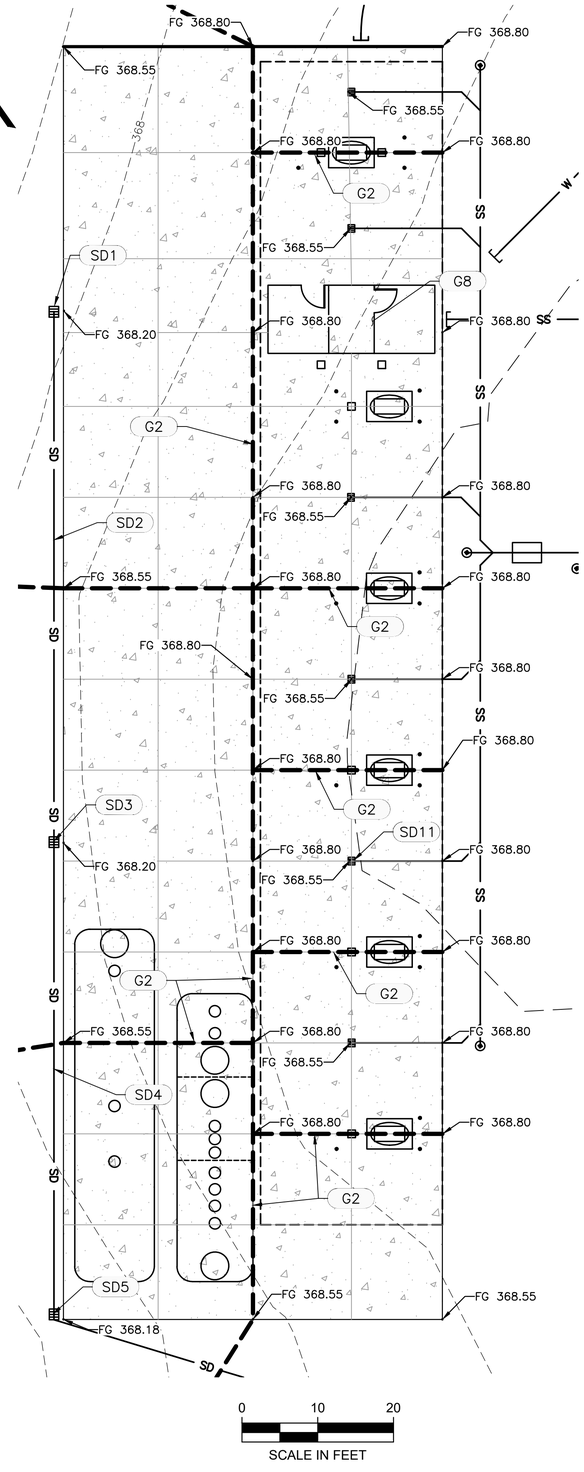
SITE LAYOUT PLAN

FILE : 30-20-033_C-101
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/24/2020

SHEET NUMBER:
C-101

Plot Date:6/24/2020 9:25 AM Plotted By: Darral Moore
Date Created:6/23/2020 \\JUB.COM\CENTRAL\CLIENTS\WALLCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMAN\OIL\DESIGN\CAD\SHEET\30-20-033_C-101.DWG





KEYED NOTES

GRADING

- (G1) MATCH EXISTING
- (G2) GRADE BREAK
- (G3) 3:1 MAX. SLOPE
- (G4) DRAINAGE BASIN #1, BTM SURF AREA 12,000 SF, BTM EL. 363.00
- (G5) DRAINGAE BASIN #2, BTM SURF AREA 200 SF, BTM EL. 365.00
- (G6) RETAIN AND PROTECT EXITSING ROADSIDE DRAINAGE SWALE
- (G7) BASIN OF SWALES TO BE COVERED WITH CRUSHED BASALT ROCK MULCH, MIN. 4" DEPTH
- (G8) FINISH FLOOR OF BLDG SHALL BE SET 6–IN ABOVE CONCRETE PAVEMENT (FF 369.30)

STORM DRAINAGE

- (SD1) CATCH BASIN #1 (9 / C-501)
  RIM 368.15
  INV EL 365.20 (SW)
- (SD2) 8" SD (±70 LF) @ 0.5% SLOPE
- (SD3) CATCH BASIN #2 (9 / C-501)
  RIM 368.15
  INV EL 364.85
- (SD4) 8" SD (±62 LF) @ 0.5% SLOPE
- (SD5) CATCH BASIN #3 (9 / C-501)
  RIM 368.15
  INV EL 364.54 (N)
  INV EL 364.54 (SE)
- (SD6) 8" SD (±90 LF) @ 0.5% SLOPE
- (SD7) SDMH PER COR STD DWG S21
  RIM 367.55
  INV EL 364.09 (NW)
  INV EL 364.09 (SE)
- (SD8) 8" SD (±28 LF) @ 1.0% SLOPE
- (SD9) 8" SD OUTFALL W/ OUTFALL PROTECTION PAD (6 / C-501)
  INV EL 363.81
- (SD10) DRAINAGE CURB CUT (5 / C-501)
- (SD11) CATCH BASIN @ FUELING ISLAND, TYP. OF 6 LOCATIONS. SEE SHEET C–103 FOR ADDITIONAL INFORMATION. (9 / C-501)
  RIM 368.55
  INV EL 366.00
- (SD12) 8" CMP (GALVANIZED) (±120 LF) @ 0.5% SLOPE PER WSDOT SECTION 9–05.2(4). SET ELEVATION TO PROVIDE A MIN. OF 12" COVER.
- (SD13) 8" ALUMINUM TRASH GRATE PER COR STND DWG S15
- (SD14) 8" CMP (GALVANIZED) (±80 LF) @ 0.5% SLOPE PER WSDOT SECTION 9–05.2(4). SET ELEVATION TO PROVIDE A MIN. OF 12" COVER.

EARTHWORK NOTES
1. QUANTITIES ARE TO SUBGRADE
2. CUT QUANTITY INCLUDES COMPACTION FACTOR OF 0.85

EARTHWORK
CUT: 4,200 C.Y.
FILL: 2,000 C.Y.

NET CUT: 2,200 C.Y.

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NO.	DESCRIPTION	BY	APPR.	DATE
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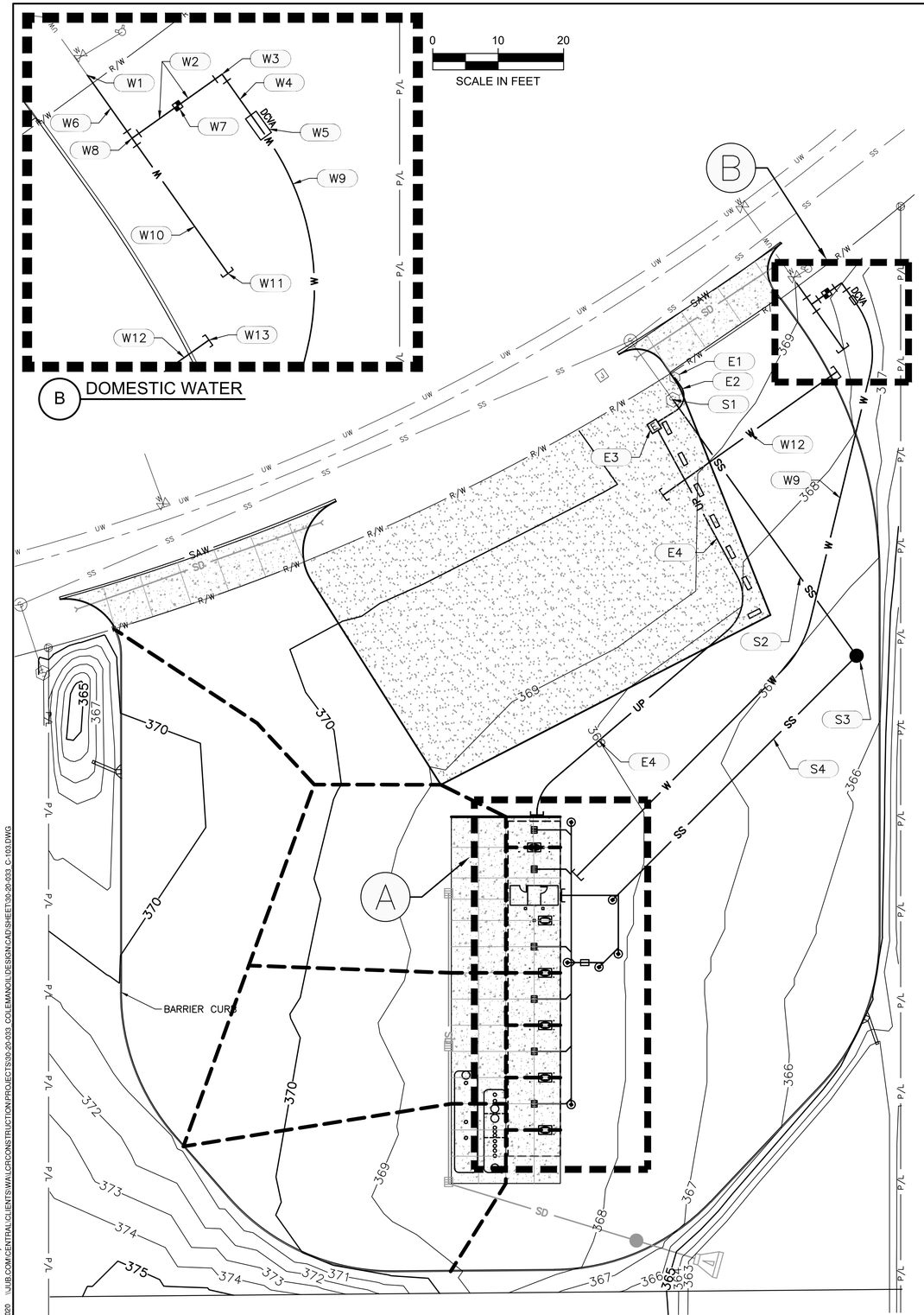
COLEMAN OIL
RICHLAND, WA

GRADING AND DRAINAGE PLAN

FILE : 30-20-033_C-102
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/24/2020

SHEET NUMBER:
C-102

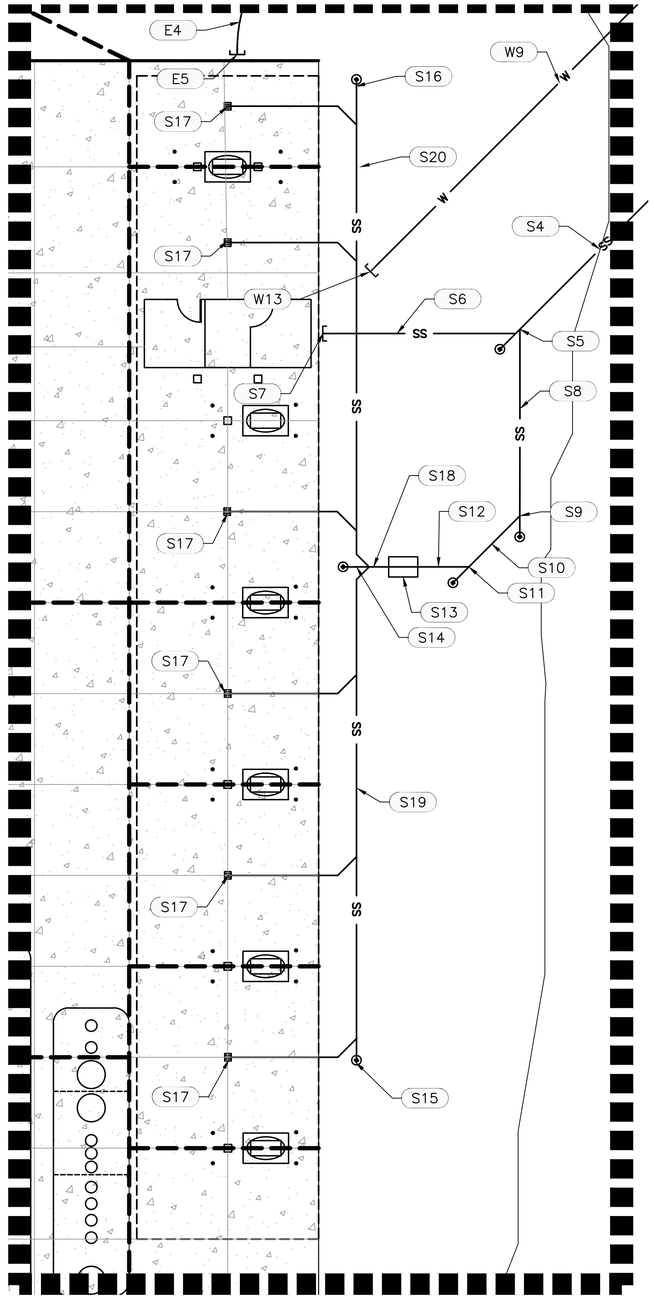
Plot Date:6/24/2020 9:23 AM Plotted By: Darral Moore
Date Created:6/24/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMANOIL\DESIGN\CAD\SHEET\30-20-033_C-102.DWG



KEYED NOTES

ELECTRICAL

- (E1) CONNECTION TO EXISTING ELECTRICAL POWER
- (E2) PRIMARY POWER CONDUIT
- (E3) PAD MOUNT TRANSFORMER. COORDINATE WORK WITH COR ENERGY SERVICES.
- (E4) SECONDARY POWER CONDUIT
- (E5) POWER CONNECTION POINT



KEYED NOTES

SEWER

- (S1) CONNECT TO EXIST. SERVICE STUB. DIG AND VERIFY APPROXIMATE INV EL ±360.8
- (S2) 8" PVC SS (±144 LF) @ 0.5% SLOPE
- (S3) SSMH PER COR STANDARD DWG S4
  RIM: 366.53
  INV IN: 361.72 (W)
  INV OUT: 361.52 (N)
- (S4) 6" PVC SS (±154 LF) @ 1.0% SLOPE
- (S5) (2) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.20
  INV EL: 363.26
- (S6) 6" PVC SS (±26 LF) @ 2.0% SLOPE
- (S7) CAP AND MARK 6" PVC
  INV EL: 363.78
- (S8) 6" PVC SS (±25 LF) @ 1.0% SLOPE
- (S9) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.10
  INV EL: 363.51
- (S10) 6" PVC SS (±10 LF) @ 1.0% SLOPE
- (S11) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.30
  INV EL: 363.61
- (S12) 6" PVC SS (±7 LF) @ 1.0% SLOPE
- (S13) OIL WATER SEPARATOR (1 / C-502)
  RIM: 368.50
  INV IN: 363.95 (W)
  INV OUT: 363.70 (E)
- (S14) (2) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.70
  INV EL: 364.00
- (S15) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.63
  INV EL: 364.65
- (S16) 6"x6" WYE AND 6" SSCO (2 / C-501)
  RIM: 368.66
  INV EL: 364.65
- (S17) CATCHBASIN, 4" PVC SS (±17 LF) @ 2.0% MIN. SLOPE, AND 6"x4" WYE.
- (S18) 6" PVC SS (±5 LF) @ 1.0% SLOPE
- (S19) 6" PVC SS (±65 LF) @ 1.0% SLOPE
- (S20) 6" PVC SS (±65 LF) @ 1.0% SLOPE

WATER

- (W1) DIG AND VERIFY LOCATION AND SIZE OF EXISTING WATERLINE STUB. REMOVE BLIND FLANGE AND CONNECT 8" WATER MAIN. COORDINATE WITH CITY WATER CREWS.
- (W2) 1" WATER SERVICE (17± LF), 42" MIN. COVER PER COR STND DWG W1
- (W3) 1" 90° ELBOW OR RADIUS PIPE PER MANUFACTURER INSTALLATION GUIDELINES.
- (W4) 1" WATER SERVICE (10± LF), 42" MIN. COVER
- (W5) 1" DCVA PER COR STND DWG W20
- (W6) 8" DI WATER (12± LF), 42" MIN. COVER
- (W7) 1" WATER METER ASSEMBLY PER COR STND DWG W3
- (W8) 8"x1" TAPPING SADDLE PER COR STND DWG W1
- (W9) 1" WATER SERVICE (313± LF), 42" MIN. COVER
- (W10) 8" DI WATER (26± LF), 42" MIN. COVER
- (W11) 8" END CAP W/THRUST BLOCK AND 2" TEMPORARY BLOW-OFF ASSEMBLY PER COR STND DWG W13A
- (W12) 2" WATER SERVICE FOR FUTURE (100± LF), 42" MIN. COVER. CAP BOTH ENDS.
- (W13) MARK AND CAP AT BUILDING. REFER TO PLANS BY OTHERS FOR CONTINUTATION.

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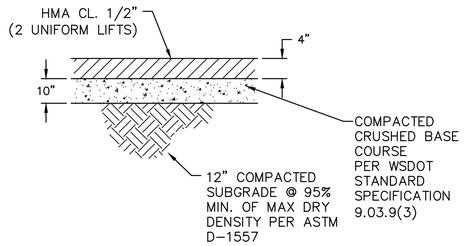
COLEMAN OIL
RICHLAND, WA

UTILITY PLAN

FILE :	30-20-033_C-103
JUB PROJ. # :	30-20-033
DRAWN BY:	----
DESIGN BY:	----
CHECKED BY:	----
ONE INCH	AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED:	6/5/2020

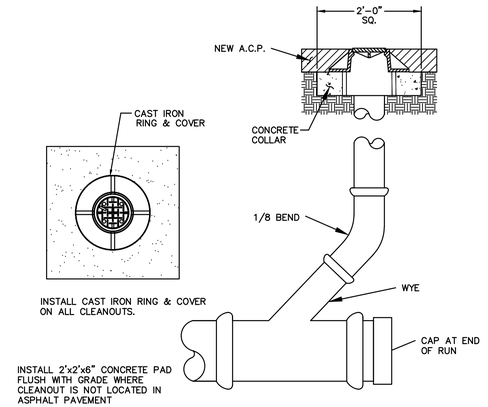
SHEET NUMBER:
C-103

Plot Date:6/24/2020 9:35 AM Plotted By: Darral Moore
Date Created:6/5/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMANOIL\DESIGN\CAD\SHEET\30-20-033_C-103.DWG

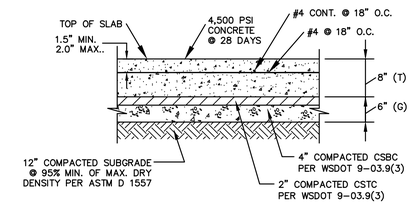


NOTES:
1. ALL GRANULAR BASE/TOP COURSE SHALL BE COMPACTED TO A MIN. 95% MAX. DRY DENSITY PER ASTM D1557.
2. HMA SHALL BE COMPACTED TO A MIN. 91% OF THE MAX. SPECIFIC GRAVITY (RICE DENSITY).
3. ASPHALT PAVEMENT SHALL BE COMMERCIAL HMA CL. 1/2" WITH PG 64-28 ASPHALT BINDER

1 ASPHALT PAVEMENT
SCALE:NTS

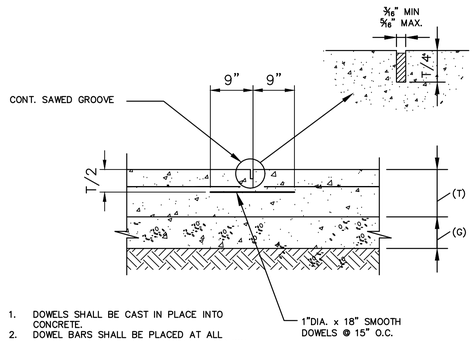


2 CLEANOUT
SCALE:NTS



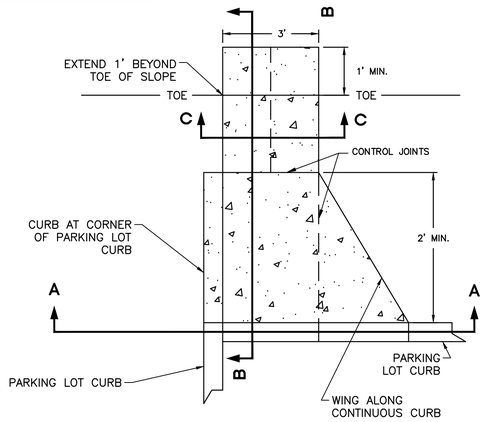
1. PROVIDE ½" MASTIC EXPANSION JOINT WHEN CONCRETE PAVEMENT MEETS CURB. MASTIC SHALL EXTEND THE FULL DEPTH OF THE CONCRETE PAVEMENT.
2. PROVIDE ½" MASTIC EXPANSION JOINT WHEN CONCRETE PAVEMENT MEETS FACE OF BUILDING. MASTIC SHALL EXTEND THE FULL DEPTH OF THE CONCRETE PAVEMENT.
3. CONCRETE PAVEMENT SHALL HAVE A SMOOTH LIGHT BROOM FINISH.
4. ALL JOINT PATTERNS SHALL CLOSELY FOLLOW THE PLAN LAYOUT.
5. CEMENT CONCRETE PAVEMENT SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE ACI 301 AND WSDOT STANDARD SPECIFICATIONS SECTION 5-05.
6. CONCRETE SHALL HAVE A 2 TO 4-INCH SLUMP BEFORE ADDING HIGH-RANGE WATER REDUCING ADMIXTURE OR PLASTICIZING ADMIXTURE, ±1-INCH
7. 6.5 SACK MINIMUM SACK CONTENT
8. MAXIMUM WATER/CEMENT RATIO: 0.45 (NON-AIR ENTRAINED) 0.35 (AIR ENTRAINED)
9. AIR-ENTRAINED: 5.5% ±1.5% AT POINT OF DELIVERY FOR 1-1/2 INCH NOMINAL MAX. AGGREGATE SIZE. 6% ±1.5% AT POINT OF DELIVERY FOR 1 TO ¾" NOMINAL MAX. AGGREGATE SIZE.
10. USE OF ACCELERATING ADMIXTURES IN COLD WEATHER IS NOT ALLOWED UNLESS AUTHORIZED BY ENGINEER IN WRITING.
11. USE OF RETARDING ADMIXTURES IN HOT WEATHER IS NOT ALLOWED UNLESS AUTHORIZED BY ENGINEER IN WRITING.
12. CONTRACTOR SHALL APPLY CURING COMPOUND TO THE ENTIRE SURFACE AREA PER SECTION 5-05.3(13)A OF THE WSDOT STANDARD SPECIFICATIONS.

3 STANDARD DUTY CEMENT CONCRETE PAVEMENT
SCALE:NTS

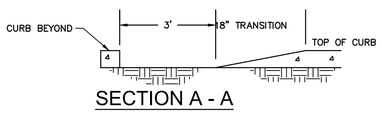


NOTES:
1. DOWELS SHALL BE CAST IN PLACE INTO CONCRETE.
2. DOWEL BARS SHALL BE PLACED AT ALL TRANVERSE AND LONGITUDINAL CONTRACTION JOINTS.
3. ALL DOWELS AND JOINTS SHALL BE IN ACCORDANCE WITH SECTION 5-05 OF THE WSDOT STANDARD SPECIFICATIONS.
4. JOINT SHALL BE FILLED WITH A JOINT SEALANT FILLER CONFORMING TO THE WSDOT STANDARD SPECIFICATION SECTION 9-04.2.

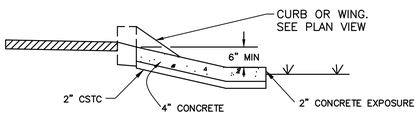
4 TRANSVERSE/LONGITUDINAL CONTRACTION JOINT
SCALE:NTS



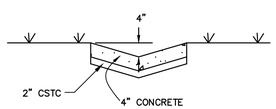
PLAN VIEW



SECTION A - A



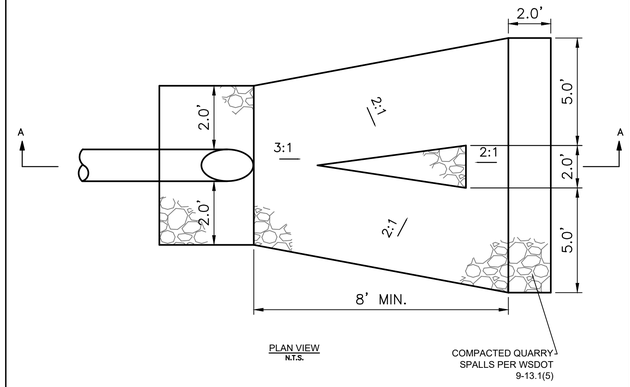
SECTION B - B

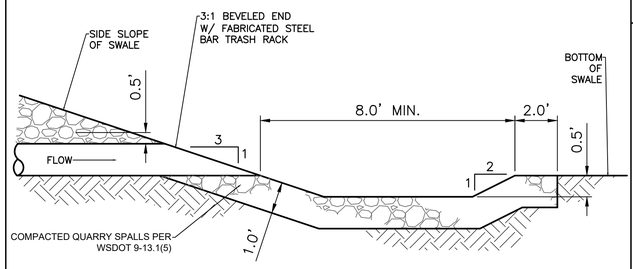


SECTION C-C

NOTES:
1. CONCRETE SHALL BE 3,000 PSI
2. FILL CONTROL JOINT W/APPROVED SILICONE OR ELESTOMERIC SEALANTS

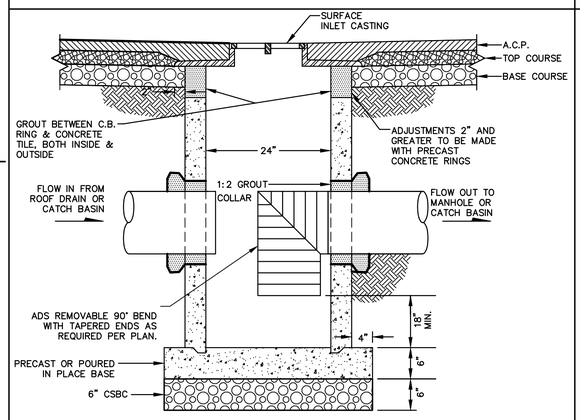
5 DRAINAGE CURB CUT
SCALE:NTS



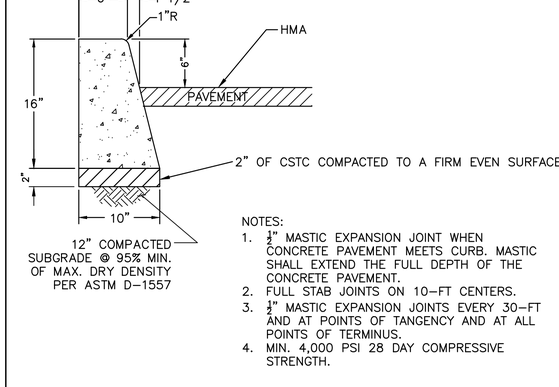


SECTION A-A
N.T.S.

6 OUTFALL PROTECTION PAD DETAIL
SCALE:NTS

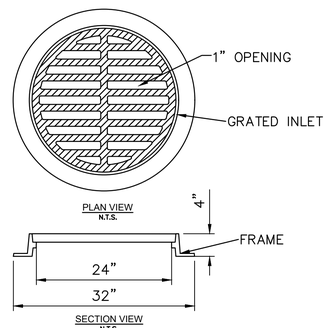


9 STORM DRAINAGE CATCH BASIN
SCALE:NTS



NOTES:
1. ½" MASTIC EXPANSION JOINT WHEN CONCRETE PAVEMENT MEETS CURB. MASTIC SHALL EXTEND THE FULL DEPTH OF THE CONCRETE PAVEMENT.
2. FULL STAB JOINTS ON 10-FT CENTERS.
3. ½" MASTIC EXPANSION JOINTS EVERY 30-FT AND AT POINTS OF TANGENCY AND AT ALL POINTS OF TERMINUS.
4. MIN. 4,000 PSI 28 DAY COMPRESSIVE STRENGTH.

8 CONCRETE BARRIER CURB
SCALE:NTS



NOTES:
1. GRATE/FRAME SHALL BE DUCTILE IRON 70-50-05
2. GRATE SHALL HAVE OPEN AREA OF 160 SQ INCHES
3. GRATE/FRAME SHALL BE DESIGNED FOR EXTRA HEAVY DUTY LOADS
4. SHALL MEET ASTM 536

10 GRATED INLET CASTING
SCALE:NTS

JUB ENGINEERS, INC.
J-U-B ENGINEERS, INC.
2810 W. Clearwater Ave. Suite 201
Kennewick, WA 99336
Phone: 509.783.2144
www.jub.com

DARRAL S. MOORE
STATE OF WASHINGTON
37991
REGISTERED
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	BY	APP.	DATE
	REVISION			

COLEMAN OIL
RICHLAND, WA

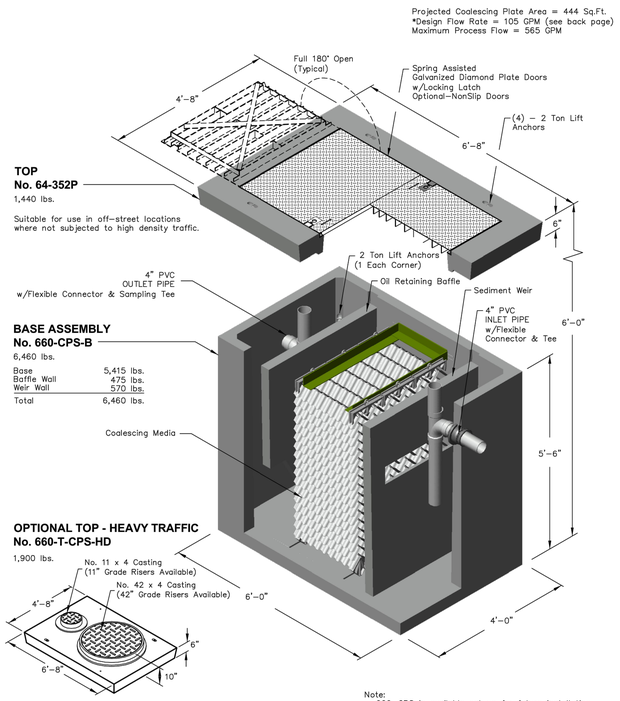
DETAILS

FILE : 30-20-033_C-501
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/5/2020

SHEET NUMBER:
C-501

Plot Date:6/5/2020 7:42 AM Plotted By: Darral Moore
Date Created:6/5/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMANOILDESIGN\CAD\SHEET\30-20-033_C-501.DWG

660-CPS



Note: Designed for 0 to 5'–0" of Cover

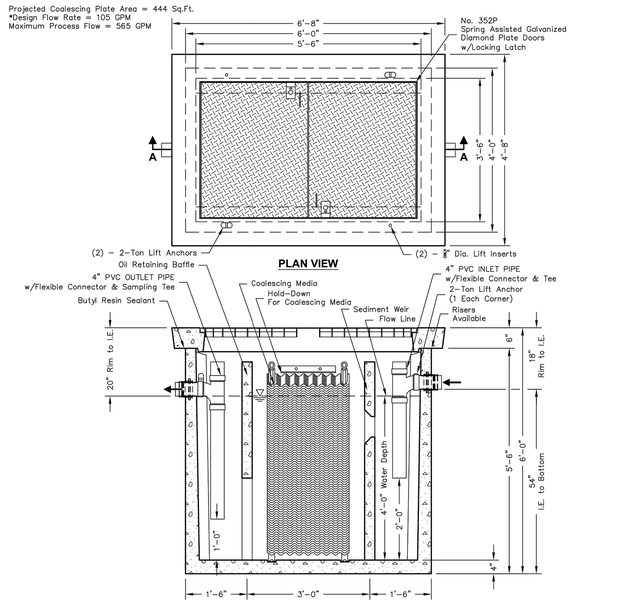
Note:
– 660–CPS is available set up for future installation of coalescing media and designated as 660–CPS–R.

Oldcastle Precast®
PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

660-CPS	660-CPS OIL / WATER SEPARATOR COALESCING - 105 GPM
File Name: 020-660CPS	
Issue Date: 2018	
oldcastleprecast.com/wilsonville	

6.0

660-CPS



*DESIGN FLOW RATE	EFFLUENT QUALITY	100% COLLECTED SIZE
105 GPM	10 ppm	60 Micron

Basic Design Information: *
Influent Characterics
– Oil Specific Gravity = 0.88
– Operating Temperature = 50°
– Influent Oil Concentration = 100 ppm
– Mean Oil Droplet Size = 130 Microns
– .033 ft/min. Critical Oil Droplet Predicted Rise Rate

*Basic Design Information per Washington State Department of Ecology. User to Adjust Estimates for Variations in Real Conditions.

Notes:
– Static Water Depth = 4'–0"
– Prior to "Startup" of system, fill with clean water to bottom of outlet pipe. For best results, fill to flow line.
– Follow Regular Inspection, Cleaning, & Maintenance Schedule (See Clean Out & Maintenance).

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PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

660-CPS	660-CPS OIL / WATER SEPARATOR COALESCING - 105 GPM
File Name: 020-660CPS	
Issue Date: 2018	
oldcastleprecast.com/wilsonville	

6.1

1 OIL/WATER SEPARATOR DETAIL
SCALE: N.T.S.

J-U-B ENGINEERS, INC.
J-U-B ENGINEERS, INC.
2810 W. Clearwater Ave.
Suite 201
Kennewick, WA 99336
Phone: 509.783.2144
www.jub.com

DARRAL S. MOORE
STATE OF WASHINGTON
37991
REGISTERED
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	BY	APPR.	DATE
	REVISION			

COLEMAN OIL
RICHLAND, WA

DETAILS

FILE : 30-20-033_C-501
JUB PROJ. # : 30-20-033
DRAWN BY: ----
DESIGN BY: ----
CHECKED BY: ----
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 6/5/2020

SHEET NUMBER:
C-502

Plot Date:6/5/2020 7:42 AM Plotted By: Darral Moore
Date Created:6/5/2020 \\JUB.COM\CENTRAL\CLIENTS\WALCR\CONSTRUCTION\PROJECTS\30-20-033_COLEMAN\ILDESIGN\CAD\SHEET\30-20-033_C-501.DWG

J-U-B Project Number: 30-20-033

Fueling Station
Richland, Washington

Stormwater Calculations

Date Prepared: 6/5/2020

J-U-B ENGINEERS, INC.

2810 W. Clearwater Ave. Ste. 201
Kennewick, WA 99336
(509) 783-2144

Project: Fueling Station | Designed CCH | Date 6/5/2020
Item: Stormwater Calculations | Checked DSM | Date 6/5/2020
File: \\jub.com\Central\Clients\WA\LCRConstruction\Projects\30-20-033_ColemanOil\Design\Model_Calcs\Stormwater\[30-20-033_StormwaterReport.xlsx]Design Input

Coleman Oil - Fueling Station

Design Requirements:

The site is designed to retain and dispose of the 25-year, 24-hour Type IA storm as required by the City of Richland

Design Input:

Per the 2019 Stormwater Management Manual for Eastern Washington (SWMMEW):

SCS Type 1A 24-hr, 25-yr strom precipitation =	1.6	inches	(Figure 4.10)
Richland's average annual precipitation =	6-8	inches	(Figure 4.1)
Region =	2		(Figure 4.1)

Per Geoprofessional Innovation geotechnical report dated 10/3/2019

Unfactored infiltration rate =	18	inches/hour
Design Infiltration Rate	4	inches/hour

Site Design Conditions:

The site was divided into drainage basins. The stormwater is collected from the impervious surfaces via sheet flow, and curbing, and is conveyed into infiltration basins.

The infiltration basins are designed to retain the entire design storm without infiltration. The tables below list the size and description of each sub-basin, in addition to the dimensions and storage volume provided by each infiltration basin.

For Impervious Areas, CN = 98

Drainage Basin	To Facility	Basin Area (SF)	Basin Area (Acres)	Loss (CN)
Sub-01	Swale-1	82,330	1.89	98
Sub-02	Swale-1	15,450	0.35	98
Sub-03	Swale-2	12,630	0.29	98

Swales

Swale-1

SWALE VOLUME				
Elevation	Depth FT	Area SF	Incr. Vol. (CF)	Cumulative Vol. (CF)
0.0	0.0	12334	0	0
1.0	1.0	13975	13155	13155

1.0 Top of Bank Elevation

Swale Shape: Irregular. Flat bottom approx. 18' x 90' with 12,334 SF bottom area. Side slopes are 3:1.

Swale-2

SWALE VOLUME				
Elevation	Depth FT	Area SF	Incr. Vol. (CF)	Cumulative Vol. (CF)
0.0	0.0	157	0	0
1.0	1.0	448	303	303
2.0	2.0	875	662	964
3.0	3.0	1441	1158	2122

3.0 Top of Bank Elevation

Swale Shape: Irregular. Flat bottom approx. 25' x 5' with 157 SF bottom area. Side slopes are 3:1.

Project:	Fueling Station		Designed	CCH	Date 6/5/2020
Item:	Autodesk SSA Model		Checked	DSM	Date 6/5/2020
File:	\\jub.com\Central\Clients\WA\LCRConstruction\Projects\30-20-033_ColemanOil\Design\Model_Calcs\Stormwater\[30-20-				

Autodesk SSA Model Setup

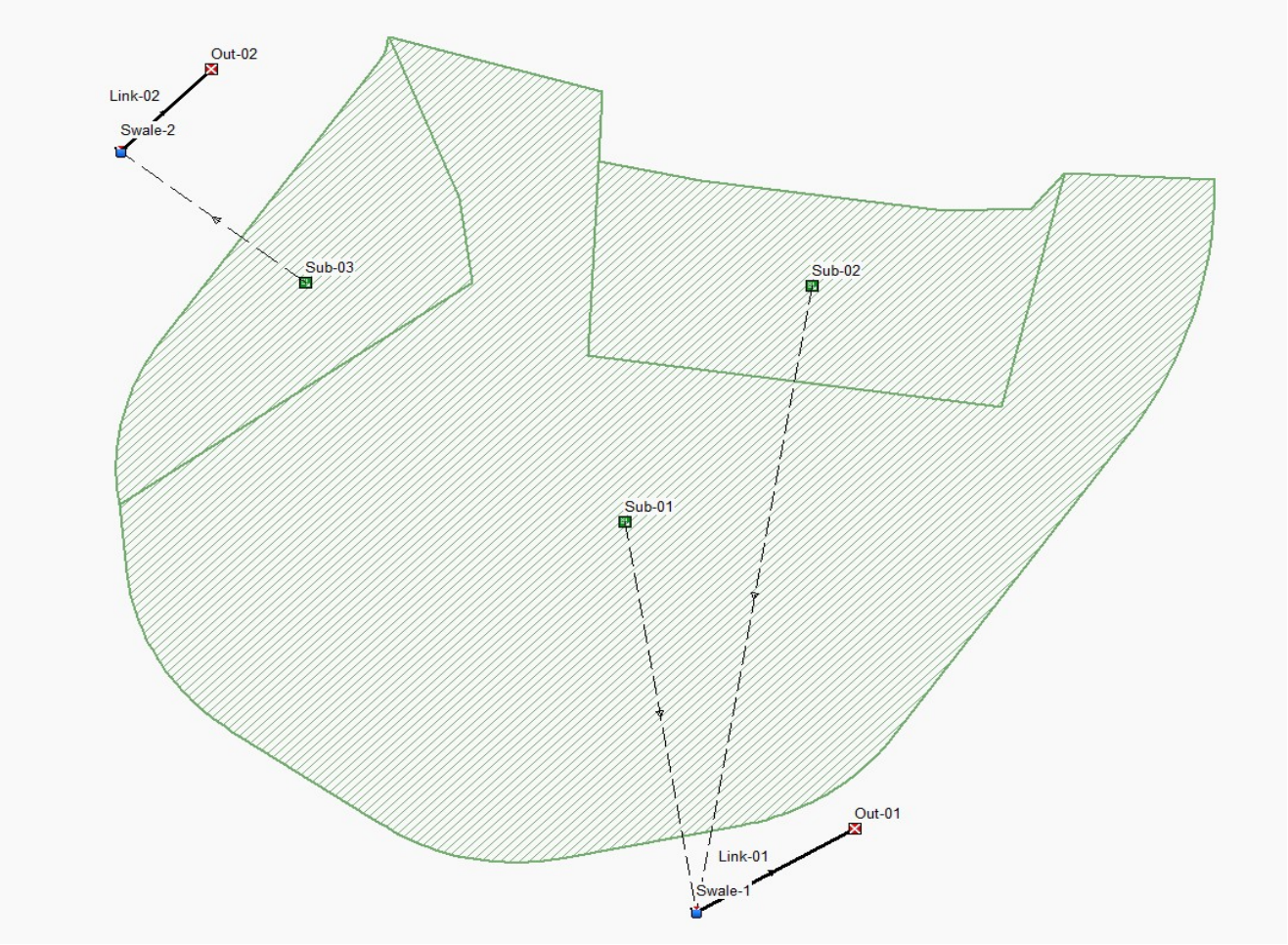
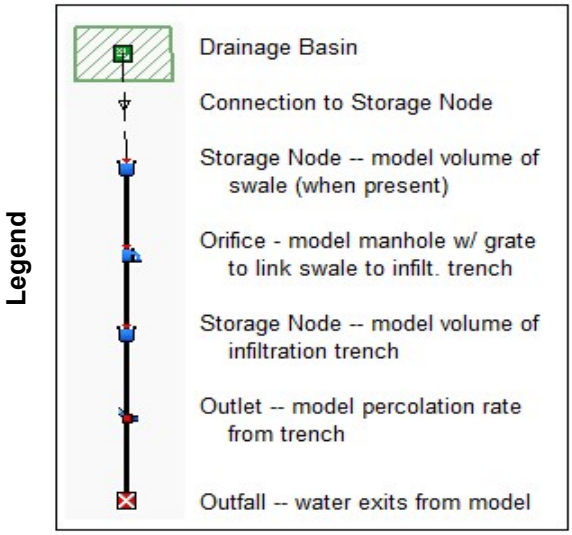


Figure 1. Autodesk SSA Model Setup
See Figure 2 for a more detailed basin map.



Autodesk SSA Model Results

25-yr, 24-hour Runoff Results

Drainage Basin	Peak Discharge (cfs)	Total Runoff Volume (CF)
Sub-01	0.69	9445
Sub-02	0.13	1760
Sub-03	0.11	1441

25-yr, 24-hr Storage Results

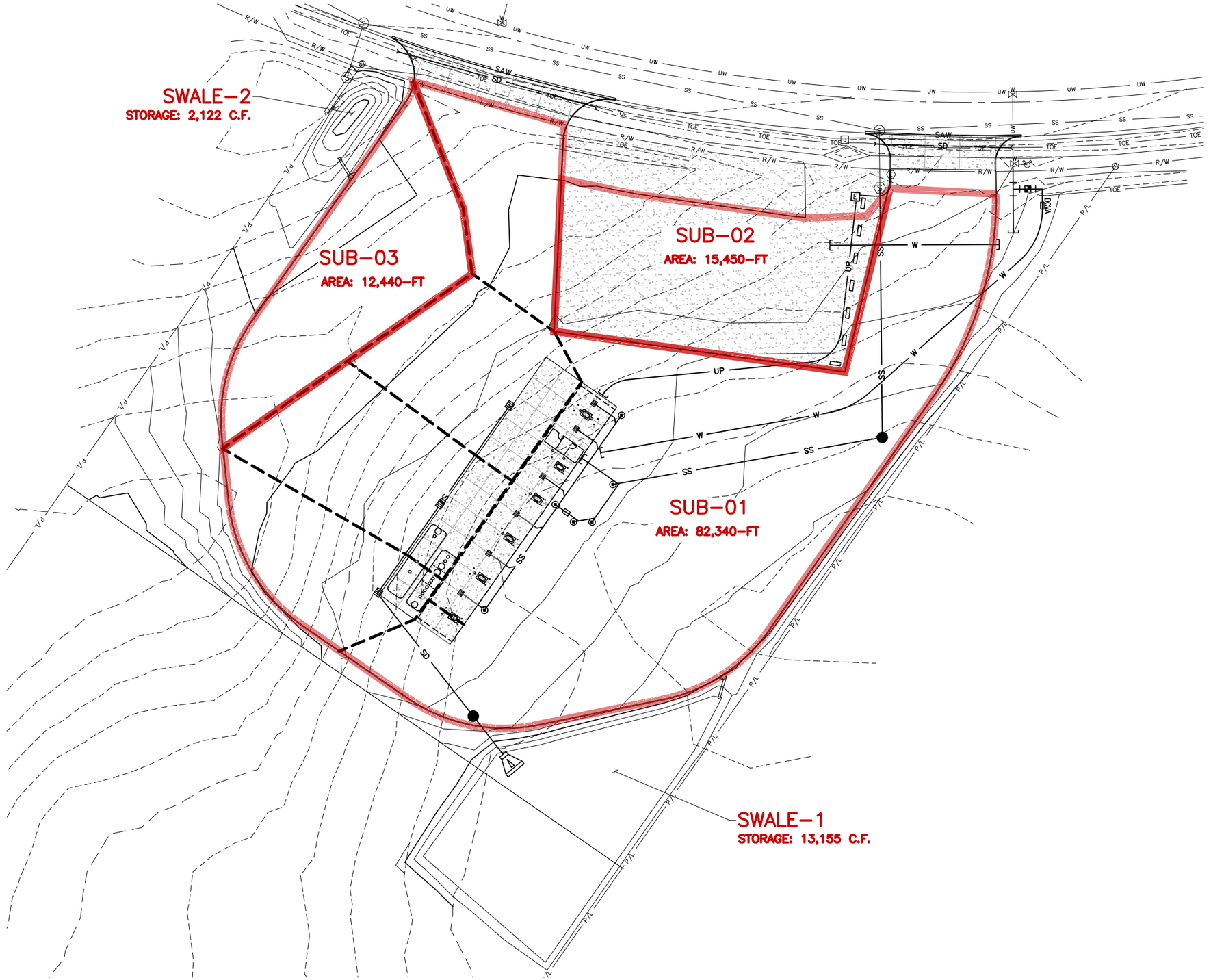
Stormwater Facility	Total Runoff Volume to Facilities (CF)	Peak Storage Volume Required (CF)	Stormwater Facility Volume (CF)	Facility Depth available (ft)	Max Water Depth (ft)
Swale 1	11205	11205	13155	1.00	0.90
Swale 2	1441	1441	2122	3.00	2.47

Infiltration Modeling Narrative

The computer software Autodesk Storm and Sanitary Analysis (SSA) was used to model the design storms based on the SCS TR-55 hydrology method. The runoff from each sub-basin is routed to the storage facility and is retained without infiltration. The total runoff that flows to each stormwater facility is shown in the Storage Results table above as "Total Runoff Volume to Facility." Since there is no modeled infiltration in the system, the total runnoff volume to facility matches the peak storage volume required. It is the peak storage volume required that is critical for sizing the facility, and should be less than or equal to the "Stormwater Facility Volume" for each facility. The peak storage volumes are modeled for each storm facility.

Infiltration time period for swales

Stormwater Facility	Btm Basin Surface Area	Inf. Rate (in/hr)	# of hours until fully drained	Inf. Volume 24 HRS (CF)	Stormwater Runoff Volumes (CF)
Swale 1	12334	4	3.0	12334	11205
Swale 2	157	4	28.0	1465	1441



LEGEND

SUB-BASIN BOUNDARY

J-U-B ENGINEERS, INC.

LAST UPDATED: 6/5/2020
PLOT DATE: 6/5/2020
FILE: 30-20-033_STORMEXHIBIT

LCR CONSTRUCTION
RICHLAND, WASHINGTON

STORM DRAINAGE
FIGURE 2. BASIN DELINEATION MAP

Plot Date:6/5/2020 9:16 AM Plotted By: Tyler Slade
Date Created:6/5/2020 \\JUB.COM\CENTRAL\CLIENTS\WA\LCRCONSTRUCTION\PROJECTS\30-20-033_COLEMANOILDESIGN\MODEL_CALCS\STORMWATER\30-20-033_STORMEXHIBIT.DWG

GeoProfessional Innovation.

October 3, 2019
File: PU19155A

Mr. Jim Cach &
Mr. Terry Otte
Coleman Oil Company
529 E. Kennewick Avenue
Kennewick, Washington 99336

RE: **Geotechnical Engineering Evaluation**
Proposed Fuel Station
Robertson Drive
Richland, Washington

Greetings, Jim and Terry.

GeoProfessional Innovation Corporation (GPI) has performed the geotechnical engineering evaluation for the upcoming Coleman Oil Company fueling station facility to be located along Robertson Drive in Richland, Washington. Our services were performed referencing the scope outlined in our proposal dated July 30, 2019.

Herein we summarize our field evaluation and laboratory test results, and outline the anticipated soil conditions with respect to the project concept as we understand it from our interactions with you. From our discussions with you, we understand many project details are yet to be finalized. GPI will remain available to consult with Coleman Oil Company and your selected designers, contractors, and other team members regarding geotechnical project aspects.

We appreciate the opportunity to develop our professional relationship with Coleman Oil Company 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

ANDREW J. ABRAMS
STATE OF WASHINGTON
43534
REGISTERED
PROFESSIONAL ENGINEER

Travis J. Wambeke, P.E.
Principal Engineer

TJW/mg

Geotechnical Engineering Evaluation

Proposed Fueling Station
Robertson Drive
Richland, Washington

PREPARED FOR:

Mr. Jim Cach &
Mr. Terry Otte
Coleman Oil Company
529 E. Kennewick Avenue
Kennewick, Washington 99336

PREPARED BY:

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

October 3, 2019

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REPORT TABLES AND FIGURES

REPORT PLATES AND APPENDICES

Geotechnical Engineering Evaluation

Proposed Fueling Station
Robertson Drive
Richland, Washington

INTRODUCTION

GeoProfessional Innovation Corporation (GPI) performed the geotechnical engineering evaluation for the upcoming Coleman Oil Company (Coleman) fueling station facility to be located along Robertson Drive in Richland, Washington. The project site location is shown on the attached Plate 1, *Exploration Map*. Our evaluation was provided referencing our July 30, 2019 proposal. Our evaluation's purpose is to assess site subsurface conditions and prepare this report outlining geotechnical considerations to aid Coleman and your project team with progressing site and building design concepts. The following text outlines the services, project understanding, exploration findings, and geotechnical opinions and recommendations.

SCOPE OF SERVICE

1. Coordinated exploration with the Washington Utility Notification Center and Coleman prior to exploration.

2. Explored the subsurface soil conditions via 5 exploratory test pits extending 4.5 to 8.5 feet below the existing ground surface. The approximate exploration locations are shown on Plate 1. Performed 2 field infiltration tests to evaluate the near surface soils' infiltration characteristics.

3. Accomplished laboratory testing referencing ASTM International (ASTM) procedures to estimate soil engineering parameters.

4. Prepared and provided this report, summarizing our findings and opinions, including exploration logs and laboratory test results.

PROJECT UNDERSTANDING

Existing Site Conditions

The site is located on an approximate 8-acre parcel comprising 3 separate lots located along Robertson Drive, approximately 1,300 feet northwest of the Logston Boulevard Intersection. 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, and grass. The parcel is bordered to the northwest and southeast by existing commercial developments, to the northeast by Logan Road, and to the southwest by Robertson Drive.

Based on our nearby exploration experience, we anticipate encountering silty sand soil, overlying dense alluvial gravel with sand and silt soil at depth. We expect the static groundwater levels will be encountered greater than 50 feet below the site surface, but there may be fluctuations with the seasonal variations in local irrigation practices on the adjacent sites, as well as precipitation. From our experiences in the area, we expect that localized, isolated deposits of uncontrolled fill at the surface may be encountered due to prior site grading, occasional dumping, or abandoned site development activities. We do not anticipate encountering bedrock during construction or within 100 feet of the ground surface.

Proposed Construction

No development plans currently exist, showing planned site layout, structure locations, site grading or other critical site features. However, from our discussions with you, we understand the project will include constructing a fueling station and convenience store with associated infrastructure. We expect the building to be an approximately 5,000 square-foot, single story structure, supported on typical shallow foundations applying structural loads of approximately 3-4 kips per linear foot along perimeter footings and no more than

40 kips per column on interior columns. We anticipate there will be no below grade portions to the building, but that there will be below grade tanks constructed for fuel pumps.

Site grading is expected to be relatively minor (1 to 2 feet) outside of footings, fuel tanks, and utility alignments. Asphalt pavements will be constructed for light duty passenger vehicle access, parking areas, and heavy-duty access drives; Portland cement concrete (PCC) pavements will be constructed for the fuel pump pull-through lanes. Stormwater will be directed to on-site infiltration facilities for disposal. We expect that City and franchise utilities will extend to the site from Robertson Drive.

FIELD EXPLORATION

Subsurface conditions at the site were explored by observing 7 exploratory test pits. Exploration was accomplished with a rubber-tired backhoe subcontracted to GPI. Soil samples were obtained at select depths and locations and transported to our laboratory for subsequent testing. Test pits were loosely backfilled. Plate 1 illustrates approximate exploration locations documented in the field. Each test pit was staked and labeled upon completing exploration. We recommend Coleman's survey consultant record these test pit locations to facilitate locating them at the onset of construction, and replacing loose test pit backfill as outlined in the *Test Pit Remediation* report section.

While on site, infiltration testing was accomplished 4 feet below the ground surface in test pits TP-19155A-1 and TP-19155A-2 referencing the *Single Ring Infiltrometer Method* outlined in *Appendix 6B* of the *Washington State Department of Ecology* (Ecology) *Stormwater Management Manual for Eastern Washington* (Stormwater Manual). GPI's GeoProfessional visually described, classified, and logged the subsurface conditions encountered during exploration referencing the *Unified Soil Classification System* (USCS). Appendix A presents exploration logs and a USCS explanation, which should be used to help interpret soil terms used throughout this report and on the exploration logs.

LABORATORY TESTING

Laboratory testing was performed 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 design purposes.

SUBSURFACE CONDITIONS

A relatively thin layer of topsoil comprising silty sand that was brown, loose, and moist, containing vegetation and organics was encountered extending 0.25 to 0.7 feet below the ground surface. During exploration, the following primary subsurface soil units were encountered beneath topsoil:

- **Alluvium:** Silty Sand (SM): brown, loose and moist. Alluvial silty sand was encountered in each test pit extending 3.0 to 5.5 feet below the ground surface. Test pit TP-19155A-5 was terminated in alluvial silty sand at 7 feet below the ground surface due to caving conditions.
- **Alluvium:** Poorly Graded Gravel with Sand (GP): Grayish-tan, loose to medium dense and moist to saturated. Alluvial poorly graded gravel with sand was encountered beneath silty sand alluvium in each exploration except TP-19155A-3 and TP-19155A-5, extending to the termination depths explored

ranging from 5 to 11 feet below the ground surface. Test pits were generally terminated in this layer due to caving conditions.

- **Alluvium:** Well Graded Gravel with Sand (GW): Grayish-tan, loose to medium dense and moist to saturated. This soil was only encountered in test pit TP-19155A-3 beneath upper silty sand, and extended to the termination depth at 9 feet below the ground surface due to caving conditions.

We encountered groundwater in test pit TP-19155A-3, 4, 6 and 7 at 4 to 7 feet below the ground surface. We expect groundwater elevations and soil moisture conditions will fluctuate with seasonal variations in precipitation, infiltration, and irrigation. This means groundwater could be higher at certain times of year. We did not encounter bedrock within the exploration extents. We gathered additional subsurface information via well logs within the project site vicinity published on the Ecology website. These well logs indicate bedrock in the area may be located greater than 100 feet below the existing ground surface.

GEOTECHNICAL RECOMMENDATTIONS

Earthwork

Test Pit Remediation

Test pit locations were staked and labeled by GPI upon completing exploration. All test pits located beneath planned building and pavement areas must be remediated during earthwork construction. Test pits shall be backfilled with either on-site native sand or imported fill meeting the requirements stated in this report's *Structural Fill* section. If authorized, GPI can review test pit areas with the contractor following site stripping and determine whether full-depth remediation is necessary based on conditions observed during construction and planned improvements overlying test pit areas.

Site Stripping

Soil containing vegetation and organics must be removed from beneath the proposed embankments, buildings, hardscapes, and all structural fill areas. Soil containing vegetation and organics was approximately 0.25 to 0.7-feet thick in our explorations. However, varying thicknesses of vegetation and organic deposits should be expected. Specifically, we expect thicker vegetation will be encountered in low-lying areas of the site. Budgeting for 0.5 feet of topsoil stripping in development areas should remove the majority of topsoil and organics with isolated thinner or thicker removal in areas. 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 reused as structural fill.

Excavation Characteristics

Site soil may be excavated using conventional excavation techniques. 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. The sandy site soil is classified as type "C" 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 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. Stockpiling materials adjacent to or within 10 feet of excavations is not recommended because it 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. Perform construction activities and excavation backfilling as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic. Further, installing perimeter drainage systems (see *Site Drainage* section) proactively can facilitate drainage during construction and reduce over-excavation.

Establishing Subgrades

Following site stripping, test pit remediation, excavating to achieve site grades, and prior to fill placement; prepare subgrades to receive fill, concrete, asphalt, or other site improvements as outlined in the following bullets:

- Embankment Subgrades:
  - Prior to placing embankment fill for site grading, compact the exposed subgrades to at least 92 percent ASTM D1557.
    - If soft conditions persist after attempting moisture conditioning and compaction, Coleman may approve over-excavating, and replace soft areas with at least 12 inches of granular structural fill. Geotextile fabrics or geogrid may be incorporated in over-excavations where soft conditions are pervasive.

- Building, Foundation, Slab & Pavement Subgrades:
  - Compact foundation bearing surfaces to at least 95 percent of the soil's maximum dry density, referencing ASTM D1557.
  - Compact all other subgrades beneath buildings, slabs, and pavements to at least 92 percent of the soil's maximum dry density, referencing ASTM D1557.
  - To accomplish subgrade compaction, we expect moisture conditioning (i.e. wetting or drying the soil) to near optimum moisture content will be required.

After preparing subgrades, it is the contractor's sole responsibility to protect subgrades from degradation, freezing, saturation, or other disturbance. Please note that if building construction lags behind the mass grading work such that seasonal wet and freezing weather conditions saturate and soften the finished subgrades, additional earthwork will be required to recompact loosened surface soil to structural fill conditions. This re-work should be specified as part of the building package if construction is delayed by more than 1 month after the earthwork package. Also note, rework at a subgrade that may have been exposed to wet or freezing weather can be laborious. There are numerous approaches that can be implemented to help protect prepared subgrades between earthwork and building phases. GPI can assist with these at which time staging becomes evident.

Our opinion is careful construction and earthwork procedures are critical to achieving adequate subgrade preparation, reducing over-excavation, and achieving the project's structural objectives. 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. GPI will remain available to consult with Coleman, and their consultants or subcontractors as the project moves forward regarding subgrade preparation procedures.

Structural Fill Criteria

Place and compact all fill for this project as structural fill. Various imported fill materials will also be required throughout construction. The required material characteristics for structural fill reference the latest

Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT Standards) as outlined in Table 1.

Table 1. Structural Fill Specifications and Allowable Use

Soil Fill Product	Allowable Use	Material Specifications
Non-Structural Fill (Landscape Fill)	• Any area that will not contain structures (typically landscape areas)	• Soil classified as GM, GW, GC, SM, SW or SC according to the USCS. • Soil must be reasonably free from deleterious substances such as wood, metal, plastic, waste, etc. • Approved by the Landscape Architect.
General Structural Fill	• Site grading and embankment construction • Backfilling utility trenches • Exterior foundation stemwall backfill	• Soil classified as GM, GW, GC, SP, SM or SW according to the USCS. • Soil meeting requirements stated in Section 9-03.14(3) – *Common Borrow* in the WSDOT Standards. • Site soil free of vegetation, organics, and debris meets these requirements. • Maximum particle size must be less than 6 inches.
Granular Structural Fill	• Backfilling over-excavations • Temporary haul roads • May also be used for *General Structural Fill* applications	• Soil meeting requirements stated in Section 9-03.14(2) – *Select Borrow* in the WSDOT Standards. • Soil may not contain particles larger than 6 inches in diameter.
Crushed Surfacing	• Slab and pavement support aggregate • Interior stemwall backfill • Granular structural fill applications	• Soil meeting requirements stated in Section 9-03.9(3) – *Crushed Surfacing* in the WSDOT Standards, including base and top course.
Drain Rock	• Perimeter foundation drain construction	• Must meet Section 9-03.12(4) – Gravel Backfill for Drains in the WSDOT Standards
Pipe Bedding	• Utility pipe bedding	• Soil meeting requirements stated in *Section 9-03.12(3)-Gravel Backfill for Pipe Zone Bedding* of WSDOT Standards.
Unsatisfactory Soil	NONE	• Soil classified as ML, CL, MH, OH, CH, OL, or PT may not be used at the project site. • Excess moisture does not render a soil unsatisfactory. Contractors must attempt moisture conditioning (i.e. drying) prior to soil disposal. Alternatively, subcontractors may elect to remove and replace over-optimum soil prior to moisture conditioning at no expense to Coleman. • Any soil containing more than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances.

Site Soil Re-Use

Soil excavated from the site (excluding topsoil containing vegetation and organics) may be re-used as *General Structural Fill* for site grading and embankment construction or *Pipe Bedding* provided it meets the requirements in Table 1 in this report. On-site soil will likely require processing to meet the requirements in

Table 1, which may include moisture conditioning and sorting to remove isolated organic material from the soil. Based on our site exploration and laboratory testing, site soil above groundwater is expected to be under-optimum moisture content and will require modest to significant wetting prior to effective re-use. Soil that is mined from below the groundwater table will obviously be at over-optimum moisture, and must be dried prior to reuse. 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 and when establishing subgrades. 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 structural fill over frozen, saturated, or soft subgrades or subgrades not reviewed and approved by the project geotechnical engineer. Fill placed outside building, pavement, or slope envelopes can be placed as non-structural fill (i.e. landscape fill) providing there are no structures (sidewalk, curbs, utilities, signs, etc.) or embankments planned directly above the landscape fill. 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: Required Compaction for Designated Project Areas.

Table 2. Required Compaction for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement[1]
Native subgrades below embankments prior to mass grading	Native soil	92%
Native subgrades below slabs, pavements, and hardscapes, prior to structural fill placement.	Native soil	92%
Site grading, embankment construction, utility trench backfilling, stemwall backfill	General structural fill	95%
Subgrades beneath foundations	Native soil or general structural fill	95%
Pavement & slab support aggregate	Crushed surfacing	95%
Landscape areas sloped flatter than 5H:1V	Landscape fill	85%

[1]Relative compaction requirement compared to the maximum dry density of the soil as determined by ASTM D1557 (Modified Proctor).

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”. From our exploration and laboratory testing, we expect the gravel alluvium encountered at depth in our site explorations will be too coarse for Proctor density testing. Coarse material may also be imported and used as general and granular 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 efforts full-time during construction.

Geosynthetics

Geosynthetics are not specifically required for any currently planned construction aspect. However, geosynthetic fabrics can aid constructability and performance for various construction aspects such as pavements, drains, and foundation soil improvements. Geogrid reinforcement can also help improve persistently soft subgrades encountered during construction. If required, geosynthetic 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. Geosynthetics Specifications

Geosynthetics Type	Potential Use	Minimum Material Specifications
Non-Woven Geosynthetics	• Asphalt pavement construction • Foundation drains	• 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) • 3.0 kg-cm/degree Aperture Stability (U.S. Army Corp of Engineers Ref. 3.3.1.2000) • Minimum Radial Stiffness of 15,400 lb/ft at 0.5% Strain (ASTM D6637)

Apply geosynthetic directly on approved subgrades, taut, free of wrinkles, and overlapped at least 1 foot. Consult GPI to review geosynthetic applications or other subgrade improvement alternatives if desired.

Utility Trench Construction Considerations

Pipe bedding for utility construction should conform to WSDOT Section 9-03.12(3)-Gravel Backfill for Pipe Zone Bedding and Table 1 of this report. Loose soil must be removed from the base of utility trenches prior to placing pipe bedding. In addition, if water is encountered it must be removed from the base of the utility trench before placing pipe bedding. We recommend utility pipes be placed on at least 4 inches of bedding placed over undisturbed native soil supported according to the pipe manufacturer's specifications and WSDOT requirements.

Thoroughly place and compact bedding below pipe haunches or the zone between the pipe invert and the spring line. Then place pipe bedding and compact it from the pipe invert to 1 foot above the top of the pipe with tamping bars and/or plate compactors to render the backfill to a firm and unyielding condition. To accomplish bedding compaction, the distance between the side of the pipe at the spring line and the trench wall should be at least 1 foot. The remainder of the utility trench should be backfilled in accordance with this report's *Compaction* section.

Earthwork 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 recommend GPI be retained to verify design-specified subgrade conditions, test pit remediation, soil bearing units, and compaction are accomplished per our requirements. If another firm is retained to perform these critical design confirmation activities, they shall become the geotechnical engineer-of-record for construction. The criteria below outlines the minimum testing and observation frequencies to implement during earthwork and foundation construction.

1. Subgrade Preparation. One compaction test every 10,000 sf beneath embankment fill areas, minimum 3 tests per testing event.

2. Mass Grading. One compaction test every 10,000 sf, per structural fill lift, minimum 3 tests per testing event.

3. Slab and Foundation 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 every 2,500 sf for slab areas, or a minimum of 4 tests per alignment/area.

4. Foundation Stemwall Backfill. One 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). One 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 Subgrades and Aggregate Courses. One compaction test every 5,000 sf, per fill lift, minimum 3 tests per testing event.

Foundation Design and Construction

The following foundation design and construction recommendations are provided to aid Coleman's structural designers with progressing structural design for planned foundations supporting the proposed fueling station. Our design recommendations are based on the estimated structural loads outlined in the *Project Understanding* section of this report. We understand structural design is still in progress. If structural loads change from those outlined herein, GPI must be notified to review our design recommendations and issue changes if necessary.

We expect this project will involve structures that may span over both cuts into native soil and fill embankments. From a geotechnical perspective, structures placed on dissimilar materials (i.e. those that span over cuts into native soil and fill embankments) have a higher propensity for realizing settlement at the transition between these differing materials. While the site materials may not be drastically different, the cut and fill transition creates a discontinuity that will require design and construction attention to reduce the moderate potential for differential performance. Where possible, we recommend site civil and architectural design place buildings entirely over cuts into native soil, or entirely over fill embankments. If this is not possible, we provide the following recommendations and those in the *earthwork* report section to reduce, but not eliminate the risk of differential performance at cut-fill transitions. Additional reduction of settlement risks at cut/fill transitions can be achieved by structural designers implementing strategic jointing or additional reinforcement in these transition areas.

Foundation Design Criteria

Design foundations referencing the current IBC edition and the following criteria:

1. Allowable bearing pressure: 3,000 psf. This requires:
   a. Frost protection embedment depth: 2-feet below finished exterior surface.
   b. Compacted subgrade soil, prepared per the *Earthwork* report section.
   c. Drained subgrade conditions (see *Site Drainage* report section).
   d. We estimate this allowable bearing pressure will provide a safety factor against bearing failure greater than 3.0.

2. Estimated static vertical settlement:
   a. Total settlement: 1.0 inch
   b. Differential settlement: 0.75 inches in 30-foot, horizontal span

3. Lateral load resistance:
   a. Foundation base friction coefficient:
      i. 0.35 for foundations cast on compacted native sand alluvium or *General Structural Fill*
      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. ¾ inches of lateral movement to mobilize full passive pressure.
      ii. Drained conditions within stemwall backfill.

Site Seismicity and Liquefaction Potential

Significant seismic activity has not been recorded in the area in geologically recent time, and the presence of faults, fault rupture, or other such features was not observed via our field reconnaissance or identified in geologic mapping that we reviewed. However, our geologic research of available *United States Geologic Survey* (USGS) data suggests at least 2 historically active faults are located within 20 miles from the project site. Engineering fault parameters from the USGS are provided in *Table 4* below.

Table 4. Nearest Fault Parameters, Coleman Oil Site (USGS 2008)

Fault	Characteristic Earthquake Magnitude	Recurrence Interval (years)
Horse Heaven Hills structure (NW trend)	6.5 to 7.4	390-50,000
Wallula/Rattlesnake Hills System	6.5 to 7.1	250-12,500

Reference: http://earthquakes.usgs.gov/hazards/qfaults

Given the low recurrence interval for seismic activity along these nearby faults, our opinion is seismic activity within the design period (approximately 2,475 years) prescribed by the 2015 *International Building Code* (IBC) is primarily associated with regional background seismicity. A site-specific study of seismic response was not performed and is not part of GPI's authorized scope.

Liquefaction is commonly a concern for loose, fine-grained sand that is saturated. Site subsurface conditions comprise silty sand and dense gravel. Though groundwater is relatively shallow at the site, the coarse, and dense nature of the site soil at depth is not conducive to liquefaction. Based on our exploration, laboratory testing and analysis, the safety factor against liquefaction during an earthquake with the design return period of 2,475 years (i.e. 2% probability of exceedance in 50 years) will not drop below 1.5. Therefore, liquefaction is not anticipated to be a significant risk at the site. However, seismically-induced settlement and/or lateral

spread (i.e. due to soil densification from seismic vibration) could be realized on the order of 1 to 3 inches during such an event.

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 "D" at the project site. We recommend seismic design reference the parameters provided in Table 5, based on the soil conditions and project location. The risk-targeted maximum considered earthquake (MCE_R) spectral response acceleration parameters provided in Table 5 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 5 are equal to 67 percent of the Risk Targeted MCE_R acceleration parameters.

Table 5. Seismic Response Criteria (ASCE 7-16)[1] – Coleman Oil Facility

Period (seconds)	Standard Acceleration Coefficients for Site Class B (g)[2]	Site Factor for Site Class D	MCE_R Spectral Acceleration Parameters for Site Class D (g)[3]	Design Spectral Acceleration Parameters for Site Class D (g)
0.0 (Peak)	PGA = 0.182	F_{PGA} = 1.436	PGA_M = 0.261 ($PGA*F_{PGA}$)	-
0.2(Short)	S_S = 0.407	F_a = 1.475	S_{MS} = 0.600 (F_a*S_S)	S_{DS} = 0.4 (⅔ S_{MS})
1.0	S_1 = 0.157	F_v = 2.286	S_{M1} = 0.358 (F_v*S_1)	S_{D1} = 0.239 (⅔ S_{M1})

[1]Values for location Latitude 46.323288° and Longitude -119.30472°.
[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

Support concrete slab-on-grade floors by a minimum 6-inches of *Crushed Surfacing* meeting the requirements in Table 1. This assumes compacted *General Structural Fill* or native soil subgrades will be prepared beneath slabs per the *Earthwork* report section. It is critically important to structurally design slabs for the anticipated use and equipment or storage loading conditions. Slabs exposed to equipment or storage point loads may require thicker support sections, slab thicknesses and reinforcing. Based on correlations to the field and laboratory test results, if these recommendations are followed, concrete slab design should utilize an allowable modulus of subgrade reaction (k) of 210 pounds per cubic inch (pci). To realize the estimated subgrade modulus, drained conditions, and a minimum of 6 inches of *Crushed Surfacing* must be provided over the compacted subgrade soil. Higher subgrade modulus values are available with thicker *Granular Structural Fill* sections 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 floors will receive floor coverings, or where interior space will house moisture sensitive equipment or finishes, we strongly recommend a vapor retarder be incorporated beneath floor slabs. Where floors will comprise exposed concrete without floor coverings; or where moisture sensitive equipment or materials are not stored vapor retarders may be omitted at the sole election of Coleman.

Where required, we anticipate structural design will specify and the contractor will install vapor retarders atop the prepared *Crushed Surfacing* support layer prior to slab 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.

Site Drainage

Explorations encountered groundwater at 4 to 7 feet below the ground surface. Therefore, depending on final grading plans, we expect groundwater may be encountered in excavations for site grading, foundations or utility construction. Also, surface water can impact construction if not managed appropriately. Aggressive surface drainage and potentially dewatering measures should be expected during precipitation, to reduce over-excavation and re-work required due to saturated surface soil.

Runoff from precipitation or snowmelt must be routed away from structures to the maximum extent practical and must not be allowed to infiltrate, or be diverted towards slopes, pavements, foundations, exterior flatwork, or slab subgrades. Runoff or water migrating along the ground surface must be conveyed away from slopes and structures by an appropriately designed series of ditches, swales, or other surface water management procedures. Provide roof gutters and downspouts but do not connect them to foundation or wall drains. Well-designed site drainage and careful final grading will help limit moisture infiltration near building and paved areas, which will help reduce impacts from frost heave, vapor intrusion to interior spaces, and help improve long-term performance of such structures.

We recommend the ground surface outside any structure 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 hardscapes and foundation walls to reduce moisture infiltration at joints near building structures.

No civil design plans have been provided at this time, showing the layout or location of planned stormwater management facilities. GPI recommends such facilities be situated at least 50 feet (horizontal) from planned structures, and at least 1 foot downgradient from planned foundation bearing surface elevations.

Foundation Drainage

Maintaining uniformly drained conditions is critical to long-term foundation performance. We recommend foundation drains be installed around the building perimeter to route water away from foundation subgrades to dedicated stormwater disposal areas. Plate 2 presents an example of a foundation and wall drainage system.

Based on well-drained native soil conditions at the site, Coleman may elect to omit foundation drains from the planned building construction. However, foundation drains can intercept irrigation or stormwater that can infiltrate below the structure, thus reducing the potential for mold, odor, moisture vapor and potential risks created by moist conditions. Also, foundation drains can help protect the structure against subsurface water

fluctuations instigated by irrigation and future nearby developments. Many of these conditions can aggravate settlement potential. Therefore, the risks of omitting foundation drains should be considered carefully.

If roof gutters, exterior pavement and other such systems that reduce the potential for surface water infiltration adjacent to structures are omitted, or if future developments are planned nearby which may impact site drainage or subsurface water conditions, we strongly recommend foundation drains be utilized.

Infiltration Testing

GPI accomplished infiltration testing in test pits TP-19155A-1 and 2 referencing the "Single Ring Infiltrometer" method outlined in Appendix 6B of Ecology's SMMEW. We performed tests approximately 4 feet below the ground surface in the alluvial silty sand encountered in the explorations. The infiltration test results yielded the estimated un-factored infiltration rates outlined in Table 6.

Table 6. Infiltration Test Results

Test Pit Location	Infiltration Test Depth (feet)	Initial Head (feet)	Infiltration Rate (inches/hour)
TP-19155A-1	4.0	2.0	18.3[1]
TP-19155-3	4.0	2.0	22.5[1]

[1]Infiltration rate represents an un-factored infiltration rate measured over the 30-minute falling head test period.

The infiltration rates measured during our exploration are relatively high. Prudent engineering judgment must be used when selecting an infiltration rate for designing stormwater disposal facilities. The project civil designer shall 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 central Washington municipalities typically range from 4 to 6. We recommend using a safety factor of at least 4 on field-measured infiltration rates due to the inherent variability of soil conditions which can impact 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 and clay) from contaminating subgrades. Compacting or "plugging" infiltration facility subgrades with fines will greatly reduce or preclude their ability to allow infiltration. 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.

We call specific attention to the relatively shallow groundwater conditions encountered at the site, with respect to stormwater disposal design. The Ecology Stormwater Manual requires at least 5 feet of vertical separation between the base of any infiltration facility and the seasonal high groundwater level at the site. Depending on final site configuration and dimensions for stormwater management facilities, existing groundwater levels at the site may preclude stormwater disposal via infiltration. Further, our exploration was accomplished in late August; we anticipate seasonal groundwater levels may rise above those encountered during spring months when regional irrigation practices in the Tri-Cities are at their peak. GPI will remain available to consult with Coleman and their design consultants regarding stormwater disposal risks associated with site groundwater levels.

Pavement Section Thickness

The following pavement section design references the *American Association of State Highway and Transportation Officials* (AASHTO) *Guide for Design of Pavement Structures* (1993 Pavement Design Guide). No detailed traffic loading has been provided at the time of this report. Therefore, GPI estimated traffic loads based on our experience with similar facilities in the Tri-Cities area. Other design parameters are based on typical pavement design criteria in the central Washington area, results from laboratory testing, and our understanding of the subsurface conditions. The following tables present our design parameters and references as well as the resulting pavement section design recommendations using the AASHTO 1993 Pavement Design Guide.

Table 7. Pavement Section Design Parameters

Design Parameter	Value Used	Reference
Reliability (R)	80%	AASHTO 1993 guidelines
Standard Deviation (S)	0.45 (flexible) 0.35 (rigid)	AASHTO 1993 guidelines
Initial Serviceability (PSI_i)	4.2	Typical central Washington area values
Terminal Serviceability (PSI_z)	2.2	Typical central Washington area values
Traffic Loading (Flexible Asphalt Pavement)	111,500 ESALS[1] (standard-duty) 366,000 ESALS (heavy-duty)	See Table 8
Traffic Loading (Rigid PCC Pavement)	1,235,500 ESALS (heavy-duty)	See Table 8
Design Life (Flexible Asphalt Pavement)	20 years	Typical central Washington value
Design Life (Rigid PCC Pavement)	40 years	Typical central Washington value
Resilient Modulus (M_r)	10,000 psi[2]	Based on California Bearing Ratio (CBR) and M_r correlations
Asphalt Layer Coefficient (a_1)	0.44	Figure 2.5 AASHTO 1993
Top Course Layer Coefficient (a_2)	0.12	Figure 2.6 AASHTO 1993
Top Course Drainage Coefficient (m_2)	1.0	Table 2.4 AASHTO 1993 for "fair" drainage, 1 to 5 percent saturation
Modulus of Subgrade Reaction (k)	210 pci[3]	Figure 3.3 AASHTO 1993 assuming 6 inches of *Crushed Surfacing* meeting WSDOT
Concrete Modulus of Rupture (S_c)	650 psi[2]	Typical values for 4,000 psi[2] compressive strength concrete
Concrete Elastic Modulus (E_c)	4,000,000 psi[2]	Typical values for 4,000 psi[2] compressive strength concrete
Load Transfer Coefficient (J)	3.2	Table 2.6 AASHTO 1993 For "asphalt" shoulder type Portland Cement Concrete (PCC)
Drainage Coefficient (c_d)	1.0	Table 2.5 AASHTO 1993 for "poor" to "fair" drainage 5 to 2.5 percent saturation

[1]Equivalent Single Axle Loads (ESALs)
[2]Pounds per square inch (psi)
[3]Pounds per square inch, per inch of subgrade (pounds per cubic inch, pci). Modulus not applicable to slab on-grade design and is only provided as a design input for rigid pavement section design.

Table 8. Traffic Loading Assumptions

Pavement Section Area	Traffic Loading Parameters	Frequency[1] or Value Used	EALF[2]
Standard-Duty Section (Parking Areas)	Passenger Vehicles	500 trips per day	0.001
	Refuse and Delivery Trucks	10 trips per day	0.90
	Fire Apparatus	3 trips per year	3.91
Heavy-Duty Section (Drive Lanes, loading docks)	Passenger Vehicles	100 trips per day	0.001
	Semi-Trucks	10 trips per day	2.18
	Refuse and Delivery Trucks	10 trips per day	0.90
	Fire Apparatus	3 trips per year	3.91
	Annual Growth Factor	5.0%	
	Construction Traffic[3]	**None**	
	Design Life	20 years (Flexible) 40 years (Rigid)	

[1]One trip is one pass by the vehicle.
[2]Equivalent Axle Load Factor; Loading by one vehicle trip.
[3]The traffic loading estimates above do not include construction traffic. Heavy construction traffic can damage pavements in as little as 1 pass. Care must be taken to limit construction traffic over pavements, or accept the risk of pavement damage due to construction traffic.

If actual traffic loading is different, GPI must review the analysis commensurate with the actual traffic loads. Based on the above pavement design parameters, Table 9 provides the flexible pavement design recommendations for pavements. Table 10 provides the rigid pavement design recommendations.

Table 9. Flexible Pavement Section Design

Pavement Section Material	Standard-Duty Section Thickness (inches)	Heavy-Duty Section Thickness (inches)	Material Specifications
Asphalt Concrete Pavement	3.0	4.0	Hot-mix asphalt (HMA) conforming to *Section 5-04* of the latest edition of WSDOT Standards. HMA should consist of Class ½ inch or Class ¾ inch.
Crushed Surfacing	8.0	10.0	Top course or base course conforming to the latest WSDOT Standards *Section 9-03.9(3) Crushed Surfacing.*
Non-woven Geotextile Fabric	Recommended	Recommended	Conforming to Geotextiles report section requirements.

Table 10. Rigid Pavement Section Design

Pavement Section Material	Heavy-Duty Thickness (inches)	Material Specifications
Portland Cement Concrete	8.0	Minimum 4,000 psi concrete with 4 to 6 percent entrained air, conforming to the latest WSDOT Standards *Section 5-01*
Crushed Surfacing	6.0	Top course or base course conforming to the latest WSDOT Standards *Section 9-03.9(3) Crushed Surfacing*
Non-woven Geotextile Fabric	Not required	Not applicable

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 semi-trucks, delivery trucks or other heavy truck traffic should be planned for heavy-duty asphalt or PCC 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. Coleman 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 large 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.

Joint Spacing and Reinforcement

Joint spacing and reinforcement for PCC pavement should conform to Section 5-05 in the latest WSDOT Standards. Table 11 outlines the joint spacing used in the design referencing these standards and WSDOT's

Standard Plan A-40.10-03. Sawcut joints within 24 hours after PCC pavement placement to help reduce the potential for shrinkage cracking.

Table 11. Contraction Joint Spacing Characteristics*

Joint Aspect	Recommended Value
Transverse Joint Spacing	15 feet maximum
Joint Width	3/16-inch minimum 5/16-inch maximum
Transverse Joint Depth	1/4 of pavement thickness
Longitudinal Joint Spacing	Same as lane width
Longitudinal Joint Depth	1/3 of pavement thickness

*Construction joints minimum 1-inch depth saw cut and spaced per final jointing plan

Per Section 5-05 of the latest *WSDOT Standards*, and *WSDOT's Standard Plan A-40.10-02,* transverse and longitudinal reinforcing bars are required for concrete pavement reinforcement. Transverse reinforcing included in the PCC pavement evaluation comprises 1.5-inch-diameter steel dowels, 1.5 feet long, centered on the joint (i.e. ½ the dowel on each side of the joint), with a 1-foot center-to-center spacing. Longitudinal reinforcing included in the PCC pavement evaluation included #5 deformed bars, 2.5 feet long, centered on the joint with a 3-foot center-to-center spacing. Reinforcing bar steel must be rated to have minimum yield strength of 60,000 psi. Alternatively, continuous reinforcement dimensions and spacing may be established by the project structural designer based on structural design requirements and anticipated structural loadings for PCC slabs.

ADDITIONAL RECOMMENDED SERVICES

Geotechnical Design Continuity

We base this report's information on our exploration results, observations, and communications with Coleman. The final site layout, site grading, building configuration, finished 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 Coleman retain GPI to provide construction observation and testing to document our report recommendations have been followed. Providing these services during construction will help to identify potential earthwork and foundation construction issues, thus allowing the contractor to proactively remedy problems and reduce the potential for errors and omissions.

EVALUATION LIMITATIONS

Our scope does not include an engineering evaluation for deep foundations, shoring, underpinning, retaining walls, dewatering systems, machine pad 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

This report was prepared for the exclusive use of Coleman and their design and construction 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. 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.

The following accompany this report:

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

LEGEND

- Test pit location observed by GPI on August 29, 2019.
- (1.0) Approximate depth of groundwater at time of excavation.
- NE Not encountered

No test pit performed in this area due to suspected utility

Approximate proposed development area

Logan Road

Robertson Drive

N

TP-19155A-7 (6.0)

TP-19155A-6 (6.0)

TP-19155A-5 (NE)

TP-19155A-4 (4.0)

TP-19155A-3 (7.0)

TP-19155A-2 (NE)

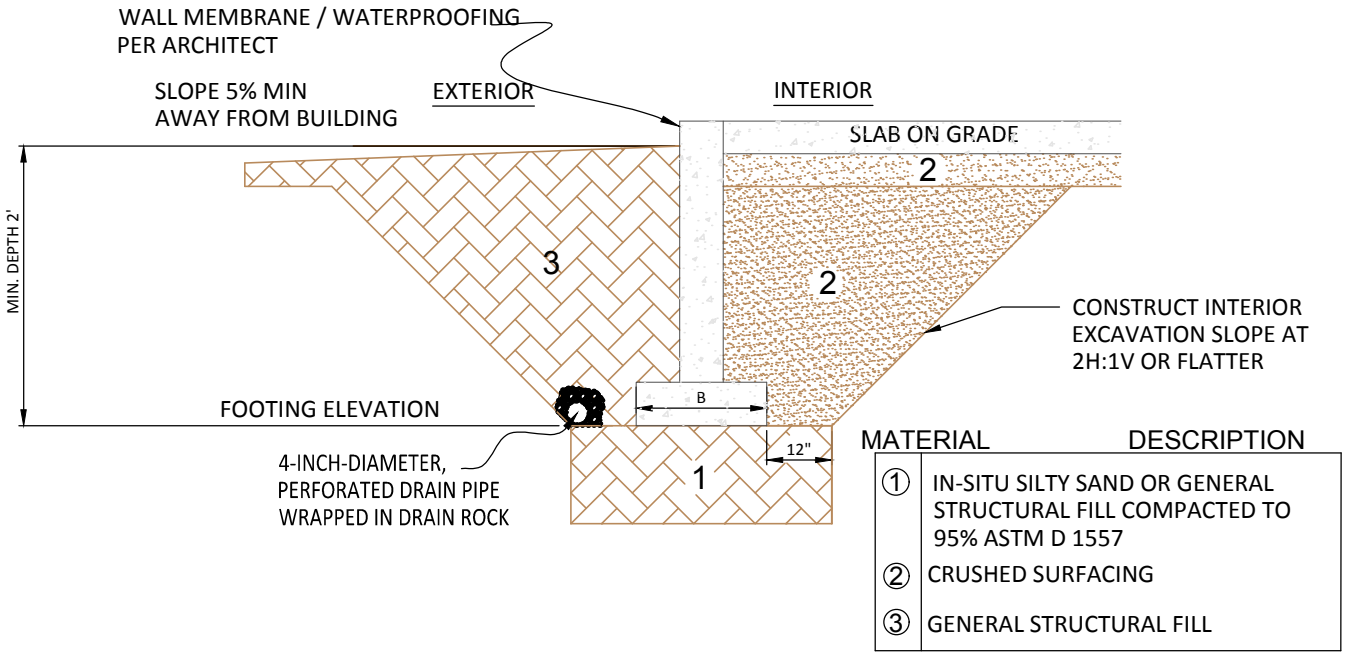
TP-19155A-1 (NE)

EXPLORATION MAP
Coleman Oil Facility
Robertson Drive
Richland, Washington

GeoProfessional Innovation.

PU19155A	PLATE 1

Reference: Base image provided by Google Earth. No Scale Intended.



MATERIAL	DESCRIPTION
①	IN-SITU SILTY SAND OR GENERAL STRUCTURAL FILL COMPACTED TO 95% ASTM D 1557
②	CRUSHED SURFACING
③	GENERAL STRUCTURAL FILL

FOUNDATION DRAIN SCHEMATIC
Coleman Oil Company
Proposed Fueling Station
Robertson Drive
Richland, Washington

NOT TO SCALE

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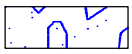
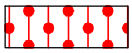
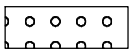
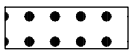
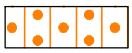
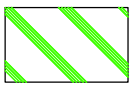
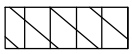
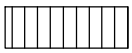
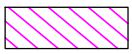
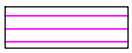
PU19155A	PLATE: 2
DRAWN BY: JBM	CHECKED BY: AJA

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

GROUND WATER AFTER 24 HOURS

GROUND WATER AT TIME OF DRILLING

GROUND WATER AT THE END OF DRILLING

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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, (SM) brown, loose, moist	0.0	SM								Moderate vegetation and organics encountered to approximately 0.5-feet BGS.
ALLUVIUM - SILTY SAND, (SM) brown, loose, moist		SM		BK	19.0		1.9			ASTM D 1557: Modified Proctor Maximum Dry Density = 118.0 pcf Optimum Moisture Content = 10.5%
	2.5									
ALLUVIUM - POORLY-GRADED GRAVEL WITH SAND, (GP) grayish tan, loose to medium dense, moist		GP		BG	1.3		1.6			Infiltration test performed at approximately 4.0-feet BGS. Unfactored Infiltration Rate=18.3-inches/hour
	5.0									
	7.5									
	10.0									
Test Pit Terminated at 11.0 Feet.										Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-1	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: PU19155A	**Date Excavated:** 08-29-2019		
Backhoe: CASE 580	**Bucket Width:** 2'		
Depth to Groundwater: N.E.	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 10/1/19 16:29 - V:\ENGINEERING\GINT FILES\2019\190829 PU19155A COLEMAN OIL HORN RAPIDS LAND PURCHASES.GPJ

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, (SM) brown, loose, moist	0.0	SM								Moderate vegetation and organics encountered to approximately 0.5-feet BGS.
ALLUVIUM - SILTY SAND, (SM) brown, loose, moist	2.5	SM								
ALLUVIUM - POORLY-GRADED GRAVEL WITH SAND, (GP) grayish tan, loose to medium dense, moist	5.0	GP								Infiltration test performed at approximately 4.0-feet BGS. Unfactored Infiltration Rate=22.5-inches/hour Caving conditions encountered at approximately 7.0-feet BGS. Soil moisture increasing with depth.
Test Pit Terminated at 9.0 Feet.	7.5									Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-2
Project: PU19155A	**Date Excavated:** 08-29-2019
Backhoe: CASE 580	**Bucket Width:** 2'
Depth to Groundwater: N.E.	**Logged By:** AJA

GeoProfessional Innovation.

EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 10/1/19 16:29 - V:\ENGINEERING\GINT FILES\2019\190829 PU19155A COLEMAN OIL HORN RAPIDS LAND PURCHASES.GPJ

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, (SM) brown, loose, moist	0.0	SM								Moderate vegetation and organics encountered to approximately 0.5-feet BGS.
ALLUVIUM - SILTY SAND, (SM) brown, loose, moist	2.5	SM								
ALLUVIUM - WELL-GRADED GRAVEL WITH SAND, (GW) grayish tan, loose to medium dense, moist to saturated	5.0	GW		BG	0.4		1.6			Caving conditions encountered at approximately 7.0-feet BGS.
Test Pit Terminated at 9.0 Feet.	7.5									Test pit terminated due to caving conditions. Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-3
Project: PU19155A	**Date Excavated:** 08-29-2019
Backhoe: CASE 580	**Bucket Width:** 2'
Depth to Groundwater: 7'	**Logged By:** AJA

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EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 10/1/19 16:29 - V:\ENGINEERING\GINT FILES\2019\190829 PU19155A COLEMAN OIL HORN RAPIDS LAND PURCHASES.GPJ

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, (SM) brown, loose, moist	0.0	SM								Moderate vegetation and organics encountered to approximately 0.7-feet BGS.
ALLUVIUM - SILTY SAND, (SM) brown, loose, moist		SM		BG						Gray to black sand encountered at approximately 1.0-feet BGS.
ALLUVIUM - POORLY-GRADED GRAVEL WITH SAND, (GP) grayish tan, loose to medium dense, moist to saturated	2.5	GP								
Test Pit Terminated at 5.0 Feet.	5.0									Test pit terminated due to caving conditions. Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-4
Project: PU19155A	**Date Excavated:** 08-29-2019
Backhoe: CASE 580	**Bucket Width:** 2'
Depth to Groundwater: 4'	**Logged By:** AJA

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EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 10/1/19 16:29 - V:\ENGINEERING\GINT FILES\2019\190829 PU19155A COLEMAN OIL HORN RAPIDS LAND PURCHASES.GPJ

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, (SM) brown, loose, moist ALLUVIUM - SILTY SAND, (SM) brown, loose, moist	0.0 2.5 5.0	SM SM								Moderate vegetation and organics encountered to approximately 0.25-feet BGS. Sand transitions from brown to gray at 4.0- to 5.0-feet BGS.
Test Pit Terminated at 7.0 Feet.										Test pit terminated due to caving conditions. Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-5	GeoProfessional Innovation.	**EXPLORATORY TEST PIT LOG**
Project: PU19155A	**Date Excavated:** 08-29-2019		
Backhoe: CASE 580	**Bucket Width:** 2'		
Depth to Groundwater: N.E.	**Logged By:** AJA		Sheet 1 Of 1

GPI TEST PIT - STRATA.GDT - 10/1/19 16:30 - V:\ENGINEERING\GINT FILES\2019\190829 PU19155A COLEMAN OIL HORN RAPIDS LAND PURCHASES.GPJ

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, (SM) brown, loose, moist	0.0	SM								Moderate vegetation and organics encountered to approximately 0.7-feet BGS. Sand transitions from brown to gray at 3.0-feet BGS.
ALLUVIUM - SILTY SAND, (SM) brown, loose, moist	2.5	SM								
ALLUVIUM - POORLY-GRADED GRAVEL WITH SAND, (GP) grayish tan, loose to medium dense, moist to saturated	5.0	GP								
Test Pit Terminated at 7.0 Feet.										Test pit terminated due to caving conditions. Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-6
Project: PU19155A	**Date Excavated:** 08-29-2019
Backhoe: CASE 580	**Bucket Width:** 2'
Depth to Groundwater: 6'	**Logged By:** AJA

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EXPLORATORY TEST PIT LOG

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, (SM) brown, loose, moist ALLUVIUM - SILTY SAND, (SM) brown, loose, moist	0.0 2.5 5.0	SM SM								Moderate vegetation and organics encountered to approximately 0.5-feet BGS. Sand transitions from brown to gray at 4.0- to 5.0-feet BGS.
ALLUVIUM - POORLY-GRADED GRAVEL WITH SAND, (GP) grayish tan, loose to medium dense, moist to saturated		GP		BG						
Test Pit Terminated at 6.5 Feet.										Test pit terminated due to caving conditions. Test pit loosely backfilled with site soil.

Client: Coleman Oil Company	**Test Pit Number:** TP-19155A-7
Project: PU19155A	**Date Excavated:** 08-29-2019
Backhoe: CASE 580	**Bucket Width:** 2'
Depth to Groundwater: 6'	**Logged By:** AJA

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EXPLORATORY TEST PIT LOG

APPENDIX B

Laboratory Test Results

GeoProfessional Innovation.

Project No.: PU19155A

Project Name: Proposed Fuel Station

Client: Coleman Oil Company

Report Date: 10/1/2019

Test Results Summary							
Test Pit	Depth	Lab	Description	In situ	Max Dry	Optimum	#200 Sieve
TP	(feet)	Number	(U.S.C.S. Classification)	Moisture, %	Density, pcf	Moisture, %	Passing, %
TP-19155A-1	1.0-2.0	PUL19-0253A	Silty Sand (SM)	1.9	118.0	10.5	19
TP-19155A-1	3.0-4.0	PUL19-0253B	Poorly Graded Gravel with Sand (GP)	1.6	-	-	1.3
TP-19155A-3	4.0-5.0	PUL19-0253C	Well Graded Gravel with Sand (GW)	1.6	-	-	0.4

Reviewed by: _____

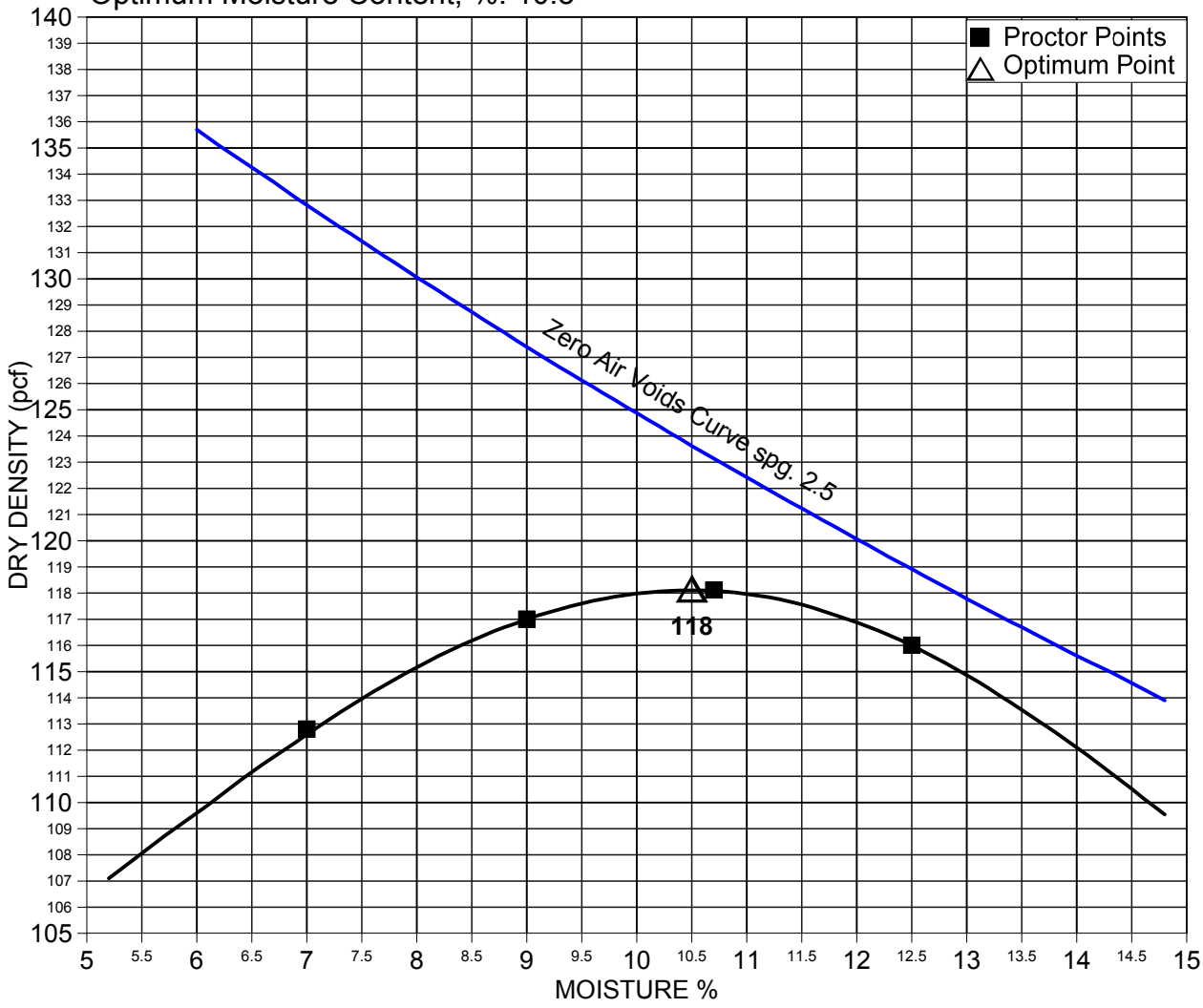
MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D 1557
Method A

GRADING ANALYSIS

SCREEN SIZE	% PASSING	AS TESTED
3/4 Inch	100	100
3/8 Inch	97	97
No. 4	96	96

Project: Proposed Fuel Station
Client: Coleman Oil Company
File Name: PU19155A
Lab Number: PUL19-0253A
Sample Location: TP-19155A-1 @ 1.0 - 2.0 feet BGS
Sample Classification: Silty Sand (SM)
Date Tested: 9/4/19 By: JBM
Rammer Type: Manual

Maximum Dry Density, pcf : 118.0
Optimum Moisture Content, %: 10.5



Reviewed By: _____

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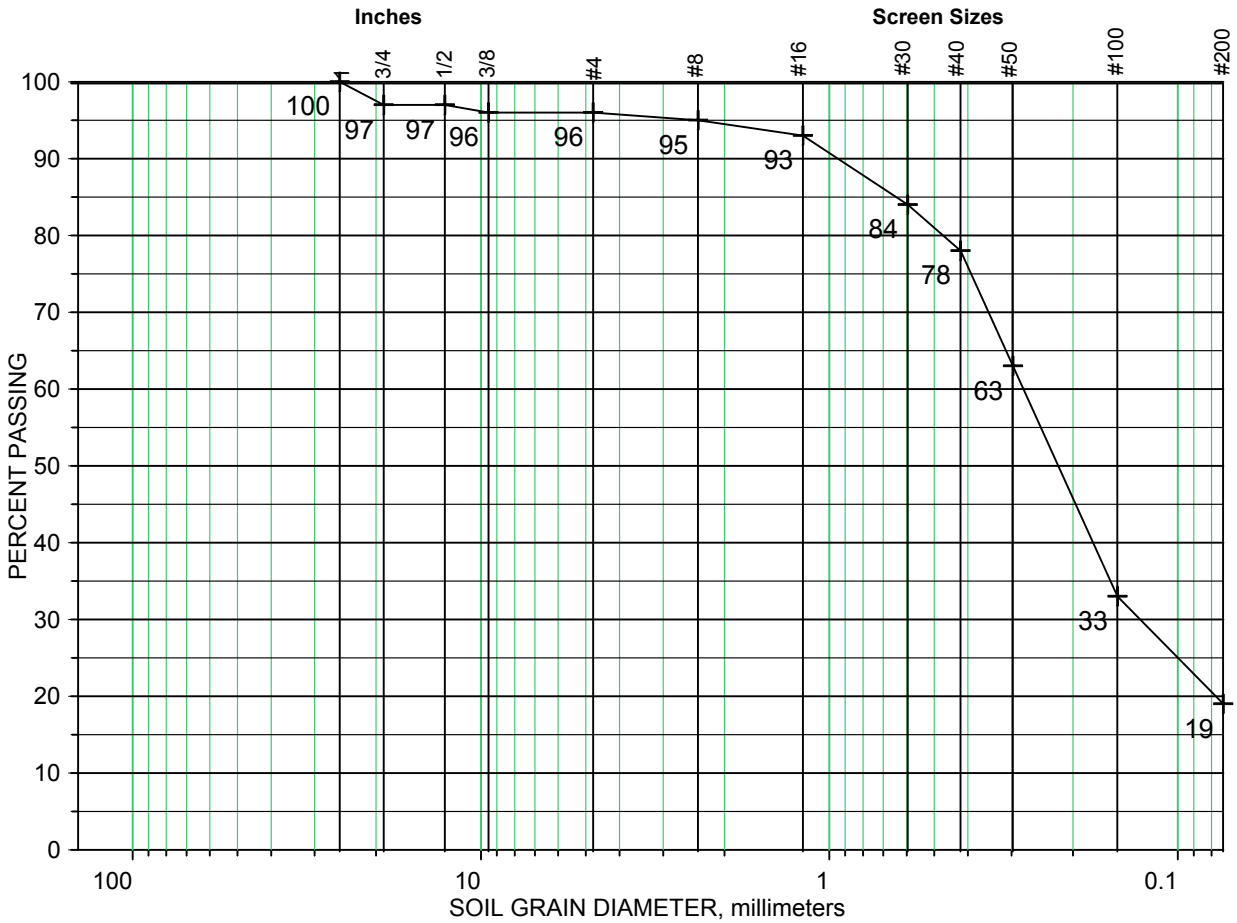
GRADATION ANALYSIS

ASTM D6913

Project: Proposed Fuel Station
Client: Coleman Oil Company
File: PU19155A
Sample No: PUL19-0253A
Sample Location: TP-19155A-1 @ 1.0 - 2.0 feet BGS
Sample Classification: Silty Sand (SM)
Date tested: 9/4/19 By: JBM

Cobbles	Gravel		Sand		
	Coarse	Fine	Coarse	Medium	Fine



Reviewed by: Andy Abr

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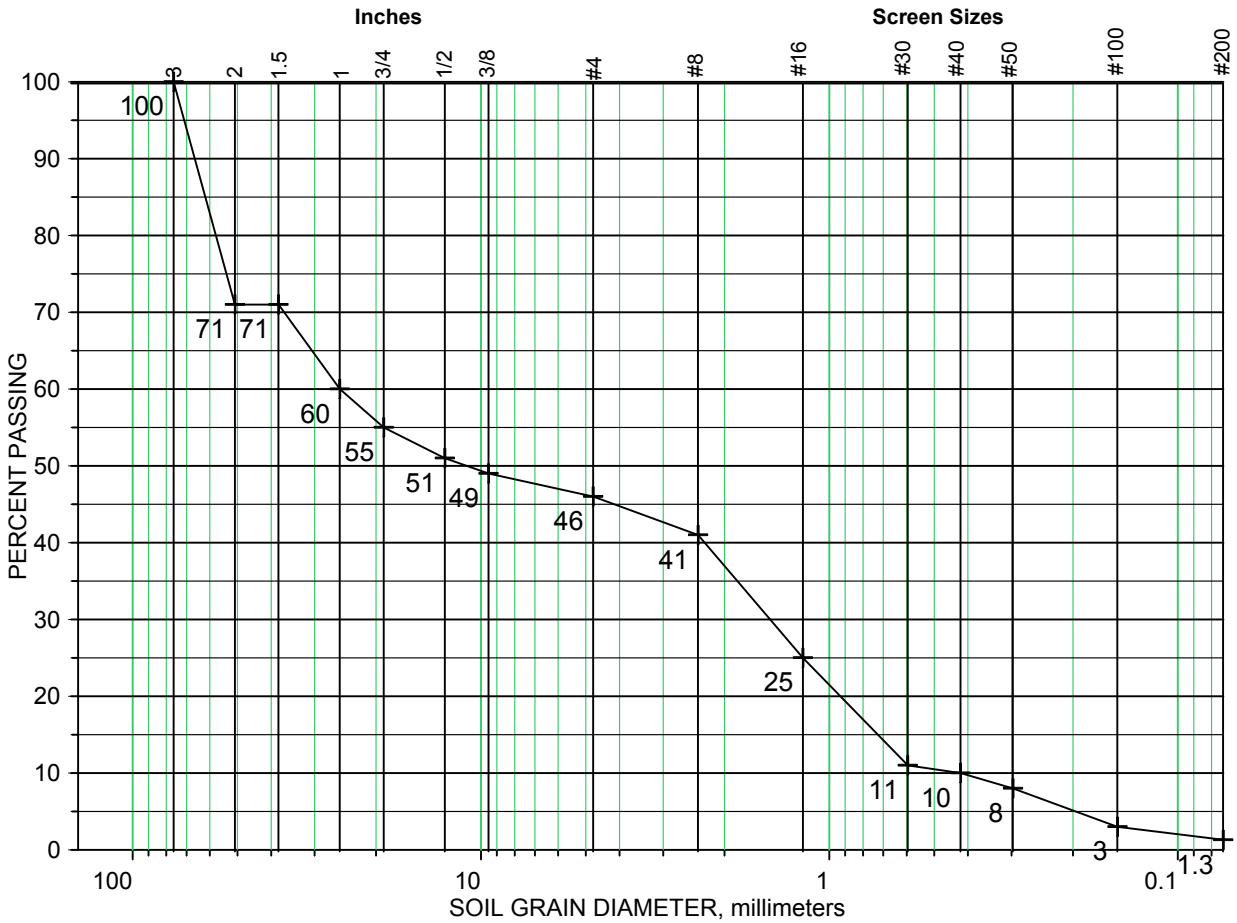
GRADATION ANALYSIS

ASTM D6913

Project: Proposed Fuel Station
Client: Coleman Oil Company
File: PU19155A
Sample No: PUL19-0253B
Sample Location: TP-19155A-1 @ 3.0 - 4.0 feet BGS
Sample Classification: Poorly Graded Gravel with Sand (GP)
Date tested: 9/4/19 By: JBM

Cobbles	Gravel		Sand		
	Coarse	Fine	Coarse	Medium	Fine



Reviewed by: _____

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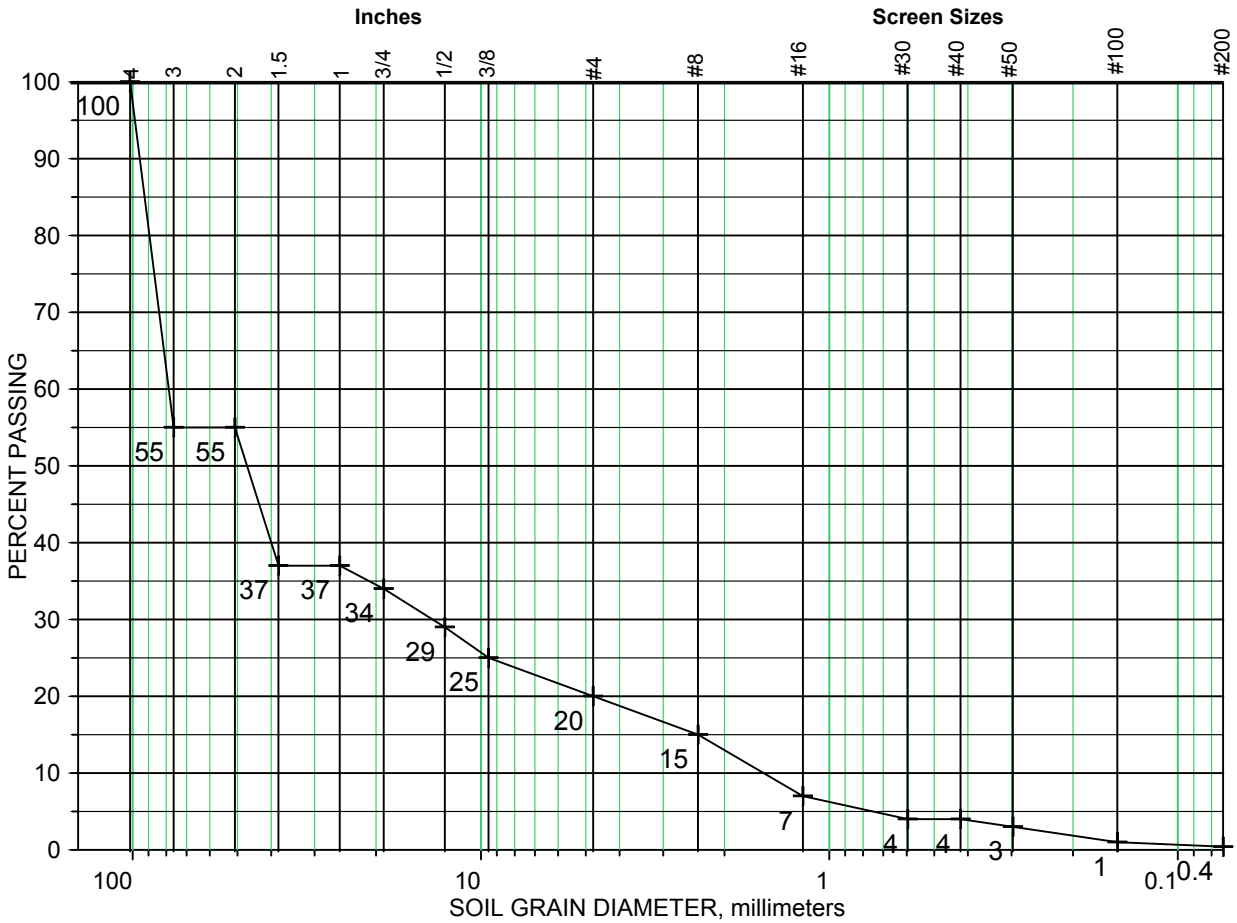
GRADATION ANALYSIS

ASTM D6913

Project: Proposed Fuel Station
Client: Coleman Oil Company
File: PU19155A
Sample No: PUL19-0253C
Sample Location: TP-19155A-3 @ 4.0 - 5.0 feet BGS
Sample Classification: Well Graded Gravel with Sand (GW)
Date tested: 9/4/19 By: JBM

Cobbles	Gravel		Sand		
	Coarse	Fine	Coarse	Medium	Fine



Reviewed by: Andy Abr

GeoProfessional Innovation.