EXHIBIT 12

Littlerock Road Self-Storage

6115 & 6119 Littlerock Road SW
Tumwater, WA 98512

PRELIMINARY STORMWATER SITE PLAN

PREPARED BY

JSA CIVIL
Engineering | Planning | Management
6945 LITTLEROCK ROAD SW, SUITE A
TUMWATER, WA 98512
CONTACT: WHITNEY DUNLAP, PE
PHONE: 360.515.9600

JSA Project 134.001

Contents

PROJECT ENGINEER'S CERTIFICATION 3
STORMWATER SITE PLAN 4
DETERMINATION OF MINIMUM REQUIREMENTS 4
SECTION 1: PROPOSED PROJECT DESCRIPTION 5
SECTION 2: EXISTING SITE CONDITIONS 6
SECTION 2.1: INFILTRATION / GEOTECHNICAL REPORT 6
SECTION 3: VICINITY ANALYSIS AND SUBBASIN DESCRIPTION 7
SECTION 3.1: KNOWN DRAINAGE PROBLEMS OR CONCERNS 7
SECTION 3.1: WELL AND SEPTIC SYSTEMS 7
SECTION 3.2: FUEL TANKS 8
SECTION 3.3: ANALYSIS OF THE 100-YEAR FLOOD 8
SECTION 4: FLOW CONTROL AND WATER QUALITY FACILITY SIZING 9
SECTION 5: AESTHETIC CONSIDERATIONS FOR FACILITIES 12
SECTION 6: CONVEYANCE SYSTEM ANALYSIS & DESIGN 12
SECTION 7: COVENANTS, DEDICATIONS, EASEMENTS 13
SECTION 8: AGREEMENTS AND GUARANTEES 13
SECTION 9: OTHER PERMITS OR CONDITIONS PLACED ON THE PROJECT 13

Appendices

Appendix 1: WWHM Reports

Appendix 2: Geotechnical Report

Appendix 3: SWPPP

Appendix 4: Conveyance Sizing Calculations

Appendix 5: Preliminary Engineering Plans

PROJECT ENGINEER'S CERTIFICATION

"I hereby state that this Drainage and Erosion Control Plan/Construction SWPPP for the Littlerock Road Self-Storage project has been prepared by me or under my supervision and meets the requirements of the City of Tumwater Drainage Design and Erosion Control Manual and the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Tumwater does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me."

PRELIMINARY	10/06/2023
Whitney Dunlap, PE	Date

STORMWATER SITE PLAN

The following report was prepared for the proposed Littlerock Road Self-Storage to accompany the site development permit application. This project was prepared to comply with the minimum technical standards and requirements that are set forth in the *2022 City of Tumwater Drainage Design and Erosion Control Manual (DDECM)*.

DETERMINATION OF MINIMUM REQUIREMENTS

The proposed commercial development will result in more than 5,000 ft^2 of new impervious surface. In accordance with the *DDECM*, a Drainage Report is required for this project. As a result, Minimum Requirements 1-11 will need to be addressed. The below table summarizes how each requirement will be met.

Table 1: Compliance with Minimum Technical Requirements

MINIMUM REQUIREMENT	COMPLIANCE WITH MINIMUM REQUIREMENT
#1 - Stormwater Site Planning	The contents of this report and all included appendices are intended to satisfy this requirement.
#2 - Construction SWPPP	A Construction SWPPP is included as Appendix 3 of this document.
#3 - Source Control of Pollution	A Source Control Pollution Prevention Plan will be prepared and included with the O&M manual.
#4 - Drainage Path Preservation	Preservation of the site's previously established natural drainage paths will be maintained to the maximum extent practicable through on-site infiltration.
#5 - Stormwater Management	On-site stormwater management is met using the LID performance standard through use of infiltration trenches to provide 100% infiltration on the site.
#6 - Runoff Treatment	Runoff Treatment is provided via Stormfilter catch basins prior to infiltration.
#7 - Flow Control	Flow control is provided via infiltration trenches (BMP T7.20).
#8 - Wetlands Protection	There are no known on-site wetlands or wetlands that the project site discharges to, therefore this requirement does not apply.
#9 - Operation and Maintenance	An Agreement to Maintain Stormwater Facilities will be prepared prior to the City issuing certificate of occupancy to the proposed apartments.
#10 - Financial Liability	A Bond Quantities Worksheet will be completed during final permitting.
#11 - Offsite Analysis and Mitigation	Historical drainage courses will not be altered. Consequently, downstream impacts are not anticipated.

SECTION 1: PROPOSED PROJECT DESCRIPTION

The following report summarizes the stormwater design analysis for the Littlerock Road Self-Storage project located at 6115 & 6119 Littlerock Road SW, Tumwater, WA 98512 (TPNs 12703211802 and 12703211801). The current proposal includes developing the 1.77-acre site with a four-story self-storage building including associated access, parking, sidewalks & utilities. After development, this impervious area coverage will be 83% for the site. Breakdowns of areas and project map can be found in Section 8 of this report.

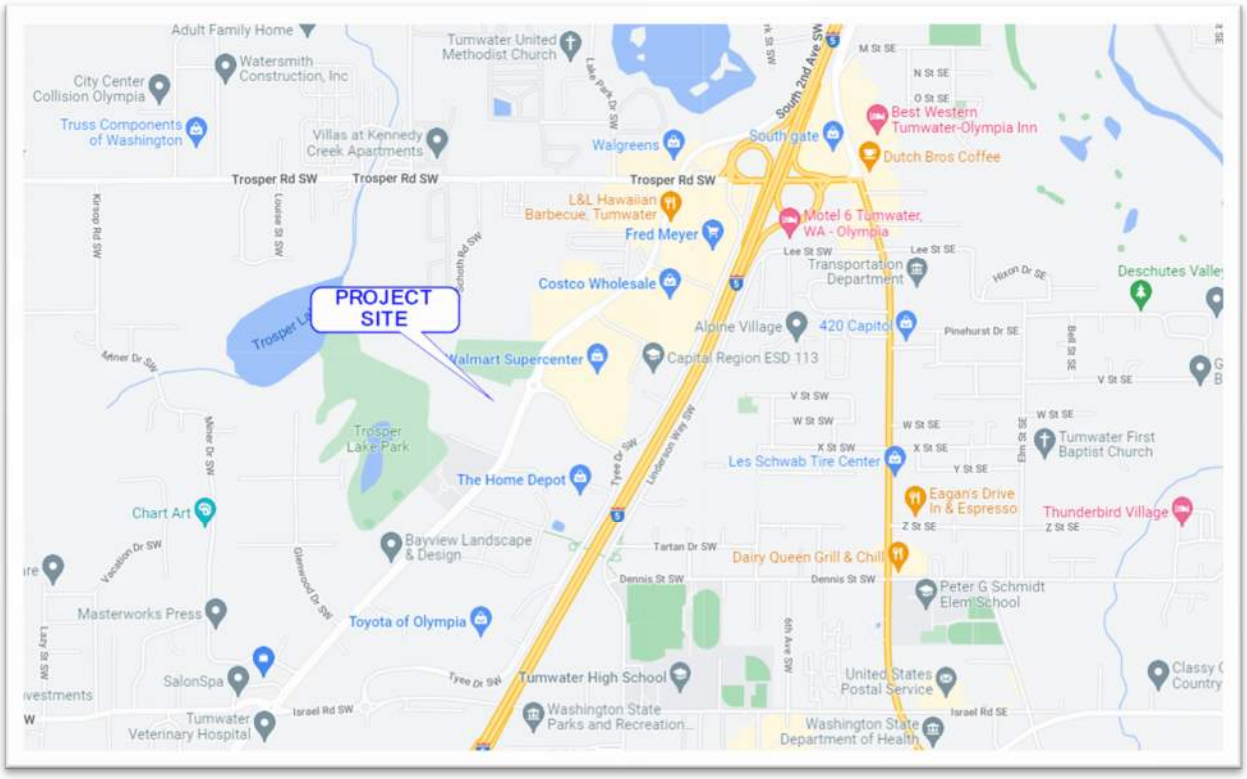


Figure 1: Vicinity Map

SECTION 2: EXISTING SITE CONDITIONS

The existing site has been previously cleared and developed with single family residences, driveways, and various outbuildings on both of the parcels. The site is predominantly lawn with some landscaping and intermittent trees. Along the western property line there is dense vegetation with larger conifer trees. Two of these larger trees are located on site and will be removed as part of the proposed project.

Existing slopes range from 0 to 10%. There are no known wetlands on the site.

An aerial photograph from 2023 is provided below.

Figure 2: 2023 Existing Conditions Aerial Photograph

SECTION 2.1: INFILTRATION / GEOTECHNICAL REPORT

A geotechnical report and on-site infiltration testing was completed by South Sound Geotechnical Consulting in May 2023. The report located in Appendix 2, recommends using a maximum design infiltration rate of 13.8 inches per hour, which is the average of the corrected infiltration rates found at each of the two test pit locations labeled PIT-1 and PIT 2 in Figure 3.

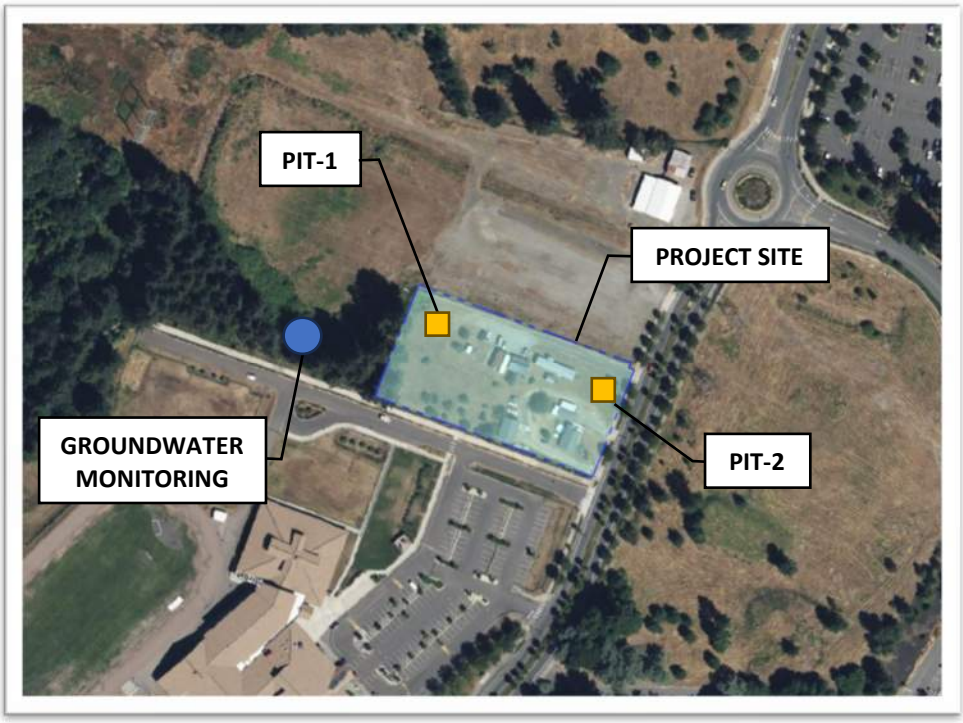


Figure 3: Test Pit Locations per Geotechnical Report

Groundwater was not observed in either test pit on-site, however groundwater monitoring was conducted on the adjacent parcel in 2022 approximately 200 feet west of the western property line for this project site. The results of that groundwater study found the maximum groundwater approximately 7.5' below the existing ground. The relative surface elevation at the depression is 176.0 yielding a maximum groundwater surface elevation of 168.5. The proposed infiltration facility bottom is located at 176.35, which provides more than the minimum 6' of vertical separation from groundwater.

SECTION 3: VICINITY ANALYSIS AND SUBBASIN DESCRIPTION

This section includes a qualitative analysis of the site and surrounding hydraulicly connected areas.

SECTION 3.1: KNOWN DRAINAGE PROBLEMS OR CONCERNS

There are no known drainage problems for the area. There is a localized low point approximately 200 feet to the west of the site where groundwater monitoring studies were conducted for the adjacent parcel. As this point is the low point in the area, excess stormwater flows from larger storm events are assumed to travel here in some capacity, however no known issues or concerns are noted. The proposed project will provide 100% infiltration of the runoff and has been designed to match predeveloped stormwater flows.

SECTION 3.1: WELL AND SEPTIC SYSTEMS

WSDOE Well Logs and on-site inspections have revealed no known wells in the vicinity of the project. A review of recorded documents shows both sites are served by septic systems which will be removed and decommissioned with the site development, which will not affect the proposed infiltration facility.

SECTION 3.2: FUEL TANKS

No fuel tanks were discovered during the project survey and/or on-site exploration activities.

SECTION 3.3: ANALYSIS OF THE 100-YEAR FLOOD

According to FEMA Community Panel Number 53067C0281E, the project is located outside of the 100-year flood zone.

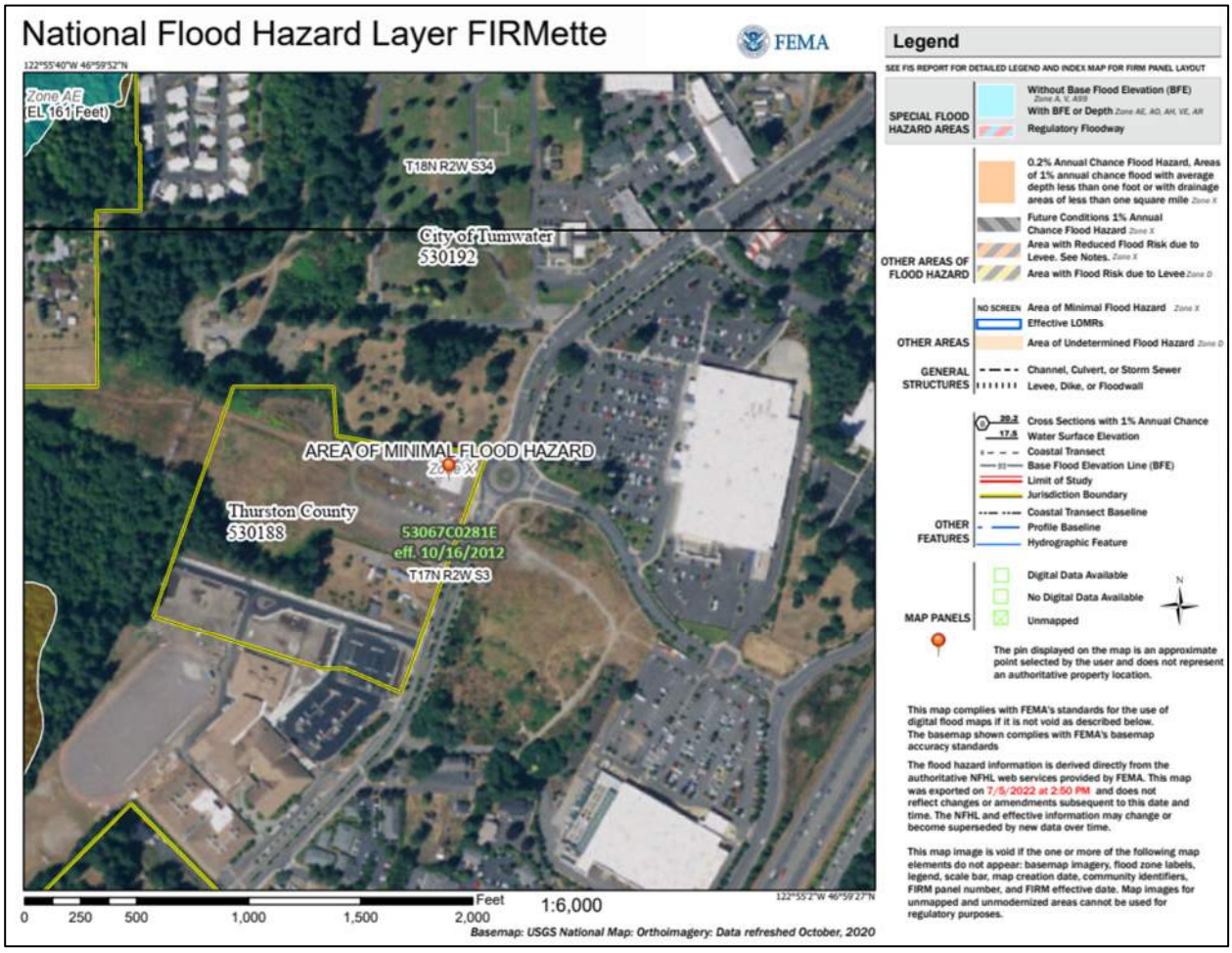


Figure 4: FEMA Map

SECTION 4: FLOW CONTROL AND WATER QUALITY FACILITY SIZING

The proposed facilities consist of catch basins and stormwater piping collecting and conveying runoff to three interconnected infiltration trenches located through the site. Water quality is provided via treatment catch basins that collect runoff from pollution generating surfaces. The bottom area of the facility been sized per *2022 Tumwater DDECM* using *WWHM2012* to infiltrate 100% of the runoff sent through the facilities.

Figure 5 provides the Basin Area Map and Table 2 provides the breakdown of pervious and impervious areas tributary to the proposed infiltration facility.

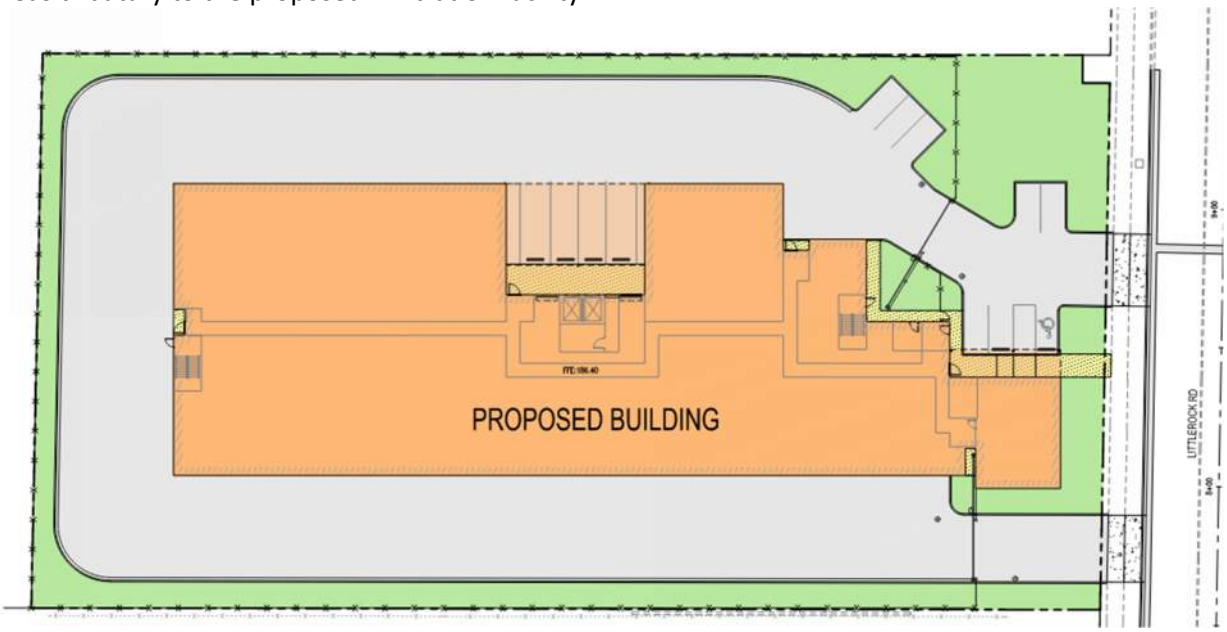


Figure 5: Basin Areas

Table 2: Land Type Designation Summary

BASIN LAND TYPE DESIGNATION	AREA (ACRES)	% OF TOTAL AREA
Total Area	1.77	100.0%
Proposed Impervious Surface – Building	0.66	83%
Proposed Impervious Surface – Paving	0.81	
Proposed Pervious Surface – Lawn/Landscaping	0.30	17%

Water Quality Treatment:

Water quality for this site is provided via stormfilter units that provide basic level treatment.
The offline treatment flowrate for a single 18" stormfilter cartridge is 7.5 gallons per minute (gpm). This equates to providing treatment for approximately 0.13 acres of impervious area per cartridge as calculated in *WWHM2012*. Figure 6 depicts the areas contributing to each stormfilter unit and the number of cartridges per basin. Overall, the project proposes 7 concrete stormfilter catch basins with either 1- or 2-18" cartridges as required for treatment.

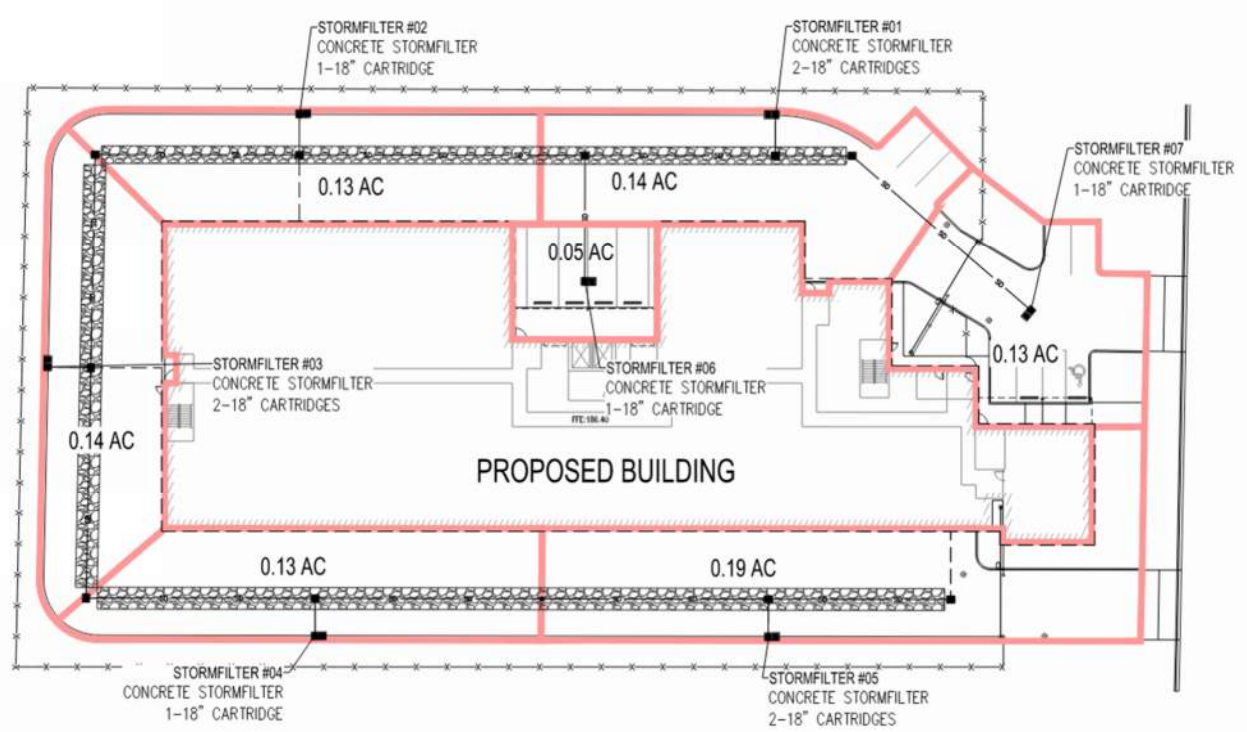


Figure 6: Water Quality Treatment Basin Areas

Flow Control:
Flow Control will be provided by interconnected gravel infiltration trenches within the asphalt drive aisle. Figure 7 below shows the cross-section detail of the proposed infiltration trench.

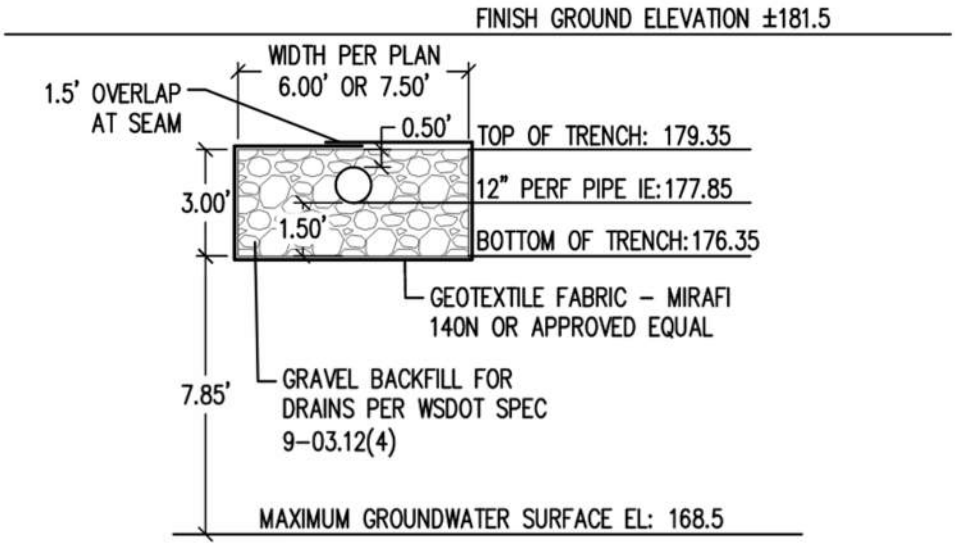


Figure 7: Infiltration Trench Typical Section

The trenches are located to maintain required 20' setbacks to structures and property lines per the *DDECM*. The site has been graded to drain stormwater runoff away from the building towards the perimeter curb and gutter. In the event of a significant system overflow/failure, the stormwater would

pond in the parking area adjacent to the curb and gutter before spilling over the curb into adjacent landscaping. The nearest natural low point is towards the west of the site where overflow runoff would be directed to.

An infiltration rate of 4 inches per hour has been used in sizing the infiltration trench, implementing a factor of safety of nearly 3.5 in addition to the correction factors used by the geotechnical engineer when calculating the recommended design rate. A summary of the designed facility is outlined in Table 3 with a more detailed breakdown of facility bottom area listed in Table 4

Table 3: Infiltration Trench Summary

BTM AREA	BTM ELEV	DEPTH	POROSITY	INFILTRATION RATE	% INFILTRATED
4,830 SF	176.35	3’	0.40	4.0 in/hr	100%

Table 4: Infiltration Trench Bottom Areas Summary

TRENCH	LENGTH	WIDTH	BTM AREA
NORTH	257.0’	6.0’	1,542 SF
WEST	146.0’	7.5’	1,095 SF
SOUTH	292.5’	7.5’	2,194 SF
TOTAL			**4,831 SF**

The depth described above is depth of rock section. For calculation purposes 4’ is used for effective total depth which includes one (1) foot of freeboard over top of riser. A screenshot of the *WWHM2012* modeling is provided as Figure 8 showing 100% infiltration with no volume through the riser. The full report in enclosed herein as Appendix 1.

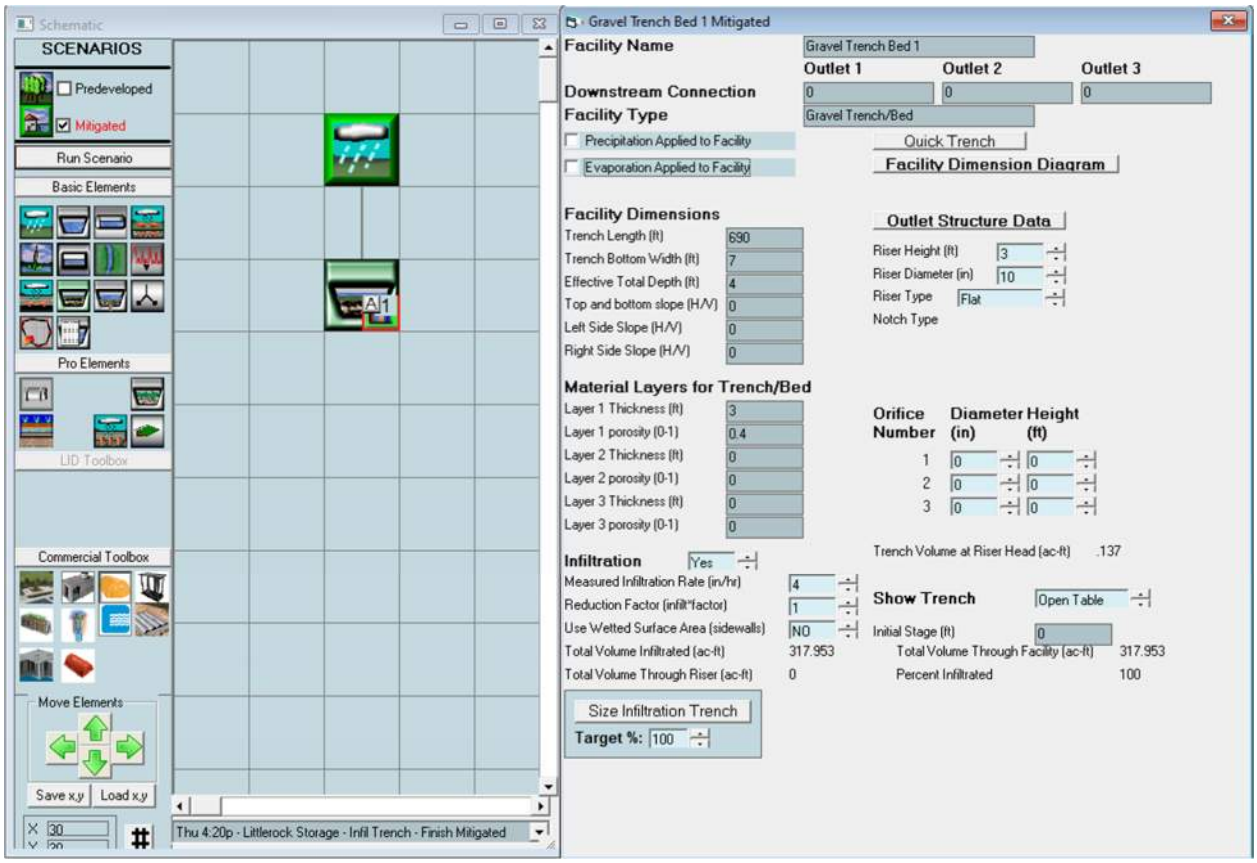


Figure 8: WWHM Results

SECTION 5: AESTHETIC CONSIDERATIONS FOR FACILITIES

The proposed stormwater facilities will be underground facilities and will not detract from the overall site surroundings. All post-construction land features outside of the development area will be restored to pre-construction condition or better.

SECTION 6: CONVEYANCE SYSTEM ANALYSIS & DESIGN

The stormwater is conveyed to the stormwater facility by concrete Stormfilter Catch Basins, Type 1 Catch Basins and ADS N-12 storm pipe. The maximum contributing area to a single pipe is 0.19 acres, which yields a 100-year flow of 0.13 cfs per *WWHM2012*. The model for this area is conservative as it assumes the entire basin in impervious when in reality a portion of the area is landscaping.

An 8” pipe with 1% slope has a capacity of 1.3 cfs, per Hydraflow Channel Output included as Appendix 4: Conveyance Sizing Calculations. All proposed piping is at least 8” in size and has a slope of at least 1%, so the conveyance system is adequately sized to handle runoff from the proposed site. The site development plan set showing proposed storm system in detail is included as Appendix 5 of this report.

SECTION 7: COVENANTS, DEDICATIONS, EASEMENTS

Maintenance of stormwater facilities will be the responsibility of the property owner as outlined within the Operation and Maintenance Manual.

SECTION 8: AGREEMENTS AND GUARANTEES

Maintenance and/or operational bonding will be provided as required for the project by City of Tumwater.

SECTION 9: OTHER PERMITS OR CONDITIONS PLACED ON THE PROJECT

Known permits required for this project include the following.

- Conditional Use Permit – City of Tumwater
- Building Permit – City of Tumwater
- Lot Consolidation – City of Tumwater
- Fire Sprinkler Permit – City of Tumwater
- Fire Alarm Permit – City of Tumwater
- Sign Permit – City of Tumwater

END OF STORMWATER SITE PLAN

APPENDIX 1
WWHM REPORTS

JSA CIVIL

Engineering | Planning | Management

WWHM2012

PROJECT REPORT

Littlerock Storage
Infiltration Trench Output

General Model Information

WWHM2012 Project Name: Littlerock Storage - Infil Trench

Site Name:	Littlerock Storage
Site Address:	6115 & 6119 Littlerock Rd
City:	Tumwater
Report Date:	7/14/2023
Gage:	Olympia Airport
Data Start:	1955/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.111
Version Date:	2023/01/27
Version:	4.2.19

POC Thresholds

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

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	1.77
Pervious Total	1.77
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.77

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
A B, Lawn, Flat	0.3
Pervious Total	0.3

Impervious Land Use	acre
ROOF TOPS FLAT	0.66
PARKING FLAT	0.81
Impervious Total	1.47
Basin Total	1.77

Mitigated Routing

Gravel Trench Bed 1

Bottom Length:	690.00 ft.
Bottom Width:	7.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	3
Pour Space of material for first layer:	0.4
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	4
Infiltration safety factor:	1
Total Volume Infiltrated (ac-ft.):	317.953
Total Volume Through Riser (ac-ft.):	0
Total Volume Through Facility (ac-ft.):	317.953
Percent Infiltrated:	100
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	10 in.
Element Flows To:	
Outlet 1	Outlet 2

Gravel Trench Bed Hydraulic Table

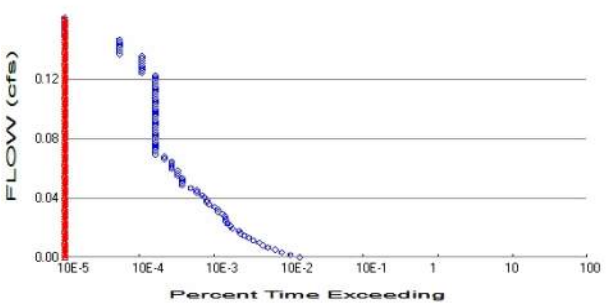
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.110	0.000	0.000	0.000
0.0444	0.110	0.002	0.000	0.447
0.0889	0.110	0.003	0.000	0.447
0.1333	0.110	0.005	0.000	0.447
0.1778	0.110	0.007	0.000	0.447
0.2222	0.110	0.009	0.000	0.447
0.2667	0.110	0.011	0.000	0.447
0.3111	0.110	0.013	0.000	0.447
0.3556	0.110	0.015	0.000	0.447
0.4000	0.110	0.017	0.000	0.447
0.4444	0.110	0.019	0.000	0.447
0.4889	0.110	0.021	0.000	0.447
0.5333	0.110	0.023	0.000	0.447
0.5778	0.110	0.025	0.000	0.447
0.6222	0.110	0.027	0.000	0.447
0.6667	0.110	0.029	0.000	0.447
0.7111	0.110	0.031	0.000	0.447
0.7556	0.110	0.033	0.000	0.447
0.8000	0.110	0.035	0.000	0.447
0.8444	0.110	0.037	0.000	0.447
0.8889	0.110	0.039	0.000	0.447
0.9333	0.110	0.041	0.000	0.447
0.9778	0.110	0.043	0.000	0.447
1.0222	0.110	0.045	0.000	0.447

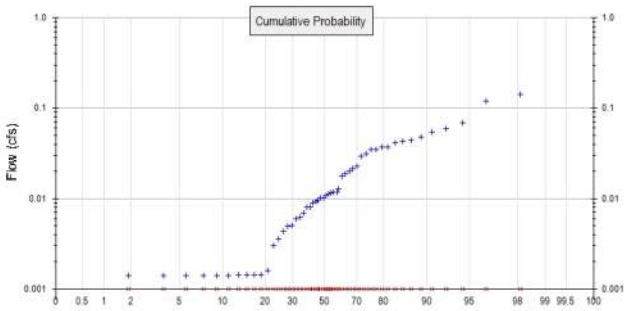
1.0667	0.110	0.047	0.000	0.447
1.1111	0.110	0.049	0.000	0.447
1.1556	0.110	0.051	0.000	0.447
1.2000	0.110	0.053	0.000	0.447
1.2444	0.110	0.055	0.000	0.447
1.2889	0.110	0.057	0.000	0.447
1.3333	0.110	0.059	0.000	0.447
1.3778	0.110	0.061	0.000	0.447
1.4222	0.110	0.063	0.000	0.447
1.4667	0.110	0.065	0.000	0.447
1.5111	0.110	0.067	0.000	0.447
1.5556	0.110	0.069	0.000	0.447
1.6000	0.110	0.071	0.000	0.447
1.6444	0.110	0.072	0.000	0.447
1.6889	0.110	0.074	0.000	0.447
1.7333	0.110	0.076	0.000	0.447
1.7778	0.110	0.078	0.000	0.447
1.8222	0.110	0.080	0.000	0.447
1.8667	0.110	0.082	0.000	0.447
1.9111	0.110	0.084	0.000	0.447
1.9556	0.110	0.086	0.000	0.447
2.0000	0.110	0.088	0.000	0.447
2.0444	0.110	0.090	0.000	0.447
2.0889	0.110	0.092	0.000	0.447
2.1333	0.110	0.094	0.000	0.447
2.1778	0.110	0.096	0.000	0.447
2.2222	0.110	0.098	0.000	0.447
2.2667	0.110	0.100	0.000	0.447
2.3111	0.110	0.102	0.000	0.447
2.3556	0.110	0.104	0.000	0.447
2.4000	0.110	0.106	0.000	0.447
2.4444	0.110	0.108	0.000	0.447
2.4889	0.110	0.110	0.000	0.447
2.5333	0.110	0.112	0.000	0.447
2.5778	0.110	0.114	0.000	0.447
2.6222	0.110	0.116	0.000	0.447
2.6667	0.110	0.118	0.000	0.447
2.7111	0.110	0.120	0.000	0.447
2.7556	0.110	0.122	0.000	0.447
2.8000	0.110	0.124	0.000	0.447
2.8444	0.110	0.126	0.000	0.447
2.8889	0.110	0.128	0.000	0.447
2.9333	0.110	0.130	0.000	0.447
2.9778	0.110	0.132	0.000	0.447
3.0222	0.110	0.137	0.029	0.447
3.0667	0.110	0.141	0.151	0.447
3.1111	0.110	0.146	0.323	0.447
3.1556	0.110	0.151	0.523	0.447
3.2000	0.110	0.156	0.733	0.447
3.2444	0.110	0.161	0.933	0.447
3.2889	0.110	0.166	1.107	0.447
3.3333	0.110	0.171	1.242	0.447
3.3778	0.110	0.176	1.337	0.447
3.4222	0.110	0.181	1.421	0.447
3.4667	0.110	0.186	1.494	0.447
3.5111	0.110	0.191	1.563	0.447
3.5556	0.110	0.196	1.630	0.447
3.6000	0.110	0.201	1.694	0.447

3.6444	0.110	0.206	1.755	0.447
3.6889	0.110	0.210	1.815	0.447
3.7333	0.110	0.215	1.873	0.447
3.7778	0.110	0.220	1.929	0.447
3.8222	0.110	0.225	1.983	0.447
3.8667	0.110	0.230	2.036	0.447
3.9111	0.110	0.235	2.087	0.447
3.9556	0.110	0.240	2.138	0.447
4.0000	0.110	0.245	2.187	0.447

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.77
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.3
Total Impervious Area: 1.47

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.009688
5 year	0.029978
10 year	0.054105
25 year	0.101555
50 year	0.152529
100 year	0.219913

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1956	0.019	0.000
1957	0.010	0.000
1958	0.008	0.000
1959	0.007	0.000
1960	0.042	0.000
1961	0.037	0.000
1962	0.001	0.000
1963	0.055	0.000
1964	0.031	0.000
1965	0.035	0.000

1966	0.018	0.000
1967	0.012	0.000
1968	0.008	0.000
1969	0.002	0.000
1970	0.006	0.000
1971	0.012	0.000
1972	0.029	0.000
1973	0.001	0.000
1974	0.021	0.000
1975	0.013	0.000
1976	0.011	0.000
1977	0.001	0.000
1978	0.011	0.000
1979	0.004	0.000
1980	0.009	0.000
1981	0.011	0.000
1982	0.009	0.000
1983	0.005	0.000
1984	0.023	0.000
1985	0.001	0.000
1986	0.020	0.000
1987	0.119	0.000
1988	0.001	0.000
1989	0.001	0.000
1990	0.068	0.000
1991	0.059	0.000
1992	0.001	0.000
1993	0.003	0.000
1994	0.001	0.000
1995	0.009	0.000
1996	0.035	0.000
1997	0.037	0.000
1998	0.006	0.000
1999	0.043	0.000
2000	0.005	0.000
2001	0.001	0.000
2002	0.010	0.000
2003	0.001	0.000
2004	0.048	0.000
2005	0.001	0.000
2006	0.141	0.000
2007	0.044	0.000
2008	0.004	0.000

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1407	0.0000
2	0.1188	0.0000
3	0.0683	0.0000
4	0.0594	0.0000
5	0.0545	0.0000
6	0.0479	0.0000
7	0.0442	0.0000
8	0.0431	0.0000
9	0.0415	0.0000
10	0.0374	0.0000
11	0.0369	0.0000

12	0.0350	0.0000
13	0.0347	0.0000
14	0.0313	0.0000
15	0.0292	0.0000
16	0.0228	0.0000
17	0.0214	0.0000
18	0.0201	0.0000
19	0.0188	0.0000
20	0.0177	0.0000
21	0.0127	0.0000
22	0.0118	0.0000
23	0.0117	0.0000
24	0.0115	0.0000
25	0.0112	0.0000
26	0.0108	0.0000
27	0.0102	0.0000
28	0.0102	0.0000
29	0.0094	0.0000
30	0.0093	0.0000
31	0.0089	0.0000
32	0.0080	0.0000
33	0.0079	0.0000
34	0.0069	0.0000
35	0.0062	0.0000
36	0.0060	0.0000
37	0.0050	0.0000
38	0.0050	0.0000
39	0.0044	0.0000
40	0.0036	0.0000
41	0.0030	0.0000
42	0.0016	0.0000
43	0.0014	0.0000
44	0.0014	0.0000
45	0.0014	0.0000
46	0.0014	0.0000
47	0.0014	0.0000
48	0.0014	0.0000
49	0.0014	0.0000
50	0.0014	0.0000
51	0.0014	0.0000
52	0.0014	0.0000
53	0.0014	0.0000

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0048	263	0	0	Pass
0.0063	194	0	0	Pass
0.0078	149	0	0	Pass
0.0093	121	0	0	Pass
0.0108	98	0	0	Pass
0.0123	84	0	0	Pass
0.0138	75	0	0	Pass
0.0153	62	0	0	Pass
0.0168	54	0	0	Pass
0.0183	47	0	0	Pass
0.0198	42	0	0	Pass
0.0213	40	0	0	Pass
0.0227	33	0	0	Pass
0.0242	31	0	0	Pass
0.0257	28	0	0	Pass
0.0272	27	0	0	Pass
0.0287	27	0	0	Pass
0.0302	26	0	0	Pass
0.0317	24	0	0	Pass
0.0332	21	0	0	Pass
0.0347	21	0	0	Pass
0.0362	19	0	0	Pass
0.0377	16	0	0	Pass
0.0392	15	0	0	Pass
0.0406	15	0	0	Pass
0.0421	14	0	0	Pass
0.0436	13	0	0	Pass
0.0451	11	0	0	Pass
0.0466	11	0	0	Pass
0.0481	9	0	0	Pass
0.0496	7	0	0	Pass
0.0511	7	0	0	Pass
0.0526	7	0	0	Pass
0.0541	7	0	0	Pass
0.0556	6	0	0	Pass
0.0571	6	0	0	Pass
0.0585	6	0	0	Pass
0.0600	5	0	0	Pass
0.0615	5	0	0	Pass
0.0630	5	0	0	Pass
0.0645	5	0	0	Pass
0.0660	4	0	0	Pass
0.0675	4	0	0	Pass
0.0690	3	0	0	Pass
0.0705	3	0	0	Pass
0.0720	3	0	0	Pass
0.0735	3	0	0	Pass
0.0750	3	0	0	Pass
0.0764	3	0	0	Pass
0.0779	3	0	0	Pass
0.0794	3	0	0	Pass
0.0809	3	0	0	Pass
0.0824	3	0	0	Pass

0.0839	3	0	0	Pass
0.0854	3	0	0	Pass
0.0869	3	0	0	Pass
0.0884	3	0	0	Pass
0.0899	3	0	0	Pass
0.0914	3	0	0	Pass
0.0929	3	0	0	Pass
0.0944	3	0	0	Pass
0.0958	3	0	0	Pass
0.0973	3	0	0	Pass
0.0988	3	0	0	Pass
0.1003	3	0	0	Pass
0.1018	3	0	0	Pass
0.1033	3	0	0	Pass
0.1048	3	0	0	Pass
0.1063	3	0	0	Pass
0.1078	3	0	0	Pass
0.1093	3	0	0	Pass
0.1108	3	0	0	Pass
0.1123	3	0	0	Pass
0.1137	3	0	0	Pass
0.1152	3	0	0	Pass
0.1167	3	0	0	Pass
0.1182	3	0	0	Pass
0.1197	2	0	0	Pass
0.1212	2	0	0	Pass
0.1227	2	0	0	Pass
0.1242	2	0	0	Pass
0.1257	2	0	0	Pass
0.1272	2	0	0	Pass
0.1287	2	0	0	Pass
0.1302	2	0	0	Pass
0.1316	1	0	0	Pass
0.1331	1	0	0	Pass
0.1346	1	0	0	Pass
0.1361	1	0	0	Pass
0.1376	1	0	0	Pass
0.1391	1	0	0	Pass
0.1406	1	0	0	Pass
0.1421	0	0	0	Pass
0.1436	0	0	0	Pass
0.1451	0	0	0	Pass
0.1466	0	0	0	Pass
0.1481	0	0	0	Pass
0.1495	0	0	0	Pass
0.1510	0	0	0	Pass
0.1525	0	0	0	Pass

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Gravel Trench Bed 1 POC	☐	289.34			☐	100.00			
Total Volume Infiltrated		289.34	0.00	0.00		100.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

Mitigated Schematic

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

WWHM2012

PROJECT REPORT

Littlerock Storage
Water Quality & Conveyance Output

General Model Information

WWHM2012 Project Name: Littlerock Storage - wq

Site Name:	Littlerock Storage
Site Address:	6115 & 6119 Littlerock Rd
City:	Tumwater
Report Date:	7/18/2023
Gage:	Olympia Airport
Data Start:	1955/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.111
Version Date:	2023/01/27
Version:	4.2.19

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	50 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	0.13
Pervious Total	0.13
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.13

Basin 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	0.19
Pervious Total	0.19
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.19

Mitigated Land Use

Basin 1

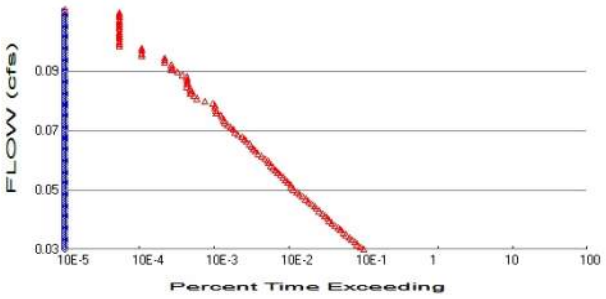
Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	0.13
Impervious Total	0.13
Basin Total	0.13

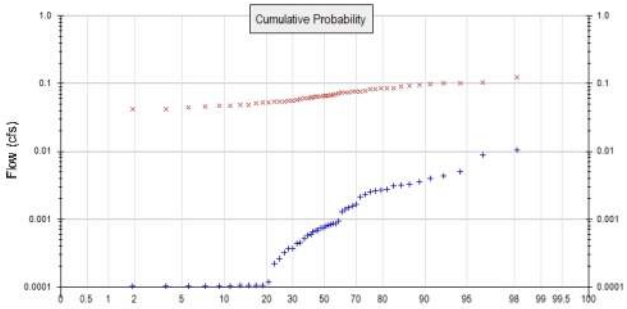
Basin 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	0.19
Impervious Total	0.19
Basin Total	0.19

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.13
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 0.13

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.000712
5 year	0.002202
10 year	0.003974
25 year	0.007459
50 year	0.011203
100 year	0.016152

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.065758
5 year	0.082419
10 year	0.09298
25 year	0.10594
50 year	0.115379
100 year	0.124673

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1956	0.001	0.060
1957	0.001	0.089
1958	0.001	0.052
1959	0.001	0.067
1960	0.003	0.077
1961	0.003	0.061
1962	0.000	0.053
1963	0.004	0.100
1964	0.002	0.068
1965	0.003	0.058

1966	0.001	0.047
1967	0.001	0.053
1968	0.001	0.045
1969	0.000	0.046
1970	0.000	0.049
1971	0.001	0.049
1972	0.002	0.072
1973	0.000	0.047
1974	0.002	0.078
1975	0.001	0.083
1976	0.001	0.069
1977	0.000	0.095
1978	0.001	0.075
1979	0.000	0.084
1980	0.001	0.056
1981	0.001	0.084
1982	0.001	0.077
1983	0.000	0.125
1984	0.002	0.054
1985	0.000	0.053
1986	0.001	0.059
1987	0.009	0.100
1988	0.000	0.041
1989	0.000	0.065
1990	0.005	0.086
1991	0.004	0.098
1992	0.000	0.054
1993	0.000	0.041
1994	0.000	0.042
1995	0.001	0.063
1996	0.003	0.073
1997	0.003	0.065
1998	0.000	0.067
1999	0.003	0.075
2000	0.000	0.073
2001	0.000	0.055
2002	0.001	0.064
2003	0.000	0.066
2004	0.004	0.103
2005	0.000	0.062
2006	0.010	0.094
2007	0.003	0.086
2008	0.000	0.066

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0103	0.1247
2	0.0087	0.1034
3	0.0050	0.0998
4	0.0044	0.0997
5	0.0040	0.0978
6	0.0035	0.0946
7	0.0032	0.0942
8	0.0032	0.0891
9	0.0031	0.0863
10	0.0027	0.0856
11	0.0027	0.0843

12	0.0026	0.0839
13	0.0025	0.0833
14	0.0023	0.0781
15	0.0021	0.0769
16	0.0017	0.0767
17	0.0016	0.0751
18	0.0015	0.0748
19	0.0014	0.0733
20	0.0013	0.0731
21	0.0009	0.0715
22	0.0009	0.0692
23	0.0009	0.0676
24	0.0008	0.0675
25	0.0008	0.0667
26	0.0008	0.0664
27	0.0008	0.0662
28	0.0007	0.0651
29	0.0007	0.0650
30	0.0007	0.0644
31	0.0007	0.0628
32	0.0006	0.0625
33	0.0006	0.0610
34	0.0005	0.0598
35	0.0005	0.0593
36	0.0004	0.0578
37	0.0004	0.0562
38	0.0004	0.0552
39	0.0003	0.0542
40	0.0003	0.0539
41	0.0002	0.0535
42	0.0001	0.0528
43	0.0001	0.0526
44	0.0001	0.0518
45	0.0001	0.0490
46	0.0001	0.0486
47	0.0001	0.0470
48	0.0001	0.0469
49	0.0001	0.0462
50	0.0001	0.0447
51	0.0001	0.0416
52	0.0001	0.0414
53	0.0001	0.0409

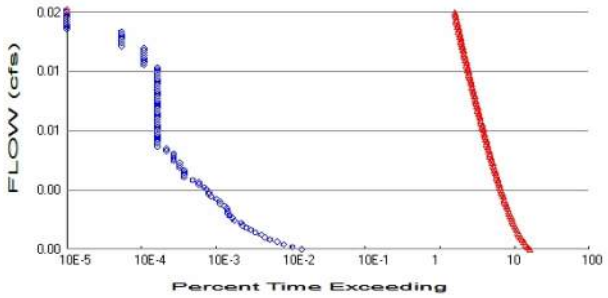
Water Quality

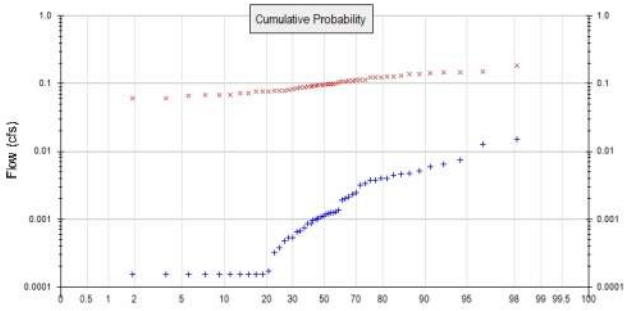
Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.0253 acre-feet
On-line facility target flow:	0.0281 cfs.
Adjusted for 15 min:	0.0281 cfs.
Off-line facility target flow:	0.0159 cfs.
Adjusted for 15 min:	0.0159 cfs.

WQ Flowrate for 0.13 AC of area, 100% impervious

POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 0.19
Total Impervious Area: 0

Mitigated Landuse Totals for POC #2
Total Pervious Area: 0
Total Impervious Area: 0.19

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	0.00104
5 year	0.003218
10 year	0.005808
25 year	0.010901
50 year	0.016373
100 year	0.023607

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0.096108
5 year	0.120459
10 year	0.135895
25 year	0.154836
50 year	0.16863
100 year	0.182215

Flow used for conveyance analysis

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**
1956	0.002	0.087
1957	0.001	0.130
1958	0.001	0.076
1959	0.001	0.097
1960	0.004	0.112
1961	0.004	0.089
1962	0.000	0.077
1963	0.006	0.146
1964	0.003	0.099
1965	0.004	0.084
1966	0.002	0.069

1967	0.001	0.077
1968	0.001	0.065
1969	0.000	0.068
1970	0.001	0.071
1971	0.001	0.072
1972	0.003	0.105
1973	0.000	0.069
1974	0.002	0.114
1975	0.001	0.122
1976	0.001	0.101
1977	0.000	0.138
1978	0.001	0.109
1979	0.000	0.123
1980	0.001	0.082
1981	0.001	0.123
1982	0.001	0.112
1983	0.001	0.182
1984	0.002	0.079
1985	0.000	0.078
1986	0.002	0.087
1987	0.013	0.146
1988	0.000	0.060
1989	0.000	0.095
1990	0.007	0.125
1991	0.006	0.143
1992	0.000	0.079
1993	0.000	0.061
1994	0.000	0.061
1995	0.001	0.092
1996	0.004	0.107
1997	0.004	0.095
1998	0.001	0.099
1999	0.005	0.110
2000	0.001	0.107
2001	0.000	0.081
2002	0.001	0.094
2003	0.000	0.097
2004	0.005	0.151
2005	0.000	0.091
2006	0.015	0.138
2007	0.005	0.126
2008	0.000	0.097

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	0.0151	0.1822
2	0.0128	0.1512
3	0.0073	0.1459
4	0.0064	0.1457
5	0.0059	0.1430
6	0.0051	0.1383
7	0.0047	0.1376
8	0.0046	0.1303
9	0.0045	0.1262
10	0.0040	0.1251
11	0.0040	0.1232
12	0.0038	0.1227

13	0.0037	0.1218
14	0.0034	0.1142
15	0.0031	0.1124
16	0.0024	0.1121
17	0.0023	0.1097
18	0.0022	0.1093
19	0.0020	0.1072
20	0.0019	0.1069
21	0.0014	0.1045
22	0.0013	0.1011
23	0.0013	0.0988
24	0.0012	0.0986
25	0.0012	0.0975
26	0.0012	0.0971
27	0.0011	0.0968
28	0.0011	0.0951
29	0.0010	0.0950
30	0.0010	0.0941
31	0.0010	0.0918
32	0.0009	0.0913
33	0.0009	0.0892
34	0.0007	0.0874
35	0.0007	0.0867
36	0.0006	0.0845
37	0.0005	0.0821
38	0.0005	0.0806
39	0.0005	0.0792
40	0.0004	0.0788
41	0.0003	0.0781
42	0.0002	0.0771
43	0.0002	0.0768
44	0.0002	0.0757
45	0.0002	0.0716
46	0.0002	0.0710
47	0.0002	0.0687
48	0.0002	0.0685
49	0.0002	0.0675
50	0.0002	0.0654
51	0.0002	0.0608
52	0.0002	0.0605
53	0.0001	0.0597

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0.037 acre-feet
On-line facility target flow:	0.0411 cfs.
Adjusted for 15 min:	0.0411 cfs.
Off-line facility target flow:	0.0233 cfs.
Adjusted for 15 min:	0.0233 cfs.

WQ Flowrate for 0.19 AC of area, 100% impervious

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

Mitigated Schematic

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

APPENDIX 2
GEOTECHNICAL REPORT

JSA CIVIL

Engineering | Planning | Management

South Sound Geotechnical Consulting

May 11, 2023

Trevor Colby
c/o Kidder Mathews
1550 Irving Street, Ste 200
Tumwater, WA 98512

Subject: Geotechnical Engineering Report
6119 Littlerock Road SW
Tumwater, Washington
SSGC Project No. 23031

Mr. Colby,

South Sound Geotechnical Consulting (SSGC) has completed a geotechnical assessment for the planned development on the above addressed property in Tumwater, Washington. Our services have been completed in general conformance with our proposal P23031 (dated April 6, 2023) and authorized per signature of our agreement for services. Our scope of services included completion of four test pits and two infiltration test on the site, laboratory testing, engineering analyses, and preparation of this report.

PROJECT INFORMATION

The site is on the west side of Littlerock Road SW, north of Tumwater Middle School, and encompasses about 1.77 acres. We understand it will be developed for commercial use. We anticipate conventional spread footing foundations will be used for support of buildings with concrete slab-on-grade floors. Conventional asphalt pavements are expected for access ways and parking. Infiltration facilities are proposed to control stormwater.

SITE CONDITIONS

Several residences, mobile homes, and sheds are generally in the eastern portion of the property and will be removed. Landscaped lawn and a small orchard are in the western portion. Overall the property is level with an overall elevation change of 2 to 3 feet.

SUBSURFACE CONDITIONS

Subsurface conditions were characterized by completing two infiltration tests and four test pits April 25, 2023. Test holes were advanced to final depths between 10 and 11 feet below existing ground surface. Approximate locations of the explorations are shown on Figure 1, Exploration Plan. A summary description of observed subgrade conditions is provided below. Logs of the test holes are provided in Appendix A.

Soil Conditions

Topsoil was below the surface and extended to depths between about 1.5 to 2 feet. Soil below the topsoil or fill was loose native silty sand with minor organics extending to depths between 3 and 4 feet. Sand with trace to some silt was below the upper silty sand. This soil was in a loose to medium dense condition and extended to the termination depth of the test holes.

Groundwater Conditions

Groundwater was not observed in the test holes at the time of excavation. Mottling or other evidence of seasonal perched groundwater was not observed in exposed soil. Groundwater levels will vary throughout the year due to seasonal precipitation and on- and off-site drainage patterns. Piezometers were installed in the two infiltration test holes to monitor seasonal groundwater, as necessary.

Geologic Setting

Native soils are mapped as Nisqually loamy fine sand per the USDA Soil Conservation Service map of Thurston County. This soil reportedly formed in sandy glacial outwash. Native soils in the test holes appear to correspond to the mapped soil type.

GEOTECHNICAL DESIGN CONSIDERATIONS

The planned development is considered feasible based on observed soil conditions in the test pits. Properly prepared native soils and structural fill are considered suitable for support of conventional spread footing foundations, slab-on-grade floors, and conventional pavements.

Native (outwash) soils are suitable for infiltration to support stormwater control. Depth to seasonal high groundwater levels are not anticipated to affect development of this site.

Recommendations presented in the following sections should be considered general and may require modifications when earthwork and grading occur. They are based upon the subsurface conditions observed in the test pits and the assumption that finish site grades will be similar to existing grades. It should be noted that subsurface conditions across the site may vary from those depicted on the exploration logs and can change with time. Therefore, proper site preparation will depend upon the weather and soil conditions encountered at the time of construction. We recommend SSGC review final plans and assess subgrade conditions at the time of construction.

General Site Preparation

Site grading and earthwork should include procedures to control surface water runoff. Grading the site without adequate drainage control measures may negatively impact site soils, resulting in increased export of impacted soil and import of fill materials, thereby potentially increasing the cost of the earthwork and subgrade preparation phases of the project.

Site grading should include removal of any fill (if encountered) and topsoil in future building and pavement areas. Subgrades should consist of firm native soils following stripping. Stripping depths are anticipated to range from 1.5 to 2 feet based on observed soil conditions, but may vary across the site. Final stripping depths can only be determined at the time of earthwork.

General Subgrade Preparation

Subgrades in building and pavement areas should consist of firm native soil. We recommend exposed subgrades in building and conventional pavement areas are proofrolled using a large roller, loaded dump truck, or other mechanical equipment to assess subgrade conditions following stripping. Proofrolling efforts should result in the upper 1 foot of subgrade soil achieving a firm and unyielding condition and a compaction level of at least 92 percent of the maximum dry density (MDD) per the ASTM D1557 test method. Wet, loose, or soft subgrades that cannot achieve this compaction level should be removed (over-excavated) and replaced with structural fill. The depth of over-excavation should be based on soil conditions at the time of construction. A representative of SSGC should be present to assess subgrade conditions during proofrolling.

Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Surface water should not be allowed into cut/fill areas, utility trenches, building footprints, or pavement areas.

Structural Fill Materials

The suitability of soil for use as structural fill will depend on the gradation and moisture content of the soil when it is placed. Soils with higher fines content (soil fraction passing the U.S. No. 200 sieve) will become sensitive with higher moisture content. It is often difficult to achieve adequate compaction if soil moisture is outside of optimum ranges for soils that contain more than about 5 percent fines.

Site Soils: Topsoil is not suitable for structural fill. Native soils are considered suitable for use as structural fill provided they can be moisture conditioned to within optimal ranges. Silt content will vary in native soil and can make them moisture sensitive, requiring conditioning (drying or wetting) to obtain optimum moisture content. Optimum moisture is considered within about +/- 2 percent of the moisture content required to achieve the maximum density per the ASTM D-1557 test method.

Import Fill Materials: We recommend imported structural fill placed during dry weather consist of material which meets the specifications for *Gravel Borrow* as described in Section 9-03.14(1) of the Washington State Department of Transportation (WSDOT) Specifications for Road, Bridge, and Municipal Construction Manual (Publication M41-10). Gravel Borrow should be protected from disturbance if exposed to wet conditions after placement.

During wet weather, or for backfill on wet subgrades, import soil suitable for compaction in wetter conditions should be provided. Imported fill for use in wet conditions should conform to specifications for *Select Borrow* as described in Section 9-03.14(2), or *Crushed Surfacing* per Section 9-03.9(3) of the WSDOT M41-10 manual, with the modification that a maximum of 5 percent by weight shall pass the U.S. No. 200 sieve for these soil types.

Structural fill placement and compaction is weather-dependent. Delays due to inclement weather are common, even when using select granular fill. We recommend site grading and earthwork be scheduled for the drier months of the year. Structural fill should not consist of frozen material.

Structural Fill Placement

We recommend structural fill is placed in lifts not exceeding about 10 inches in loose measure. It may be necessary to adjust lift thickness based on site and fill conditions during placement and compaction. Finer grained soil used as structural fill and/or lighter weight compaction equipment may require thinner lifts to attain required compaction levels. Coarser granular soil with lower fines contents could potentially be placed in thicker lifts (1 foot maximum) if they can be adequately compacted. Structural fill should be compacted to attain the recommended levels presented in Table 1, Compaction Criteria.

Table 1. Compaction Criteria

Fill Application	Compaction Criteria*
Footing areas (below structures and retaining walls)	95 %
Upper 2 feet in pavement areas, slabs and sidewalks, and utility trenches	95 %
Below 2 feet in pavement areas, slabs and sidewalks, and utility trenches	92 %
Utility trenches or general fill in non-paved or -building areas	90 %

*Per the ASTM D 1557 test method.

Trench backfill within about 2 feet of utility lines should not be over-compacted to reduce the risk of damage to the line. In some instances, the top of the utility line may be within 2 feet of the surface. Backfill in these circumstances should be compacted to a firm and unyielding condition.

We recommend fill procedures include maintaining grades that promote drainage and do not allow ponding of water within the fill area. The contractor should protect compacted fill subgrades from disturbance during wet weather. In the event of rain during structural fill placement, the exposed fill surface should be allowed to dry prior to placement of additional fill. Alternatively, the wet soil can be removed. We recommend consideration be given to protecting haul routes and other high traffic areas with free-draining granular fill material (i.e. sand and gravel containing less than 5 percent fines) or quarry spalls to reduce the potential for disturbance to the subgrade during inclement weather.

Earthwork Procedures

Conventional earthmoving equipment should be suitable for earthwork at this site. Earthwork may be difficult during periods of wet weather or if elevated soil moisture is present. Excavated site soils may not be suitable as structural fill depending on the soil moisture content and weather conditions at the time of earthwork. If soil is stockpiled and wet weather is anticipated, the stockpile should be protected with securely anchored plastic sheeting. If stockpiled soils become unusable, it may become necessary to import clean, granular soils to complete wet weather site work.

Wet or disturbed subgrade soils should be over-excavated to expose firm, non-yielding, non-organic soils and backfilled with compacted structural fill. We recommend the earthwork portion of this project be completed during extended periods of dry weather. If earthwork is completed during the wet season (typically late October through May) it may be necessary to take extra measures to protect subgrade soils.

If earthwork takes place during freezing conditions, we recommend the exposed subgrade is allowed to thaw and is re-compacted prior to placing subsequent lifts of structural fill. Alternatively, the frozen soil can be removed to unfrozen soil and replaced with structural fill.

The contractor is responsible for designing and constructing stable, temporary excavations (such as utility trenches) to maintain stability of excavation sides and bottoms. Excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards. Temporary excavation cuts should be sloped at inclinations of 1.5H:1V (Horizontal:Vertical) or flatter, unless the contractor can demonstrate the safety of steeper inclinations. Deeper excavations may require shoring. Permanent cut and fill slopes should be graded at inclinations of 2H:1V, or flatter.

A geotechnical engineer and accredited testing material laboratory should be retained during the construction phase of the project to observe earthwork operations and to perform necessary tests and observations during subgrade preparation, placement and compaction of structural fill, and backfilling of excavations.

Foundations

Foundations can be placed on native soils or on structural fill above prepared native subgrades as described in this report. The following recommendations are for conventional spread footing foundations:

Bearing Capacity (net allowable):	2,000 pounds per square foot (psf) for footings supported firm native soils or structural fill over native subgrades prepared as described in this report.
Footing Width (Minimum):	18 inches (Strip) 24 inches (Column)

Embedment Depth (Minimum):	18 inches (Exterior) 12 inches (Interior)	
Settlement:	Total:	< 1 inch
	Differential:	< 1/2 inch (over 30 feet)
Allowable Lateral Passive Resistance:	300 psf/ft* (below 18 inches)	
Allowable Coefficient of Friction:	0.35*	

*These values include a factor of safety of approximately 1.5.

The net allowable bearing pressures presented above may be increased by one-third to resist transient, dynamic loads such as wind or seismic forces. Lateral resistance to footings should be ignored in the upper 12-inches from exterior finish grade.

Foundation Construction Considerations

All foundation subgrades should be free of water and loose soil prior to placing concrete, and should be prepared as recommended in this report. Concrete should be placed soon after excavating and compaction to reduce disturbance to bearing soils. Should soils at foundation level become excessively dry, disturbed, saturated, or frozen, the affected soil should be removed prior to placing concrete. We recommend SSGC observe all foundation subgrades prior to placement of concrete.

Foundation Drainage

Ground surface adjacent foundations should be sloped away from buildings. We recommend footing drains are installed around perimeter footings that bear on the upper silty sand layer. Footing drains should include a minimum 4-inch diameter perforated rigid plastic or metal drain line installed at the base of the footing. The perforated drain lines should be connected to a tight line pipe that discharges to an approved storm drain receptor. The drain line should be surrounded by a zone of clean, free-draining granular material having less than 5 percent passing the No. 200 sieve or meeting the requirements of section 9-03.12(2) "Gravel Backfill for Walls" in the WSDOT M41-10 manual. The free-draining aggregate zone should be at least 12 inches wide and wrapped in filter fabric. The granular fill should extend to within 6 inches of final grade where it should be capped with compacted fill containing sufficient fines to reduce infiltration of surface water into the footing drains. Alternately, the ground surface can be paved with asphalt or concrete. Cleanouts are recommended for maintenance of the drain system.

Footing drains are not considered necessary for footings that are founded on native outwash.

On-Grade Floor Slabs

On-grade floor slabs should be placed on native soils or structural fill prepared as described in this report. We recommend a modulus subgrade reaction of 175 pounds per square inch per inch (psi/in) for native soil or compacted granular structural fill over native soil.

We recommend a capillary break is provided between the prepared subgrade and bottom of slab. Capillary break material should be a minimum of 4 inches thick and consist of compacted clean, free-draining, well graded course sand and gravel. The capillary break material should contain less than 5 percent fines, based on that soil fraction passing the U.S. No. 4 sieve. Alternatively, clean angular gravel such as No. 7 aggregate per Section 9-03.1(4) C of the WSDOT M41-10 manual could be used for this purpose.

We recommend positive separations and/or isolation joints are provided between slabs and foundations, and columns or utility lines to allow independent movement where needed. Backfill in interior trenches beneath slabs should be compacted in accordance with recommendations presented in this report.

A vapor retarder should be considered beneath concrete slabs that will be covered with moisture sensitive or impervious coverings (such as tile, wood, etc.), or when the slab will support equipment or stored materials sensitive to moisture. We recommend the slab designer refer to ACI 302 and/or ACI 360 for procedures and limitations regarding the use and placement of vapor retarders.

Seismic Considerations

Seismic parameters and values in Table 2 are recommended based on the 2018 International Building Code (IBC).

Table 2. Seismic Parameters

PARAMETER	VALUE
2018 International Building Code (IBC) Site Classification[1]	D
S_s Spectral Acceleration for a Short Period	1.39
S_1 Spectral Acceleration for a 1-Second Period	0.521g

[1] Note: In general accordance with the *2018 International Building Code* for risk categories I,II,III. IBC Site Class is based on the estimated characteristics of the upper 100 feet of the subsurface profile. S_s, and S_1 values based on the ATC Hazards website.

Liquefaction

Soil liquefaction is a condition where loose, typically granular soils located below the groundwater surface lose strength during ground shaking, and is often associated with earthquakes. The risk of liquefaction at this site is low to moderate for the design level earthquake based on the Washington DNR's Olympia-Lacey-Tumwater Urban Area, Washington: Liquefaction Susceptibility Map

(GM-47), dated 1999. This level may cause some architectural or minor structural damage to buildings, but should not result in foundation failure. A detailed seismic analysis would be required to fully assess liquefaction potential of site soils.

Infiltration Characteristics

Infiltration facilities will be used to assist in control of stormwater. An assessment of infiltration potential was completed by performing two Pilot Infiltration Tests per procedures in the City of Tumwater Drainage Design and Erosion Control Manual. Results of the tests are presented in Table 3.

Table 3. Infiltration Rates

Test Hole and Depth (ft)	Soil Type	Measured Infiltration Rate (in/hr)	Corrected Infiltration Rate (in/hr)	Correction Factors* (Fg/Ft/Fp)
PIT-1, 4 ft	Outwash	33	13.2	(1.0/0.5/0.8)
PIT-2, 4.5 ft	Outwash	36	14.4	

*Correction Factors from the Tumwater Drainage Design and Erosion Control Manual. Note Fg may vary based on dimensions and depth of selected infiltration facility.

The measured infiltration rates are considered appropriate for the soil tested and are comparable to infiltration tests completed at other sites in the area with similar soil. As soils across the site were similar, we recommend averaging the above rates for a design infiltration rate of 13.8 inches per hour (in/hr) for native outwash soil. Seasonal high groundwater is not anticipated to adversely affect infiltration systems within 5 feet of current ground surface.

Cation Exchange Capacity (CEC) and organic content tests were completed on a representative sample of outwash soil. Test results are summarized in the Table 4.

Table 4. CEC and Organic Content Results

Test Site, Sample Number, Depth	CEC Results (milliequivalents)	CEC Required* (milliequivalents)	Organic Content Results (%)	Organic Content Required* (%)
TP-4, S-1, 4.5 ft	11.3	≥ 5	4.97	≥1.0

* Values from the Tumwater Drainage Design and Erosion Control Manual.

Organic content and CEC results of the sample satisfy City requirements.

Conventional Pavement Sections

Subgrades for conventional pavements should be prepared as described in the "*Subgrade Preparation*" and "*Structural Fill*" sections of this report. Subgrades below pavement sections should be graded or crowned to promote drainage and not allow for ponding of water beneath the section. If drainage is not provided and ponding occurs, subgrade soils could become saturated, lose strength, and result in premature distress or failure of the section. In addition, the pavement surfacing should also be graded to promote drainage and reduce the potential for ponding of water on the pavement surface. We recommend a separation fabric (such as Mirafi N180, or other) is placed on the prepared subgrade prior to placement of pavement section materials. The purpose of the fabric is to maintain segregation of the coarser fill and the lower finer grained native soil. Coarser fill will have the tendency to migrate into the looser native soil over time which can compromise the structural integrity of the pavement section fill and result in premature distress in the pavement without the separation fabric.

Pavement section designs have been prepared and are based on AASHTO design guidelines and the following assumed design parameters:

- 20-year life span;
- Estimated design life Equivalent Single Axle Loads (18 kips) of 540,000;
- Estimated subgrade CBR of 8 (native);
- Terminal serviceability of 2.0; and,
- Level of reliability 85 percent.

Minimum recommended pavement sections for conventional asphalt or concrete pavements are presented in Table 5. We should be notified if actual traffic (ESAL) loads will be greater or less than those assumed to verify or modify the pavement sections. Pavement sections in public right-of-ways should be designed per City of Tumwater standards.

Table 5. Preliminary Pavement Sections

Traffic Area	Minimum Recommended Pavement Section Thickness (inches)			
	Asphalt Concrete Surface[1]	Portland Cement Concrete[2]	Aggregate Base Course[3,4]	Subbase Aggregate[5]
Car Parking Areas	2	4	4	12
Truck Access	3	6	6	12

[1] 1/2 –inch nominal aggregate hot-mix asphalt (HMA) per WSDOT 9-03.8(1)

[2] A 28 day minimum compressive strength of 4,000 psi and an allowable flexural strength of at least 250 psi

[3] Crushed Surfacing Base Course per WSDOT 9-03.9(3)

[4] Although not required for structural support under concrete pavements, a minimum four-inch thick base course layer is recommended to help reduce potential for slab curl, shrinkage cracking, and subgrade "pumping" through joints

[5] Gravel Borrow per WSDOT 9-03.14(1) or Permeable Ballast WSDOT 9-03.9(1)

Conventional Pavement Maintenance

The performance and lifespan of pavements can be significantly impacted by future maintenance. The above pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be completed. Proper maintenance will slow the rate of pavement deterioration, and will improve pavement performance and life. Preventive maintenance consists of both localized maintenance (crack and joint sealing and patching) and global maintenance (surface sealing). Added maintenance measures and reduced pavement life should be anticipated over the lifetime of pavements if any existing fill or topsoil is left in-place beneath pavement sections.

REPORT CONDITIONS

This report has been prepared for the exclusive use of Mr. Trevor Colby for specific application to the project discussed, and has been prepared in accordance with generally accepted geotechnical engineering practices in the area. No warranties, either express or implied, are intended or made. The analysis and recommendations presented in this report are based on observed soil conditions and test results at the indicated locations, and from other geologic information discussed. This report does not reflect variations that may occur across the site, or due to the modifying effects of construction, or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

This report was prepared for the planned type of development of the site as discussed herein. It is not valid for third party entities or alternate types of development on the site without the express written consent of SSGC. If development plans change we should be notified to review those changes and modify our recommendations as necessary.

The scope of services for this project does not include any environmental or biological assessment of the site including identification or prevention of pollutants, hazardous materials, or conditions. Other studies should be completed if the owner is concerned about the potential for contamination or pollution.

We appreciate the opportunity to work with you on this project. Please contact us if additional information is required or we can be of further assistance.

Respectfully,

South Sound Geotechnical Consulting

Timothy H. Roberts, P.E.
Member/Geotechnical Engineer

Attachments: Figure 1 – Exploration Plan
Appendix A – Field Exploration Procedures and Exploration Logs
Appendix B – Laboratory Testing and Results
Unified Soil Classification System

Legend

TP - 1

Approximate Test Pit Location

PIT - 1

Approximate Infiltration Test Location

Base map from Google Maps

Scale: NTS

South Sound Geotechnical Consulting
P.O. Box 39500
Lakewood, WA 98496
(253) 973-0515

Figure 1 – Exploration Plan

6119 Littlerock Rd SW Development
Tumwater, Washington

SSGC Project #23031

Appendix A

Field Exploration Procedures and Exploration Logs

Field Exploration Procedures

Our field exploration for this project included four test pits and two Pilot Infiltration Tests completed on April 25, 2023. The approximate locations of the explorations are shown on Figure 1, Exploration Plan. Test pit locations were determined by pacing from site features. Ground surface elevations referenced on the logs were inferred from topographic data from Google Earth satellite imagery. Test pit locations and elevations should be considered accurate only to the degree implied by the means and methods used.

A private excavation company dug the test pits. Soil samples were collected and stored in moisture tight containers for further assessment and laboratory testing. Explorations were backfilled with excavated soils and tamped when completed. Please note that backfill in the explorations may settle with time. Backfill material located in roads or building areas should be re-excavated and recompacted, or replaced with structural fill.

The following logs indicate the observed lithology of soils and other materials observed in the explorations at the time of excavation. Where a soil contact was observed to be gradational, our log indicates the average contact depth. Our logs also indicate the approximate depth to groundwater (where observed at the time of excavation), along with sample numbers and approximate sample depths. Soil descriptions on the logs are based on the Unified Soil Classification System.

Test Pit TP-1

Depth (feet)	Material Description
0 – 1.5	**Topsoil**
1.5 – 3	Silty SAND with trace organics: Loose, moist, dark brown. (SM)
3 – 10	SAND with trace to some silt: Loose, moist, brown. (SP/SW)
	Test pit completed at approximately 10 feet on 4/25/23. Groundwater not observed at time of excavation. Approximate surface elevation: 169 feet

Test Pit TP-2

Depth (feet)	Material Description
0 – 2	**Topsoil**
2 – 4	Silty SAND with trace organics: Loose, moist, dark brown. (SM)
4 – 11	SAND with trace to some silt: Loose, moist, brown grading gray at 7 feet. (SP/SW)(Sample S-1 @ 7 feet)
	Test pit completed at approximately 11 feet on 4/25/23. Groundwater not observed at time of excavation. Approximate surface elevation: 169 feet

Test Pit TP-3

Depth (feet)	Material Description
0 – 1.5	**Topsoil**
1.5 – 3	Silty SAND with trace organics: Loose, moist, dark brown. (SM)
3 – 10	SAND with trace to some silt: Loose, moist, brown grading gray at 7 feet. (SP/SW)
	Test pit completed at approximately 10 feet on 4/25/23. Groundwater not observed at time of excavation. Approximate surface elevation: 168 feet

Test Pit TP-4

Depth (feet)	Material Description
0 – 1.5	**Topsoil**
1.5 – 3.5	Silty SAND with trace organics: Loose, moist, dark brown. (SM)(Sample S-1 @ 2.5 feet)
3 – 11	SAND with trace to some silt: Loose, moist, brown grading gray at 7.5 feet. (SP/SW)(Sample S-2 @ 4.5 feet)
	Test pit completed at approximately 11 feet on 4/25/23. Groundwater not observed at time of excavation. Approximate surface elevation: 168 feet

Infiltration Test PIT-1

Depth (feet)	Material Description
0 – 1.5	**Topsoil**
1.5 – 3	Silty SAND with trace organics: Loose, moist, dark brown. (SM)
3 – 10	SAND with trace to some silt: Loose, moist, brown grading gray at 7 feet. (SP/SW)(Sample S-1 @ 4 feet)
	Test pit completed at approximately 10 feet on 4/25/23. Infiltration test completed at 4 feet. Groundwater not observed at time of excavation. Piezometer set in test hole. Approximate surface elevation: 167 feet

Infiltration Test PIT-2

Depth (feet)	Material Description
0 – 1.5	**Topsoil**
1.5 – 4	Silty SAND with trace organics: Loose, moist, dark brown. (SM)
4 – 10	SAND with trace to some silt: Loose, moist, brown grading gray at 7 feet. (SP/SW)(Sample S-1 @ 4.5 feet)
	Test hole completed at approximately 10 feet on 4/25/23. Infiltration test completed at 4.5 feet. Groundwater not observed at time of excavation. Piezometer set in test hole. Approximate surface elevation: 169 feet

Appendix B

Laboratory Testing and Results

Laboratory Testing

Select soil samples were tested for organic content and cation exchange capacity (CEC) by Northwest Agricultural Consultants of Kennewick, Washington. Results of the laboratory testing are included in this appendix.

Northwest Agricultural Consultants

2545 W Falls Avenue
Kennewick, WA 99336
509.783.7450
www.nwag.com
lab@nwag.com

PAP-Accredited
NAPT

South Sound Geotechnical Consulting
PO Box 39500
Lakewood, WA 98496

Report: 63523-1-1
Date: May 4, 2023
Project No: 23031
Project Name: 6119 Littlerock

Sample ID	Organic Matter	Cation Exchange Capacity
TP-4, S-2	4.97 %	11.3 meq/100g
Method	**ASTM D2974**	**EPA 9081**

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]					Soil Classification	
					Group Symbol	Group Name[B]
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]		GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]		GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH		GM	Silty gravel[F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]		SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]		SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH		SM	Silty sand[G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line[J]		CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]		ML	Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line		CH	Fat clay[K,L,M]
			PI plots below "A" line		MH	Elastic Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

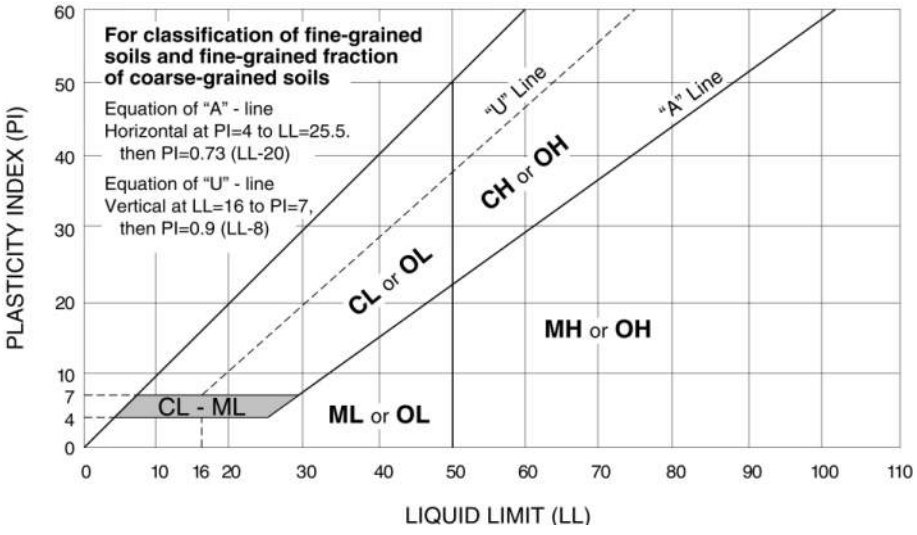
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



APPENDIX 3
SWPPP

JSA CIVIL

Engineering | Planning | Management

TABLE OF CONTENTS

Construction Stormwater Pollution Prevention Plan

Cover Sheet 1
Table of Contents 2
Construction Stormwater Pollution Prevention Elements 3
Objective of the Stormwater Pollution Prevention Plan 3
Summary of the Elements 3
Element #1 – Preserve Vegetation/Mark Clearing Limits.....3-4
Element #2 – Establish Construction Access 4
Element #3 – Control Flow Rates 4
Element #4 – Install Sediment Controls 4
Element #5 – Stabilize Soils 4-5
Element #6 – Protect Slopes 5
Element #7 – Protect Drain Inlets 5
Element #8 – Stabilize Channels and Outlets 5-6
Element #9 – Control Pollutants 6
Element #10 – Control Dewatering 6
Element #11 – Maintain BMPs 6-7
Element #12 – Manage the Project.....7
Element #13 – Protection Low Impact Development BMPs 8
Project Description 8
Location 8
Project Overview 8
Existing Site Conditions 8
Existing Drainage System 8
Existing Topography and Vegetation 9
Adjacent Areas 9
Critical Areas 9
Soils 9
Erosion Problem Areas 9
Construction Phasing 9
Construction Schedule 9
Engineering Calculations 10
Site Plan 10
References 10

CONSTRUCTION STORMWATER POLLUTION PREVENTION ELEMENTS

Objective of Stormwater Pollution Prevention Plan

The purpose of a Construction Stormwater Pollution Prevention Plan (SWPPP) is to describe the potential for pollution problems during the duration of a construction project. The SWPPP also explains and illustrates the measures that may need to be taken on the construction site to control said problems. The SWPPP is a guideline for the Contractor to follow during the construction process to prevent erosion and migration of sediments. Erosion control measures are not limited to those that are identified in this SWPPP or on the temporary erosion and sediment control plans. Construction Best Management Practices (BMPs) shall be installed as necessary to meet the Department of Ecology's and City of Tumwater's guidelines for construction stormwater pollution prevention and the requirements that are set forth in the National Pollutant Discharge Elimination System (NPDES) Permit.

This SWPPP was prepared in accordance to the established guidelines and BMPs that are set forth in *2022 City of Tumwater DDECM.* The *DDECM* describes the thirteen (13) elements of construction stormwater pollution prevention. The thirteen (13) elements include the following:

- Element #1 – Preserve Vegetation/Mark Clearing Limits
- Element #2 – Establish Construction Access
- Element #3 – Control Flow Rates
- Element #4 – Install Sediment Controls
- Element #5 – Stabilize Soils
- Element #6 – Protect Slopes
- Element #7 – Protect Drain Inlets
- Element #8 – Stabilize Channels and Outlets
- Element #9 – Control Pollutants
- Element #10 – Control Dewatering
- Element #11 – Maintain BMPs
- Element #12 – Manage the Project
- Element #13 - *Protection Low Impact Development BMPs*

Summary of Elements

The BMPs listed in this report, or their equivalent, are required. Any revisions by the Contractor to the BMPs listed in the SWPPP shall be approved by the Engineer in writing. Thus, if the Contractor does not require a BMP or needs to modify a BMP, the Contractor shall document the reason(s) and present the documentation to the Engineer for approval.

Element #1 - Preserve Vegetation/Mark Clearing Limits

Prior to beginning land disturbing activities, which include site clearing and grading, the Contractor shall mark the clearing limits (including trees) that are to be preserved within the construction zone. High-visibility fences shall be installed/erected as shown on the temporary erosion and sediment control plan and in accordance with the landscaping plan. The following BMPs are applicable for this project. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

- BMP C101: Preserving Natural Vegetation
- BMP C103: High-Visibility Plastic or Metal Fence with Backup Support

Element #2 - Establish Construction Access

A stabilized construction entrance shall be constructed to minimize the tracking of sediment onto any public road. During initial construction, the existing asphalt driveway may be used as a construction entrance. The stabilized construction entrance shall be constructed per the TESC plans and details and in accordance with the requirements of BMP C105.

- BMP C105: Stabilized Construction Entrance

Element #3 - Control Flow Rates

Properties and waterways downstream from the development site shall be protected from erosion due to increases in the volume, velocity, and/or peak flow rates of stormwater runoff from the project site. The following BMPs are applicable for this project. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

- BMP C240: Sediment Trap
- BMP C241: Temporary Sediment Pond

Element #4 - Install Sediment Controls

Prior to leaving a construction site or prior to discharging into an infiltration facility, stormwater runoff must pass through a sediment pond or some other appropriate BMP for removal of sediments. Silt fencing shall be constructed as shown on the temporary and erosion sediment control plans. The following BMPs are applicable for this project. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

- BMP C230: Straw Bale Barrier
- BMP C231: Brush Barrier
- BMP C232: Gravel Filter Berm
- BMP C233: Silt Fence
- BMP C234: Vegetated Filter Strip
- BMP C235: Straw Wattles
- BMP C240: Sediment Trap
- BMP C241: Temporary Sediment Pond
- BMP C251: Construction Stormwater Filtration

Element #5 - Stabilize Soils

All exposed and unworked soils shall be stabilized by application of effective BMPs, which protect the soil from the erosive forces of raindrop impact, flowing water, and from wind erosion. From October 01 through April 30 of each calendar year, no soils shall remain exposed and unworked form more than two (2) days. From May 01 to September 30 of each calendar year, no soils shall remain exposed and

unworked for more than seven (7) days. This condition applies to all on-site soils, whether at final grade or not.

In areas where the on-site soils will remain unworked for more than the aforementioned time duration limits or have reached final grade, seeding and mulching shall be installed in accordance with BMP C120 and C121. Sod shall be installed in accordance with BMP C124 for disturbed areas that require immediate vegetative cover. Dust control shall be used as needed to prevent wind transport of dust from disturbed soil surfaces and in accordance with BMP C140. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

BMP C120: Temporary and Permanent Seeding
BMP C121: Mulching
BMP C123: Plastic Covering
BMP C124: Sodding
BMP C125: Topsoiling
BMP C140: Dust Control

Element #6 - Protecting Slopes

Slopes shall be constructed in such a manner that will minimize erosion. This shall include, but is not limited to: placing excavated material on the uphill side of trenches, collecting drainage at the top of slopes, etc. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

BMP C200: Interceptor Dike and Swale
BMP C205: Subsurface Drains
BMP C206: Level Spreader
BMP C207: Check Dams

Element #7 - Protect Drain Inlets

All storm drain catch basins/inlets that are in use during construction, as well as all existing structures within the project limits, shall be protected so that stormwater runoff shall not enter any conveyance system without first being filtered or treated to remove sediment from sediment laden runoff. Install storm drain inlet protection devices as shown on the erosion and sediment control plans and in accordance with BMP C220.

BMP C220: Storm Drain Inlet Protection

Element #8 - Stabilize Channels and Outlets

All temporary on-site conveyance channels shall be constructed and stabilized to prevent erosion. Stabilization that is adequate to prevent erosion of outlets and drainage channels shall be provided. If the following BMPs are not shown on the construction plan set, the Engineer reserves the right to direct the Contractor to install, construct, and/or implement said BMPs.

BMP C202: Channel Lining

BMP C209: Outlet Protection

Element #9 - Control Pollutants

All pollutants, including waste materials and demolition of debris, that are generated or brought on-site during construction activities shall be handled and disposed of in a manner that does not cause contamination of stormwater. Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drawdown, solvent and degreasing cleaning operations, fuel tank drawdown and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed on-site using temporary plastic placed beneath and, if raining, over the vehicle. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical(s) to stormwater runoff. Manufacturers' recommendations shall be followed for application rates and procedures. The following Source Control BMPs will be prepared/implemented by the Contractor for this project.

- Maintenance of storm drainage facilities
- Street sweeping at an interval that's prescribed by the Engineer and/or the City of Tumwater

Element #10 - Control Dewatering

All foundation, vault, and trench dewatering activities shall be routed to a sediment pond for basic filtering/treatment. Clean, non-turbid dewatered water, as determined by the Certified Professional in Erosion and Sediment Control, can be discharged to systems tributary to state surface waters, provided the dewatering flow does not cause erosion or flooding to receiving waters.

Highly turbid or otherwise contaminated dewatered water that's from construction equipment operation, clamshell digging, concrete tremie pour, or work inside a cofferdam, shall be handled separately from stormwater at the site. Some disposal options, depending on site constraints, may include:

- Transport off-site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute State waters
- On-site treatment using chemical treatment or other suitable treatment technologies
- Sanitary sewer discharge with local sewer district's approval if there is no other option

Element #11 - Maintain BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repairs shall be completed in accordance with the practices, procedures, and materials for each respective BMP. Sediment Control BMPs shall be inspected weekly or after a runoff-producing storm event during the dry season and daily during the wet season.

All temporary erosion and Sediment Control BMPs shall be removed within thirty (30) days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall

be removed or stabilized on-site. Disturbed soil areas resulting from removal of BMPs or vegetation shall be permanently stabilized.

Element #12 - Manage the Project

- Phasing of Construction - the project shall be phased where feasible in order to prevent, to the maximum extent practicable, the transport of sediment from the site during construction. Revegetation of exposed areas and maintenance of said vegetation shall be an integral part of the clearing activities for each phase.

- Seasonal Work Limitations - from October 01 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that silt-laden runoff will be prevented from leaving the construction site.

  The following activities are exempt for the seasonal clearing and grading limitations:

  1. Routine maintenance and necessary repair of erosion and sediment control BMPs.

  2. Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to the soil.

  3. Activities where there is 100% infiltration of surface runoff within the site in approved and installed erosion and sediment control facilities.

- Inspection and Monitoring - all BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function.

  The Certified Professional in Erosion and Sediment Control for this project is _____. _____ shall be on-site or on-call at all times during construction. The role of the Certified Professional in Erosion and Sediment Control is to identify problems or failures of erosion control measures in the field and to promptly initiate corrective measures. The Certified Professional in Erosion and Sediment Control shall be compensated by the Contractor.

  Sampling and analysis of discharged stormwater from the construction site may be necessary to ensure compliance with the standards.

  Whenever inspection and/or monitoring reveals that the BMPs identified in the Construction SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, the Construction SWPPP shall be modified, as appropriate, in a timely manner.

- Maintenance of the Construction SWPPP - the Construction SWPPP shall be retained on-site or within reasonable access to the site. The Construction SWPPP shall be modified whenever there is a significant change in the design, construction, operation, and/or maintenance of any BMP.

Element #13 – Protect Low Impact Development BMPs

Protect all infiltration trench areas from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the proposed infiltration trench. Restore BMPs to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP must include removal of sediment and any sediment-laden swale and/or pond soils, and replacing the removed soils with soils meeting the design specification.

Prevent compacting the infiltration areas by excluding construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment. Keep all heavy equipment off existing soils under LID facilities that have been excavated to final grade to retain the infiltration rate of the soils.

- BMP C102: Buffer Zone
- BMP C103: High Visibility Fence
- BMP C200: Interceptor Dike and Swale
- BMP C201: Grass-Lined Channels
- BMP C207: Check Dams
- BMP C208: Triangular Silt Dike
- BMP C231: Brush Barrier
- BMP C233: Silt Fence
- BMP C234: Vegetated Strip

PROJECT DESCRIPTION

Location

The proposed residential development site is located on Thurston County tax parcel numbers: 12703211801 & 12703220802, in the City of Tumwater, Washington.

Project Overview

The proposed project spans across two (2) adjoining properties, combined for a total project area of approximately 1.77 acres. A multi-story storage building and the associated parking, sidewalks and utilities are proposed on the project site.

EXISTING SITE CONDITIONS

Existing Drainage System

The site gradually slopes east to west with runoff generally infiltrating. Existing storm systems are in place along Littlerock Road SW to the east, and Tumwater Middle School to the south. To the north of the project is cleared land that contains overhead power lines and toward the west is undeveloped land with areas of clearing and areas of dense vegetation. All surrounding areas generally infiltrate stormwater runoff, however there is a natural low point approximately 200 feet to the west of the site where stormwater flows may collect in larger storm events.

Existing Topography & Vegetation

The existing site has contains multiple single-family residential type buildings with lawn, landscaping and driveways. There are various landscaping trees, but the site has generally been cleared of any larger trees and dense vegetation. With the proposed development the site will be cleared of all existing structures and perimeter landscaping areas planted with approved trees and shrubs.

ADJACENT AREAS

South: Tumwater Middle School.
West: Densely vegetated parcel with localized low point for the area.
East: Littlerock Road SW
North: Cleared and mostly undeveloped land with overhead power lines.

CRITICAL AREAS

There are no know critical areas on the site.

SOILS

The soil type is Nisqually Loamy Fine sand. The Hydrologic Soil Group classification is: A

EROSION PROBLEM AREAS

Potential on-site erosion control problems are not anticipated for this project. The site is generally flat and stormwater is expected to infiltrate.

CONSTRUCTION PHASING

This self-storage project will be completed in one (1) phase.

CONSTRUCTION SCHEDULE

Anticipated construction activities and sequences are shown in the following table.

Table 1: Estimated Construction Schedule

CONSTRUCTION ACTIVITY	ANTICIPATED DATE OF COMPLETION
Contractor Notice to Proceed	09/01/2023
Install Erosion Control Facilities	09/02/2023
Begin Site Rough Grading	09/05/2023
Begin Installing Site Utilities	09/10/2023

Stabilize Site	10/01/2019
Project Substantial Completion	04/01/2024

ENGINEERING CALCULATIONS

Refer to this project's Stormwater Site Plan for stormwater design calculations.

SITE PLAN

TESC plans are enclosed in the Stormwater Site Plan

REFERENCES

City of Tumwater DDECM 2022.

END OF CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

APPENDIX 4
CONVEYANCE SIZING CALCULATIONS

JSA CIVIL

Engineering | Planning | Management

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 18 2023

Littlerock Storage Pipe Calc

Circular

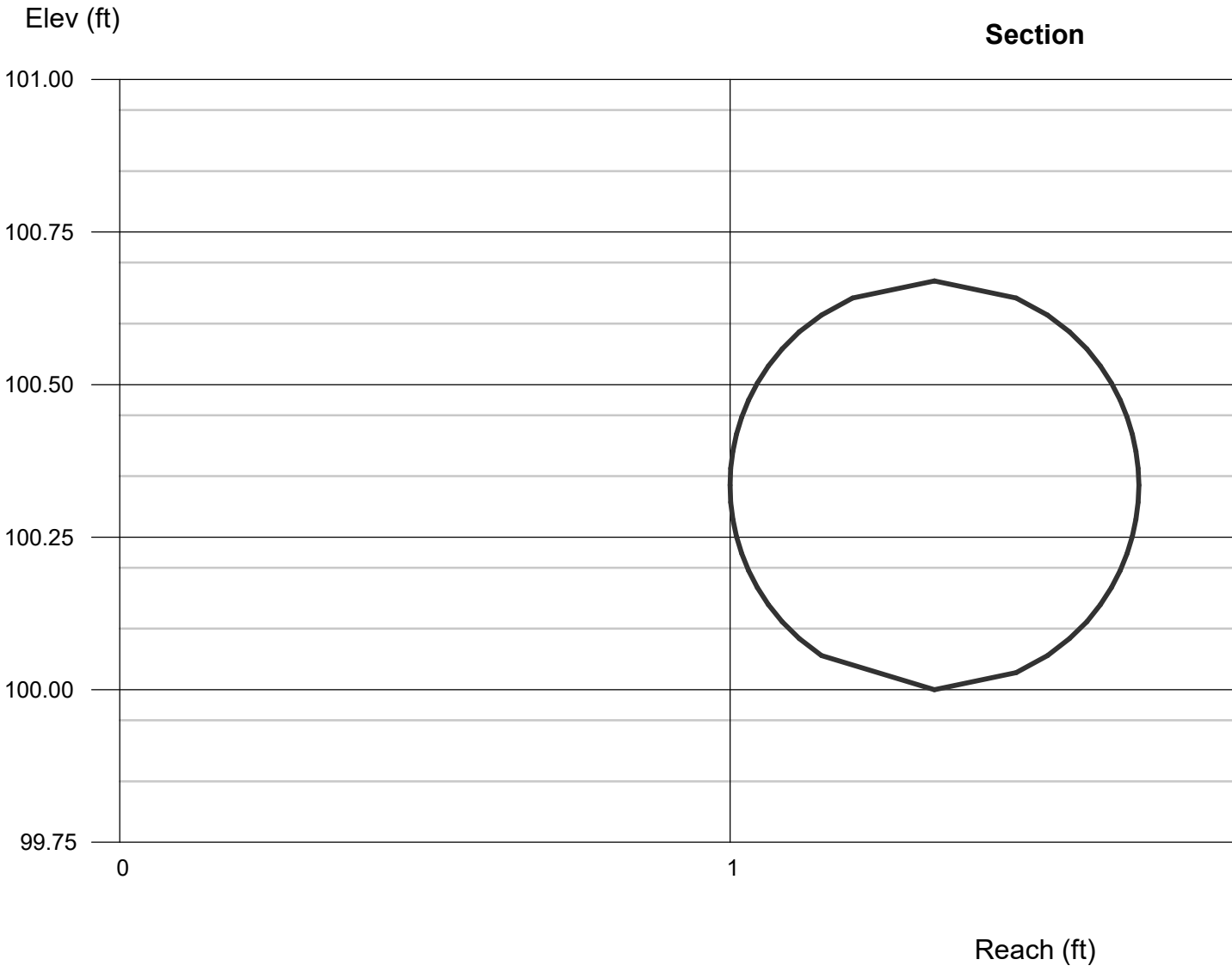
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.67

Highlighted

Depth (ft)	= 0.67
Q (cfs)	= 1.326
Area (sqft)	= 0.35
Velocity (ft/s)	= 3.76
Wetted Perim (ft)	= 2.10
Crit Depth, Yc (ft)	= 0.55
Top Width (ft)	= 0.00
EGL (ft)	= 0.89

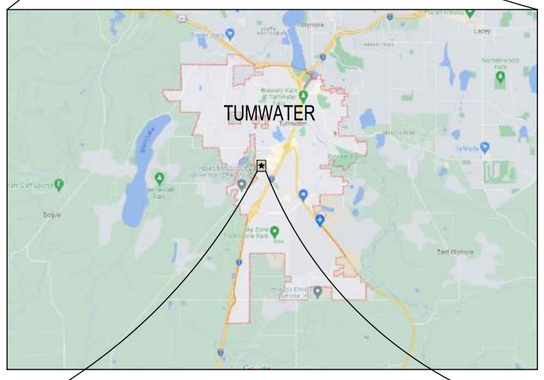


APPENDIX 5
ENGINEERING PLANS

JSA CIVIL

Engineering | Planning | Management

SELF STORAGE FACILITY
CIVIL CONSTRUCTION DOCUMENTS
TUMWATER, WA



APPLICANT
TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406
EMAIL: TREVOR@KCIWA.COM

ENGINEER
JSA CIVIL, LLC
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98512
PHONE: 425.577.4527
CONTACT: WHITNEY DUNLAP

ARCHITECT
SITE, PLAN, MIX LLC
1730 174TH AVE NE
WOODINVILLE, WA 98072
PHONE: 206.310.7770
CONTACT: STEPHEN BOURNE

LANDSCAPE ARCHITECT
ERIC WILLIAMS
1529 SOUTH SEASHORE DR
TACOMA, WA 98465
PHONE: 253.678.4173
EMAIL: WDSTUDIO70@YAHOO.COM

GEOTECHNICAL
SOUTH SOUND GEOTECHNICAL CONSULTING
PO BOX 39500
LAKEWOOD, WA 98496
PHONE: 253.973.0515
CONTACT: TIMOTHY ROBERTS

SURVEYOR
INFORMED LAND SURVEY
PO BOX 5137
TACOMA, WA 98415
PHONE: 253.627.2070
CONTACT: EVAN WAHLSTROM

GOVERNING AGENCY
CITY OF TUMWATER
PHONE: 360.754.4140

UTILITIES
SEWER & WATER
CITY OF TUMWATER
PHONE: 360.754.4140

PHONE
LUMEN
866.963.6665

POWER & GAS
PUGET SOUND ENERGY
PHONE: 888.225.5773

CABLE
COMCAST
PHONE: 800.934.6489

SITE INFORMATION
ADDRESS: 6115/6119 LITTLE ROCK ROAD TUMWATER, WA
PARCEL: 12703211802, 12703211801
ACRES: ±1.77
ZONING: GC (GENERAL COMMERCIAL)

LEGAL DESCRIPTION
PARCEL A (6115):
SECTION 03 TOWNSHIP 17 RANGE 2W QUARTER NW NW & NE SW SS-0955 LT 2 DOCUMENT 1048623; EXC PTN FOR LITTLEROCK RD PER AFN:3868410.

PARCEL B (6119):
SECTION 03 TOWNSHIP 17 RANGE 2W QUARTER NE NW & NW NW SS-0955 LT 1 DOCUMENT 009/107 EX PTN TO LITTLEROCK RD #3914710

HORIZONTAL & VERTICAL DATUM
SEE SURVEY

SHEET INDEX	
SHEET	TITLE
CV-01	COVER SHEET
GN-01	GENERAL NOTES & ABBREVIATIONS
GN-02	CITY OF TUMWATER GENERAL NOTES
SV-01	ALTA/NSPS LAND TITLE SURVEY
EC-01	EROSION CONTROL & DEMOLITION PLAN
EC-02	EROSION CONTROL NOTES & DETAILS
SP-01	SITE PLAN
SP-02	HORIZONTAL CONTROL & PAVING PLAN
SP-03	SITE & PAVING DETAILS
SP-04	SITE & PAVING DETAILS
CG-01	GRADING PLAN
UT-01	UTILITY PLAN
SD-01	STORMWATER PLAN
SD-02	STORMWATER PROFILES
SD-03	STORMWATER PROFILES
SD-04	STORMWATER DETAILS
SD-05	STORMWATER DETAILS
WT-01	WATER PLAN
WT-02	WATER PROFILES
WT-03	WATER DETAILS
SS-01	SEWER PLAN
SS-02	SEWER PROFILES
SS-03	SEWER DETAILS

OVERALL SITE PLAN
1" = 50'

GEOTECHNICAL & WABO INSPECTION NOTE:
THE CITY OF TUMWATER REQUIRES THAT THE FIRM PROVIDING THE SOILS REPORT, SOUTH SOUND GEOTECHNICAL CONSULTING, CONDUCT THE SITE INSPECTIONS AS DEFINED IN THE REPORT. THE CITY ALSO REQUIRES THAT IN ADDITION TO THE SOILS ENGINEERING FIRM, A WABO REGISTERED SPECIAL INSPECTOR WITH EXPERIENCE WITH SOIL GRADING BE EMPLOYED, BY THE OWNER, TO CONDUCT COMPACTION TESTING FOR THE BUILDING PADS AND THE REQUIRED FIRE LANES. THE SPECIAL INSPECTOR SHALL NOT BE THE GEOTECHNICAL FIRM, THE CIVIL ENGINEER OF RECORD OR AN EMPLOYEE OF THE CONTRACTOR. ALL GRADING WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY SOUTH SOUND GEOTECHNICAL CONSULTING. COMPACTION TESTING OF THE SOULS UNDER THE FIRE LANES AND THE BUILDING FOUNDATIONS AND UTILITY TRENCHES SHALL BE VERIFIED BY SOUTH SOUND GEOTECHNICAL CONSULTING AND THE WABO SPECIAL INSPECTOR.

INADVERTENT DISCOVERY NOTE:
WHEN AN UNANTICIPATED DISCOVERY OF PROTECTED CULTURAL MATERIAL (E.G., BONES, SHELLS, STONE TOOLS, BEADS, CERAMICS, OLD BOTTLES, HEARTHS, ETC.) OR HUMAN REMAINS ARE DISCOVERED, THE PROPERTY OWNER OR CONTRACTOR WILL IMMEDIATELY STOP ALL WORK, COMPLETELY SECURE THE LOCATION, AND CONTACT THE WASHINGTON STATE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION AND OTHER CONTACTS AS IDENTIFIED IN THE CITY OF TUMWATER STANDARD INADVERTENT ARCHAEOLOGICAL AND HISTORIC RESOURCES DISCOVERY PLAN. THE INDIVIDUAL OR REPRESENTATIVE WHOM THE PERMIT WAS ISSUED TO MUST SEND WRITTEN NOTIFICATION OF THE INADVERTENT DISCOVERY TO THE CITY OF TUMWATER DEPARTMENT OF COMMUNITY DEVELOPMENT.

SURVEY MONUMENT NOTE
THE PROFESSIONAL LAND SURVEYOR RESPONSIBLE FOR THE SURVEYING OF THE PROJECT MUST OBTAIN A PERMIT FROM DNR BEFORE ANY MONUMENTS ARE DISTURBED.

DEWATERING NOTE
THE CONTRACTOR SHALL UTILIZE APPROPRIATE DEWATERING SYSTEMS AND TECHNIQUES TO MAINTAIN THE EXCAVATED AREA SUFFICIENTLY DRY FROM GROUNDWATER AND/OR SURFACE RUNOFF SO AS NOT TO ADVERSELY AFFECT CONSTRUCTION PROCEDURES OR CAUSE EXCESSIVE DISTURBANCE OF UNDERLYING NATURAL GROUND. THE CONTRACTOR SHALL REPAIR ANY DAMAGE RESULTING FROM THE FAILURE OF THE DEWATERING OPERATIONS OR FROM A FAILURE TO MAINTAIN ALL THE AREAS OF WORK IN A SUITABLE DRY CONDITION. UNLESS OTHERWISE SPECIFIED, CONTINUE DEWATERING UNINTERRUPTED UNTIL THE STRUCTURES, PIPES, AND APPURTENANCES TO BE BUILT HAVE BEEN PROPERLY INSTALLED, BACKFILLED, AND COMPACTED. WHERE SUBGRADE MATERIALS ARE UNABLE TO MEET THE SUBGRADE DENSITY REQUIREMENTS DUE TO IMPROPER DEWATERING TECHNIQUES, REMOVE AND REPLACE THE MATERIALS AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL NOTE
THE CONTRACTOR SHALL PROVIDE ALL FLAGGERS, SIGNS, AND OTHER TRAFFIC CONTROL DEVICES AS NECESSARY TO COMPLETE THE WORK. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL CONSTRUCTION SIGNS, WARNING SIGNS, DETOUR SIGNS, AND OTHER TRAFFIC CONTROL DEVICES NECESSARY TO WARN AND PROTECT THE PUBLIC AT ALL TIMES FROM INJURY OR DAMAGE AS A RESULT OF THE CONTRACTOR'S OPERATIONS THAT MAY OCCUR IN HIGHWAYS, ROADS, OR STREETS. NO WORK SHALL BE DONE ON OR ADJACENT TO THE ROADWAY UNTIL ALL NECESSARY SIGNS AND TRAFFIC CONTROL DEVICES ARE IN-PLACE. THE CONTRACTOR SHALL NOT CLOSE DOWN THROUGH TRAFFIC ON CITY/COUNTY/STATE ROADS. ACCESS FOR BOTH VEHICULAR AND PEDESTRIAN TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT WHERE THE CONTRACTOR OBTAINS PERMISSION TO TEMPORARILY CLOSE A SIDEWALK. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY OF TUMWATER FOR REVIEW AND APPROVAL PRIOR TO STARTING ANY WORK IN THE RIGHT-OF-WAY.

CALL BEFORE YOU DIG
THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 4:56:05pm - User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 CV-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
PRELIMINARY
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
COVER SHEET

SHEET
CV-01

JSA CIVIL GENERAL CONSTRUCTION NOTES

1. ALL WORK, WORKMANSHIP AND MATERIALS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE FOLLOWING MANUAL(S) AND DOCUMENT(S):

   THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION
   HTTPS://WSDOT.WA.GOV/ENGINEERING-STANDARDS/ALL-MANUALS-AND-STANDARDS/MANUALS/STANDARD-SPECIFICATIONS-ROAD-BRIDGE-AND-MUNICIPAL-CONSTRUCTION

   THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD PLANS
   HTTPS://WSDOT.WA.GOV/ENGINEERING-STANDARDS/ALL-MANUALS-AND-STANDARDS/STANDARD-PLANS

   THE CITY OF TUMWATER STANDARD PLANS
   HTTPS://WWW.CI.TUMWATER.WA.US/DEPARTMENTS/TRANSPORTATION-ENGINEERING-DEPARTMENT/TRANSPORTATION-AND-ENGINEERING-SERVICES/ENGINEERING-SURVEYING/DEVELOPMENT-GUIDE/AUTOCAD-DWG-FILES

   THE CITY OF TUMWATER DRAINAGE DESIGN AND EROSION CONTROL MANUAL
   HTTPS://WWW.CI.TUMWATER.WA.US/HOME/COMPONENTS/CALENDAR/EVENT/6886/19?SORTN=ENAME&SORTD=ASC&FOLDER=1304

   THE CITY OF TUMWATER DEVELOPMENT GUIDE
   HTTPS://WWW.CI.TUMWATER.WA.US/DEPARTMENTS/TRANSPORTATION-ENGINEERING-DEPARTMENT/TRANSPORTATION-AND-ENGINEERING-SERVICES/ENGINEERING-SURVEYING/DEVELOPMENT-GUIDE

   GEOTECHNICAL REPORT FINALIZED BY SOUTH SOUND GEOTECHNICAL CONSULTING ON MAY 11, 2023

2. ALL GOVERNMENTAL SAFETY REGULATIONS SHALL BE STRICTLY ADHERED TO INCLUDING OSHA.

3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DULY NOTIFY THE CITY OF TUMWATER IN ADVANCE OF THE COMMENCEMENT OF ANY AUTHORIZED WORK AND TO SCHEDULE REQUIRED INSPECTIONS. ANY REQUIRED INSPECTION TEST WILL BE PERFORMED AT THE CONTRACTOR'S EXPENSE.

4. THE APPROVAL OF THESE PLANS BY THE CITY OF TUMWATER DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO COMPLY WITH THE REQUIREMENTS OF OTHER GOVERNING AGENCIES.

   CAUTION – NOTICE TO CONTRACTOR

5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON THE PROJECT SURVEY AND OTHER RECORDS OF UTILITIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL FOR UTILITY LOCATES 48 HOURS PRIOR TO PLANNED EXCAVATIONS.

6. THE DESIGN SHOWN IS BASED UPON THE ENGINEER'S UNDERSTANDING OF THE EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ON THIS PLAN SET ARE BASED UPON COMPILED SURVEY DATA. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING FIELD CONDITIONS PRIOR TO BIDDING THE PROPOSED WORK IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE.

7. EXISTING UTILITIES ARE SHOWN FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY EXACT LOCATION, DIAMETER, LENGTH, CONDITION, PIPE TYPE, SLOPE AND VERTICAL AND HORIZONTAL ALIGNMENT OF THE EXISTING ALIGNMENT OF THE PROPOSED POINTS OF CONNECTION PRIOR TO CONNECTION AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO INSTALLATION OF THE PROPOSED UTILITIES.

8. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL OBTAIN ALL NECESSARY LOCAL, STATE, AND FEDERAL APPROVALS AND PERMITS.

9. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THE APPROVED PLANS, SPECIFICATIONS, CONSTRUCTION SWPPP, AND CONTRACT DOCUMENTS AT THE CONSTRUCTION SITE AT ALL TIMES.

10. CONSTRUCTION SIGNING AND TRAFFIC CONTROL SHALL BE PER THE CURRENT COPY OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). THE CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY OF TUMWATER AND OBTAIN APPROVAL PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.

11. ALL VEHICLES AND EQUIPMENT SHALL BE KEPT WITHIN THE WORK AREAS ESTABLISHED FOR THAT WORK SHIFT UNLESS TRAVELING TO OR FROM THE SITE. UNDER NO CIRCUMSTANCES SHALL VEHICLES BE PARKED OR EQUIPMENT BE STORED OUTSIDE OF THESE AREAS.

12. OTHER CONSTRUCTION PROJECTS MAY OCCUR NEAR THE PROJECT SITE AND MAY BE IN PROGRESS CONCURRENT WITH THE PROJECT. THE CONTRACTOR SHALL COOPERATE AS NECESSARY AND NOT INTERFERE OR HINDER THE PROGRESS OR COMPLETION OF WORK BEING PERFORMED BY OTHER CONTRACTORS.

13. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON THESE DRAWINGS AND TO OBTAIN ACCEPTANCE BY THE CITY OF TUMWATER AND THE PROJECT OWNER.

14. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL "PRE CONSTRUCTION" STATE OR BETTER.

15. DRIVEWAY ACCESS AND UTILITY SERVICE TO EXISTING HOMES AND BUSINESSES SHALL BE MAINTAINED AT ALL TIMES.

16. THE CONTRACTOR SHALL ASSUME THAT A PORTION OF THE SOILS WILL NOT PROVIDE SUFFICIENT STABILITY TO STAND UP IN VERTICAL TRENCH WALLS. THIS WILL RESULT IN WIDER TRENCHES, GREATER EARTHWORK VOLUMES, AND MORE SURFACE DISTURBANCE. THE CONTRACTOR SHALL ASSUME THAT A PORTION OF NATIVE SOILS WILL INCLUDE BOULDERS/COBBLES WHICH ARE GREATER THAN 24 INCHES IN DIAMETER WHICH WILL SLOW DOWN THE CONTRACTOR'S PROGRESS. THIS WILL RESULT IN WIDER TRENCHES, GREATER EARTHWORK VOLUMES, MORE SURFACE DISTURBANCE, AND MORE SURFACE RESTORATION THAN WHAT MAY BE SHOWN ON THE DRAWINGS.

17. THE REMOVAL, LOADING, AND HAULING OF EXCESS MATERIALS AS A RESULT OF DEMOLITION, TRENCHING, AND EXCAVATION ACTIVITIES SHALL BE DISPOSED OF AT A CONTRACTOR-PROVIDED WASTE SITE AT NO ADDITIONAL COST TO THE OWNER.

18. THE EXISTING CONDITIONS SHOWN ON THESE DRAWINGS ARE BASED ON A TOPOGRAPHIC/NSPS LAND TITLE SURVEY FROM INFORMED LAND SURVEY, DATED JULY 17, 2023. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING AND ALERT THE ENGINEER IMMEDIATELY IF DISCREPANCIES ARE FOUND

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

ABBREVIATIONS

&	AND	KWH	KILOWATT HOURS
Ð	ANGLE		
±	APPROXIMATELY	L	LENGTH
@	AT	LB(S)	POUND(S)
℄	CENTERLINE	LF	LINEAR FEET
°	DEGREE	LP	LOW POINT ELEVATION
=	EQUALS	LT	LEFT
'	FOOT		
>	GREATER THAN	MAX	MAXIMUM
"	INCH	MFR	MANUFACTURER
#	NUMBER	MH	MANHOLE
%	PERCENT	MIN	MINIMUM, MINUTE
		MISC	MISCELLANEOUS
AC	ASPHALTIC CONCRETE	MON	MONUMENT IN CASE
ADD'L	ADDITIONAL		
ADJT	ADJACENT	N	NORTH, NORTHING
AFF	ABOVE FINISH FLOOR	N/A	NOT APPLICABLE
AP	ANGLE POINT	NE	NORTHEAST
APPROX	APPROXIMATE	NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
ARCH	ARCHITECT	NIC	NOT IN CONTRACT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NO, NO	NUMBER
ATB	ASPHALT TREATED BASE COURSE	NTS	NOT TO SCALE
AVE	AVENUE	NW	NORTHWEST
BCR	BEGIN CURB RETURN	OC, OC	ON CENTER
BFV	BUTTERFLY VALVE	OD	OUTSIDE DIAMETER
BGS	BELOW GROUND SURFACE	OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
BLK	BLOCK(S)		
BLDG	BUILDING	P	POWER, POWER VAULT
BM	BENCHMARK	PC	POINT OF CURVATURE
BVC	BEGIN VERTICAL CURB	PCC	POINT OF COMPOUND CURVE OR PORTLAND CEMENT CONCRETE
C	CONDUIT	PED	PEDESTAL
CB	CATCH BASIN	PI	POINT OF INTERSECTION
CF	CUBIC FEET	ℙ	PROPERTY LINE
CIRC	CIRCUIT, CIRCULA(R, TION)	POC	POINT OF CONNECTION
CIP	CAST-IN-PLACE	PP	POWER POLE
CIP MON	CAST-IN-PLACE MONUMENT	PRC	POINT OF REVERSE CURVATURE
CJ	CENTER JOINT	PROP	PROPERTY
℄	CENTER LINE	PSI	POUNDS PER SQUARE INCH
CL	CROWNLINE	PT	POINT OF TANGENCY
CLR	CLEAR	PVC	POINT OF VERTICAL CURVE
CO	CLEANOUT	PVI	POINT OF VERTICAL INTERSECTION
COMM	COMMUNICATION	PVT	POINT OF VERTICAL TANGENT
COMPT	COMPACTED	PVMT	PAVEMENT
CONC	CONCRETE	PWR	POWER
CONST	CONSTRUCT		
CONT	CONTINU(E, ED, OUS, ATION)	QTY	QUANTITY
COORD	COORDINATE		
CSBC	CRUSHED SURFACING BASE COURSE	R	RADIUS
CSTC	CRUSHED SURFACING TOP COURSE	RD	ROAD, ROADWAY
CULV	CULVERT	REF	REFERENCE
CU YD	CUBIC YARD	REINF	REINFORC(E, ED, ING, MENT)
		REQ'D	REQUIRED
D/W	DRIVEWAY	REV	REVISION
DEF	DEFLECTION	RIM	STRUCTURE RIM ELEVATION
DEG	DEGREE	RT	RIGHT TURN
DEMO	DEMOLISH/DEMOLITION	R/W, ROW	RIGHT OF WAY
DIA	DIAMETER		
DIM	DIMENSION(S)	S	SOUTH OR SLOPE
DIP	DUCTILE IRON PIPE	SCHED	SCHEDULE
DR	DRIVE	SD, SDMH	STORM DRAIN, STORM DRAIN MANHOLE
DWG(S)	DRAWING(S)	SE	SOUTHEAST
		SECT	SECTION(S)
E	EAST OR ELECTRICAL	SHT	SHEET
EA	EACH	SP	SPRINKLER
ECR	END CURB RETURN	SQ	SQUARE
EHH	ELECTRICAL HANDHOLE	SQ FT	SQUARE FEET
EL, ELEV	ELEVATION	SQ IN	SQUARE INCH
ELEC	ELECTRIC(AL)	SS	SANITARY SEWER
ENGR	ENGINEER	SSMH	SANITARY SEWER MANHOLE
EOP	EDGE OF PAVEMENT	ST	STREET
EQ	EQUAL(LY)	STA	STATION
EQUIP	EQUIPMENT	STD	STANDARD
ESMT	EASEMENT	STRUCT	STRUCTUR(E, AL)
EVC	END VERTICAL CURVE	SW	SOUTHWEST
EX, EXIST	EXISTING EXP EXPANSION	SYS	SYSTEM
EXP	EXPANSION		
		T	TELEPHONE OR TELEPHONE VAULT
FDC	FIRE DEPARTMENT CONNECTION	TBD	TO BE DETERMINED
FDN	FOUNDATION	TBM	TEMPORARY BENCH MARK
FF	FINISH FLOOR	TC	TOP OF CURB ELEVATION
FG	FINISH GRADE ELEVATION	TELE	TELEPHONE
FH	FIRE HYDRANT	TEMP	TEMPORARY
FIN	FINISH(ED)	TP, T/P	TOP OF PIPE
FL	FIRE LINE/FLANGE	TYP	TYPICAL
FT	FOOT/FEET	TW	TOP OF WALL ELEVATION
G	GAS	UDG	UNDERGROUND
GALV	GALVANIZED	VAP	VERTICAL ANGLE POINT
GRND	GROUND	VC	VERTICAL CURVE
GV	GATE VALVE	VERT	VERTICAL
		VOL	VOLUME
HH	HANDHOLE		
HMA	HOT MIX ASPHALT	W	WEST, WIDTH, WIDE OR WATER
HORIZ	HORIZONTAL	W/	WITH
HT	HEIGHT	W/O	WITHOUT
		WM	WATER MAIN OR WILLAMETTE MERIDIAN
IE	INVERT ELEVATION	WV	WATER VALVE
IN	INCH		
		XFMR	TRANSFORMER
JB, J-BOX	JUNCTION BOX		
JT	JOINT TRENCH		
KV	KILOVOLTS		
KW	KILOWATT		

DRAFTING SYMBOLS

(XX) .....CONSTRUCTION NOTE NUMBER

(XX)

[X]

[XX-A] .....SECTION NUMBER

[XX-01] .....SHEET NUMBER SECTION IS LOCATED ON

REVISIONS

PROJECT NO.
163.001

DRAWN
C. DAHM

CHECKED
–

SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP

WHITNEY E. DUPUP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
PRELIMINARY

12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE

GENERAL NOTES & ABBREVIATIONS

SHEET

GN-01

CITY OF TUMWATER - STORM DRAIN CONSTRUCTION NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY/COUNTY STANDARDS AND THE 2018 STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION (WSDOT/APWA).
2. TEMPORARY EROSION/WATER POLLUTION MEASURES SHALL BE REQUIRED IN ACCORDANCE WITH SECTION 1-07.15 OF THE STANDARD SPECIFICATIONS AND THE DRAINAGE DESIGN AND EROSION CONTROL MANUAL ("DRAINAGE MANUAL").
3. PROPONENT SHALL COMPLY WITH ALL OTHER PERMITS AND OTHER REQUIREMENTS OF THE GOVERNING AUTHORITY OR AGENCY.
4. A PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION OR STAKING OF THE SITE.
5. ALL STORM MAINS AND RETENTION/DETENTION AREAS SHALL BE STAKED FOR GRADE AND ALIGNMENT BY AN ENGINEERING OR SURVEY FIRM LICENSED TO PERFORM SUCH WORK.
6. STORM DRAIN PIPE SHALL BE AS SPECIFIED IN THE 2018 CITY OF TUMWATER DRAINAGE DESIGN AND EROSION CONTROL MANUAL.
7. SPECIAL STRUCTURES, OIL/WATER SEPARATORS, AND OUTLET CONTROLS SHALL BE INSTALLED PER PLANS AND MANUFACTURERS RECOMMENDATIONS.
8. PROVIDE TRAFFIC CONTROL PLAN(S) AS REQUIRED IN ACCORDANCE WITH MUTCD.
9. CALL UNDERGROUND LOCATE LINE 1-800-424-5555 MINIMUM 48 HOURS PRIOR TO ANY EXCAVATIONS.
10. ALL SURVEYING AND STAKING SHALL BE PERFORMED BY AN ENGINEERING OR SURVEYING FIRM CAPABLE OF PERFORMING SUCH WORK. THE ENGINEER OR SURVEYOR DIRECTING SUCH WORK SHALL BE LICENSED BY THE STATE OF WASHINGTON.
11. THE MINIMUM STAKING OF STORM SEWER SYSTEMS SHALL BE AS FOLLOWS:
    A. STAKE LOCATION OF ALL CATCH BASINS/MANHOLES AND OTHER FIXTURES FOR GRADE AND ALIGNMENT.
    B. STAKE LOCATION, SIZE, AND DEPTH OF RETENTION/DETENTION FACILITY.
    C. STAKE FINISHED GRADE OF ALL STORMWATER FEATURES, INCLUDING BUT NOT LIMITED TO CATCH BASIN/MANHOLE RIM ELEVATIONS, OVERFLOW STRUCTURES, WEIRS, AND INVERT ELEVATIONS OF ALL PIPES IN CATCH BASINS, MANHOLES, AND THOSE PIPES THAT DAYLIGHT.
12. PIPE MATERIALS USED FOR STORMWATER CONVEYANCE SHALL BE AS APPROVED BY THE JURISDICTION. PIPE SIZE, SLOPE, COVER, ETC., SHALL BE AS SPECIFIED IN THE DRAINAGE MANUAL.
13. ALL DRIVEWAY CULVERTS SHALL BE OF SUFFICIENT LENGTH TO PROVIDE A MINIMUM 3:1 SLOPE FROM THE EDGE OF THE DRIVEWAY TO THE BOTTOM OF THE DITCH. CULVERTS SHALL HAVE BEVELED END SECTIONS TO MATCH THE SIDE SLOPE.
14. IF DRAINAGE OUTLETS (STUB-OUTS) ARE TO BE PROVIDED FOR EACH INDIVIDUAL LOT, THE STUB-OUTS SHALL CONFORM TO THE FOLLOWING:
    A. EACH OUTLET SHALL BE SUITABLY LOCATED AT THE LOWEST ELEVATION ON THE LOT, SO AS TO SERVICE ALL FUTURE ROOF DOWNSPOUTS AND FOOTING DRAINS, DRIVEWAYS, YARD DRAINS, AND ANY OTHER SURFACE OR SUBSURFACE DRAINS NECESSARY TO RENDER THE LOTS SUITABLE FOR THEIR INTENDED USE. EACH OUTLET SHALL HAVE FREE-FLOWING, POSITIVE DRAINAGE TO AN APPROVED STORM WATER CONVEYANCE SYSTEM OR TO AN APPROVED OUTFALL LOCATION.
    B. OUTLETS ON EACH LOT SHALL BE LOCATED WITH A FIVE-FOOT-HIGH, 2"X4" STAKE MARKED "STORM" OR "DRAIN." THE STUB-OUT SHALL VISIBLY EXTEND ABOVE SURFACE LEVEL AND BE SECURED TO THE STAKE.
    C. PIPE MATERIAL SHALL BE AS APPROVED BY THE JURISDICTION.
    D. DRAINAGE EASEMENTS ARE REQUIRED FOR DRAINAGE SYSTEMS DESIGNED TO CONVEY FLOWS THROUGH INDIVIDUAL LOTS.
    E. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LOCATIONS OF ALL STUB-OUT CONVEYANCE LINES WITH RESPECT TO THE UTILITIES (E.G., POWER, GAS, TELEPHONE, TELEVISION).
    F. ALL INDIVIDUAL STUB-OUTS SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE LOT OWNER.
15. THE STORM DRAINAGE SYSTEM SHALL BE CONSTRUCTED ACCORDING TO APPROVED PLANS ON FILE WITH THE JURISDICTION. ANY MATERIAL DEVIATION FROM THE APPROVED PLANS WILL REQUIRE WRITTEN APPROVAL FROM THE JURISDICTION.
16. A COPY OF THE APPROVED STORM WATER PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
17. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SIMILARLY STABILIZED TO THE SATISFACTION OF THE JURISDICTION. FOR SITES WHERE GRASS HAS BEEN PLANTED THROUGH HYDROSEEDING, THE PERFORMANCE BOND WILL NOT BE RELEASED UNTIL THE GRASS HAS BEEN THOROUGHLY ESTABLISHED, UNLESS OTHERWISE APPROVED BY THE JURISDICTION.
18. ALL BUILDING DOWNSPOUTS ON COMMERCIAL SITES SHALL BE CONNECTED TO THE STORM DRAINAGE SYSTEM, UNLESS OTHERWISE APPROVED BY THE JURISDICTION.
19. ALL EROSION CONTROL AND STORMWATER FACILITIES SHALL BE REGULARLY INSPECTED AND MAINTAINED BY THE CONTRACTOR DURING THE CONSTRUCTION PHASE OF THE DEVELOPMENT PROJECT.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. ALL SECTIONS OF THE CURRENT W.S.D.O.T. STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL SHALL APPLY.
21. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN STREET USE AND OTHER RELATED OR REQUIRED PERMITS PRIOR TO ANY CONSTRUCTION ACTIVITY IN THE JURISDICTION'S RIGHT-OF-WAY. IT SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS PRIOR TO ANY CONSTRUCTION.
22. NO FINAL CUT OR FILL SLOPE SHALL EXCEED TWO (2) HORIZONTAL TO ONE (1) VERTICAL WITHOUT STABILIZATION BY ROCKERY OR BY A STRUCTURAL RETAINING WALL.
23. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, WIDTHS, THICKNESSES, AND ELEVATIONS OF ALL EXISTING PAVEMENTS AND STRUCTURES, INCLUDING UTILITIES AND OTHER FRONTAGE IMPROVEMENTS, THAT ARE TO INTERFACE WITH NEW WORK, PROVIDE ALL TRIMMING, CUTTING, SAW CUTTING, GRADING, LEVELING, SLOPING, COATING, AND OTHER WORK, INCLUDING MATERIALS AS NECESSARY TO CAUSE THE INTERFACE WITH EXISTING WORKS TO BE PROPER, WITHOUT CONFLICT, ACCEPTABLE TO THE ENGINEER AND THE JURISDICTION, COMPLETE IN PLACE, AND READY TO USE.
24. COMPACTION OF ALL FILL AREAS SHALL BE PER CURRENT APWA SPECIFICATIONS. FILL SHALL BE PROVIDED IN 6" MAXIMUM LIFTS AND SHALL BE COMPACTED TO 95 PERCENT OF ITS MAXIMUM RELATIVE DENSITY.
25. CONTRACTOR SHALL CONTACT THE CITY OF TUMWATER PUBLIC WORKS TO OBTAIN FREE ANTI-DUMP DISCS AND INSTALL THEM AT ALL PROJECT STORMWATER STRUCTURES.

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

CITY OF TUMWATER - SANITARY SEWER MAIN INSTALLATION NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF TUMWATER STANDARDS AND THE LATEST EDITION OF THE STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION (WSDOT/APWA).
2. CITY OF TUMWATER DATUM SHALL BE USED FOR ALL VERTICAL CONTROL. A BENCHMARK LIST IS AVAILABLE FROM THE PUBLIC WORKS DEPARTMENT.
3. ALL APPROVALS AND PERMITS REQUIRED BY THE CITY OF TUMWATER SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
4. IF CONSTRUCTION IS TO TAKE PLACE IN THE COUNTY RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE COUNTY AND OBTAIN ALL THE REQUIRED APPROVALS AND PERMITS
5. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE CITY OF TUMWATER CONSTRUCTION INSPECTOR PRIOR TO THE START OF CONSTRUCTION.
6. THE CITY OF TUMWATER CONSTRUCTION INSPECTOR SHALL BE NOTIFIED A MINIMUM OF 48 HOURS IN ADVANCE OF A TAP CONNECTION TO AN EXISTING MAIN. TAP ONLY PERFORMED BY CITY.
7. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-424-5555 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.
8. GRAVITY SEWER MAIN SHALL BE PVC, ASTM D 3034 SDR 35 OR ASTM F 789 WITH JOINTS AND RUBBER GASKETS CONFORMING TO ASTM D 3212 AND ASTM F 477.
9. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C 478. MANHOLES SHALL BE TYPE 1-48" MANHOLE OR LARGER UNLESS OTHERWISE SPECIFIED ON THE PLANS. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C 443 AND SHALL BE GROUTED FROM THE INSIDE. LIFT HOLES SHALL BE GROUTED FROM THE OUTSIDE AND INSIDE OF THE MANHOLE.
10. SIDE SEWER SERVICES SHALL BE PVC, ASTM D 3034 SDR 35 WITH FLEXIBLE GASKETED JOINTS. SIDE SEWER CONNECTIONS SHALL BE MADE BY A TAP TO AN EXISTING MAIN OR A WYE BRANCH FROM A NEW MAIN.
11. ALL SEWER MAINS SHALL BE FIELD STAKED FOR GRADES AND ALIGNMENT BY A LICENSED ENGINEERING OR SURVEYING FIRM QUALIFIED TO PERFORM SUCH WORK.
12. BEDDING OF THE SEWER MAIN AND COMPACTION OF THE BACKFILL MATERIAL SHALL BE REQUIRED IN ACCORDANCE WITH THE ABOVE MENTIONED SPECIFICATION (SEE NOTE 1).
13. TEMPORARY STREET PATCHING SHALL BE ALLOWED FOR AS APPROVED BY THE CITY ENGINEER. TEMPORARY STREET PATCHING SHALL BE PROVIDED BY PLACEMENT AND COMPACTION OF ONE INCH MAXIMUM ASPHALT CONCRETE COLD MIX. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AS REQUIRED.
14. EROSION CONTROL MEASURES SHALL BE TAKEN BY THE CONTRACTOR DURING CONSTRUCTION TO PREVENT INFILTRATION OF EXISTING AND PROPOSED STORM DRAINAGE FACILITIES AND ROADWAYS.
15. PROVIDE TRAFFIC CONTROL PLAN(S) IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS REQUIRED.
16. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THESE APPROVED PLANS ON THE CONSTRUCTION SITE AT ALL TIMES.
17. ANY CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER AND THE CITY OF TUMWATER.
18. ALL LINES SHALL BE CLEANED AND PRESSURE TESTED IN CONFORMANCE WITH THE ABOVE REFERENCED SPECIFICATIONS (SEE NOTE 1). A WATER TEST OF ALL MANHOLES IN ACCORDANCE WITH TUMWATER STANDARD IS ALSO REQUIRED. TESTING SHALL TAKE PLACE AFTER ALL UNDERGROUND UTILITIES ARE INSTALLED AND COMPACTION OF THE ROADWAY SUBGRADE IS COMPLETED.
19. PRIOR TO BACKFILL, ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED BY THE CITY OF TUMWATER CONSTRUCTION INSPECTOR. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM CORRECTION OF ANY DEFICIENCIES AND/OR FAILURES AS DETERMINED BY SUBSEQUENT TESTING AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CITY OF TUMWATER FOR THE REQUIRED INSPECTIONS.
20. ALL SANITARY SEWER MAINS SHALL BE PLACED IN PUBLIC RIGHT-OF-WAY OR IF IN EASEMENT AREAS, PROVIDE 12 FOOT WIDE PAVED (SIX INCH BALLAST, TWO INCH CRUSHED, TWO INCH ASPHALT) ACCESS TO ALL MANHOLES. NO LOT LINE SEWER MAINS WILL BE ALLOWED.
21. ALL MAINS WILL BE DEDICATED TO THE CITY FOR MAINTENANCE WITH APPROPRIATE BILLS OF SALE AND EASEMENTS.
22. CITY OWNERSHIP OF THE MAIN AND LATERAL WILL GO TO THE PROPERTY LINE OR EASEMENT IF A CLEANOUT EXISTS AT THIS POINT. IF NO CLEANOUT EXISTS, CITY RESPONSIBILITY ENDS AT THE LIMIT OF THE MAIN.
23. ALL PIPE AND SERVICES SHALL BE INSTALLED WITH 12 GAUGE COATED COPPER WIRE, WRAPPED AROUND THE PIPE, BROUGHT UP AND TIED OFF AT TOPS OF MANHOLES, CLEANOUTS AND STUB MARKERS.
24. ALL NEWLY CONSTRUCTED MANHOLES SHALL BE COATED ON THE OUTSIDE 4-FOOT BELOW GRADE TO THE BOTTOM OF THE MANHOLE.

CITY OF TUMWATER - STREET CONSTRUCTION NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF TUMWATER STANDARDS AND THE 2018 STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL IN ACCORDANCE WITH THE M.U.T.C.D. PRIOR TO DISRUPTION OF ANY TRAFFIC, TRAFFIC CONTROL PLANS SHALL BE PREPARED AND SUBMITTED TO THE CITY FOR APPROVAL. NO WORK SHALL COMMENCE UNTIL ALL APPROVED TRAFFIC CONTROL IS IN PLACE.
3. ALL CURB AND GUTTER, STREET GRADES, SIDEWALK GRADES, AND ANY OTHER VERTICAL AND/OR HORIZONTAL ALIGNMENT SHALL BE STAKED BY AN ENGINEERING OR SURVEYING FIRM CAPABLE OF PERFORMING SUCH WORK.
4. WHERE NEW ASPHALT JOINS EXISTING, THE EXISTING ASPHALT SHALL BE CUT TO A NEAT VERTICAL EDGE AND TACKED WITH ASPHALT EMULSION TYPE CSS-1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE NEW ASPHALT SHALL BE FEATHERED BACK OVER EXISTING TO PROVIDE FOR A SEAL AT THE SAW CUT LOCATION AND THE JOINT SEALED WITH GRADE AR-4000W PAVING ASPHALT.
5. COMPACTION OF SUBGRADE, ROCK, AND ASPHALT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
6. FORM AND SUBGRADE INSPECTION BY THE CITY IS REQUIRED BEFORE POURING CONCRETE. TWENTY-FOUR HOURS NOTICE IS REQUIRED FOR FORM INSPECTION.
7. SEE THE CITY OF TUMWATER DEVELOPMENT GUIDELINES FOR TESTING AND SAMPLING FREQUENCIES.
8. CONTRACTOR SHALL INSTALL CURB & GUTTER VIA MACHINE WHEN GRADE IS 0.5-PERCENT OR LESS.

CITY OF TUMWATER - WATER MAIN INSTALLATION NOTES

1. ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH CITY OF TUMWATER STANDARDS AND THE 2018 STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, LATEST EDITION.
2. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE CITY PRIOR TO THE START OF CONSTRUCTION.
3. WATER MAINS EQUAL TO OR LESS THAN TWELVE INCHES IN DIAMETER SHALL BE AWWA C900 FACTORY MUTUAL APPROVED PRESSURE CLASS 150 PVC OR CEMENT MORTAR-LINED DUCTILE IRON, THICKNESS CLASS 50. ALL WATER MAINS LARGER THAN 12 INCHES IN DIAMETER SHALL BE AWWA C905, PR 235 PVC OR CEMENT MORTAR-LINED DUCTILE IRON, THICKNESS CLASS 50.
4. GATE VALVES SHALL BE RESILIENT WEDGE, NRS (NON RISING STEM) WITH O-RINGS SEALS. VALVE ENDS SHALL BE MECHANICAL JOINT OR ANSI FLANGES. VALVES SHALL CONFORM TO AWWA 509-80. VALVES SHALL BE MUELLER, M & H, KENNEDY, CLOW R/W OR WATEROUS SERIES 500. EXISTING VALVES SHALL BE OPERATED BY CITY EMPLOYEES ONLY.
5. HYDRANTS SHALL BE THE DRY BARREL TYPE AND ONE OF THE FOLLOWING: WATEROUS, M & H, MUELLER, OR CLOW. HYDRANTS SHALL BE BAGGED UNTIL SYSTEM IS APPROVED. ALL HYDRANTS SHALL BE EQUIPPED WITH STORZ ADAPTERS.
6. ALL LINES SHALL BE CHLORINATED AND TESTED IN CONFORMANCE WITH THE ABOVE REFERENCED SPECIFICATION (SEE NOTE 1).
7. ALL PIPE AND SERVICES SHALL BE INSTALLED WITH 12 GAUGE COATED COPPER WIRE, WRAPPED AROUND THE PIPE, BROUGHT UP AND TIED OFF AT TOP OF VALVE BOX.
8. PROVIDE TRAFFIC CONTROL PLAN(S) AS REQUIRED IN ACCORDANCE WITH MUTCD.
9. ALL WATER MAINS SHALL BE STAKED FOR GRADES AND ALIGNMENT BY AN ENGINEERING OR SURVEYING FIRM CAPABLE OF PERFORMING SUCH WORK.
10. CALL UNDERGROUND LOCATE AT 1-800-424-5555 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATIONS.
11. WHERE CONNECTIONS REQUIRE "FIELD VERIFICATION", CONNECTION POINTS WILL BE EXPOSED BY CONTRACTOR AND FITTINGS VERIFIED 48 HOURS PRIOR TO DISTRIBUTING SHUT-DOWN NOTICES.
12. AT ANY CONNECTION TO AN EXISTING LINE WHERE A NEW VALVE IS NOT INSTALLED, THE EXISTING VALVE MUST BE PRESSURE TESTED TO CITY STANDARDS PRIOR TO CONNECTION. IF AN EXISTING VALVE FAILS TO PASS THE TEST, THE CONTRACTOR SHALL MAKE THE NECESSARY PROVISIONS TO TEST THE NEW LINE PRIOR TO CONNECTION TO THE EXISTING SYSTEM OR INSTALL A NEW VALVE.
13. NO LOT LINE WATERMAINS ARE ALLOWED.
14. MEGALUG RESTRAINED JOINTS (OR EQUAL) SHALL BE USED AT ALL WATER LINE FITTINGS, BENDS, TEES, ETC. FOR 16" WATER LINE. CONTRACTOR SHALL COORDINATE WITH THE JOINT RESTRAINT MANUFACTURER AND SUPPLIER TO DETERMINE NUMBER OF JOINTS REQUIRED TO BE RESTRAINED AT EACH FITTING.
15. CONTRACTOR SHALL INSTALL FIELD LOCK GASKETS FOR WATERMAINS.

CITY OF TUMWATER - TRENCH BACKFILL & RESTORATION NOTES (FOR WORK IN THE ROW)

A. ALL TRENCH AND PAVEMENT CUTS SHALL BE MADE BY SAW CUTS. THE CUTS SHALL BE A MINIMUM OF 1 FOOT OUTSIDE THE TRENCH WIDTH.

B. ALL TRENCHING SHALL BE BACKFILLED AS ACCORDING TO WSDOT/APWA AND CITY OF TUMWATER STANDARDS EXCEPT AS NOTED BELOW.

IF THE EXISTING MATERIAL IS DETERMINED BY THE CITY TO BE SUITABLE FOR BACKFILL, THE CONTRACTOR MAY USE THE NATIVE MATERIAL. ALL TRENCH BACKFILL MATERIALS SHALL BE COMPACTED TO 95% DENSITY. BACKFILL COMPACTION SHALL BE PERFORMED IN 6 INCH LIFTS.

PERPENDICULAR TRENCHES SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL AS ACCORDING TO DETAIL NO. ST-13.

REPLACEMENT OF THE ASPHALT CONCRETE OR PORTLAND CONCRETE CEMENT SHALL BE OF EXISTING DEPTH PLUS 1 INCH, OR TOTAL THICKNESS OF 3 INCHES, WHICHEVER IS GREATER.

C. TACK SHALL BE APPLIED TO THE EXISTING PAVEMENT AND EDGE OF CUT AND SHALL BE EMULSIFIED ASPHALT GRADE CSS-1 AS SPECIFIED IN SECTION 9-02.1(6) OF THE WSDOT/APWA STANDARD SPECIFICATIONS. TACK COAT SHALL BE APPLIED AS SPECIFIED IN SECTION 5-04 OF THE WSDOT/APWA STANDARD SPECIFICATIONS.

D. ASPHALT CONCRETE CLASS B SHALL BE PLACED ON THE PREPARED SURFACE BY AN APPROVED PAVING MACHINE AND SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 5-04 OF THE WSDOT/APWA STANDARD SPECIFICATIONS, EXCEPT THAT LONGITUDINAL JOINTS BETWEEN SUCCESSIVE LAYERS OF ASPHALT CONCRETE SHALL BE DISPLACED LATERALLY A MINIMUM OF 12 INCHES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. FINE AND COARSE AGGREGATE SHALL BE IN ACCORDANCE WITH SECTION 9-03.8 OF THE WSDOT/APWA STANDARD SPECIFICATIONS. ASPHALT CONCRETE OVER 2 INCHES THICK SHALL BE PLACED IN EQUAL LIFTS NOT TO EXCEED 2 INCHES EACH.

ALL STREET SURFACES, WALKS OR DRIVEWAYS WITHIN THE STREET TRENCHING AREAS AFFECTED BY THE TRENCHING SHALL BE FEATHERED AND SHIMMED TO AN EXTENT THAT PROVIDES A SMOOTH-RIDING CONNECTION AND EXPEDITIOUS DRAINAGE FLOW FOR THE NEWLY PAVED SURFACE. SHIMMING AND FEATHERING AS REQUIRED BY THE CITY ENGINEER SHALL BE 4-17 ACCOMPLISHED BY RAKING OUT THE OVERSIZED AGGREGATES FROM THE CLASS B MIX AS APPROPRIATE. SURFACE SMOOTHNESS SHALL BE PER SECTION 5-04.3(13) OF THE WSDOT/APWA STANDARD SPECIFICATIONS. THE PAVING SHALL BE CORRECTED BY REMOVAL AND REPAVING OF THE TRENCH ONLY.

E. ALL JOINTS SHALL BE SEALED USING PAVING ASPHALT AR4000W.

F. WHEN TRENCHING WITHIN THE ROADWAY SHOULDER(S), THE SHOULDER SHALL BE RESTORED TO ITS ORIGINAL OR BETTER CONDITION.

G. THE FINAL PATCH SHALL BE COMPLETED AS SOON AS POSSIBLE AND SHALL BE COMPLETED WITHIN 30 DAYS AFTER FIRST OPENING THE TRENCH. THIS TIME FRAME MAY BE ADJUSTED IF DELAYS ARE DUE TO INCLEMENT PAVING WEATHER, OR OTHER ADVERSE CONDITIONS THAT MAY EXIST. HOWEVER, DELAYING OF FINAL PATCH OF OVERLAY WORK IS ALLOWABLE ONLY SUBJECT TO THE CITY ENGINEER'S APPROVAL. THE CITY ENGINEER MAY DEEM IT NECESSARY TO COMPLETE THE WORK WITHIN THE 30 DAYS TIME FRAME AND NOT ALLOW ANY TIME EXTENSION. IF THIS OCCURS, THE CONTRACTOR SHALL PERFORM THE NECESSARY WORK AS DIRECTED BY THE CITY ENGINEER.

H. WHEN TRENCHING WITHIN AN EXISTING ROADWAY, NO EXISTING ASPHALT LESS THAN 4' WIDE SHALL BE LEFT IN PLACE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE EXISTING ASPHALT AND REPLACE AT THE TIME OF PATCHING THE TRENCH.

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUMP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

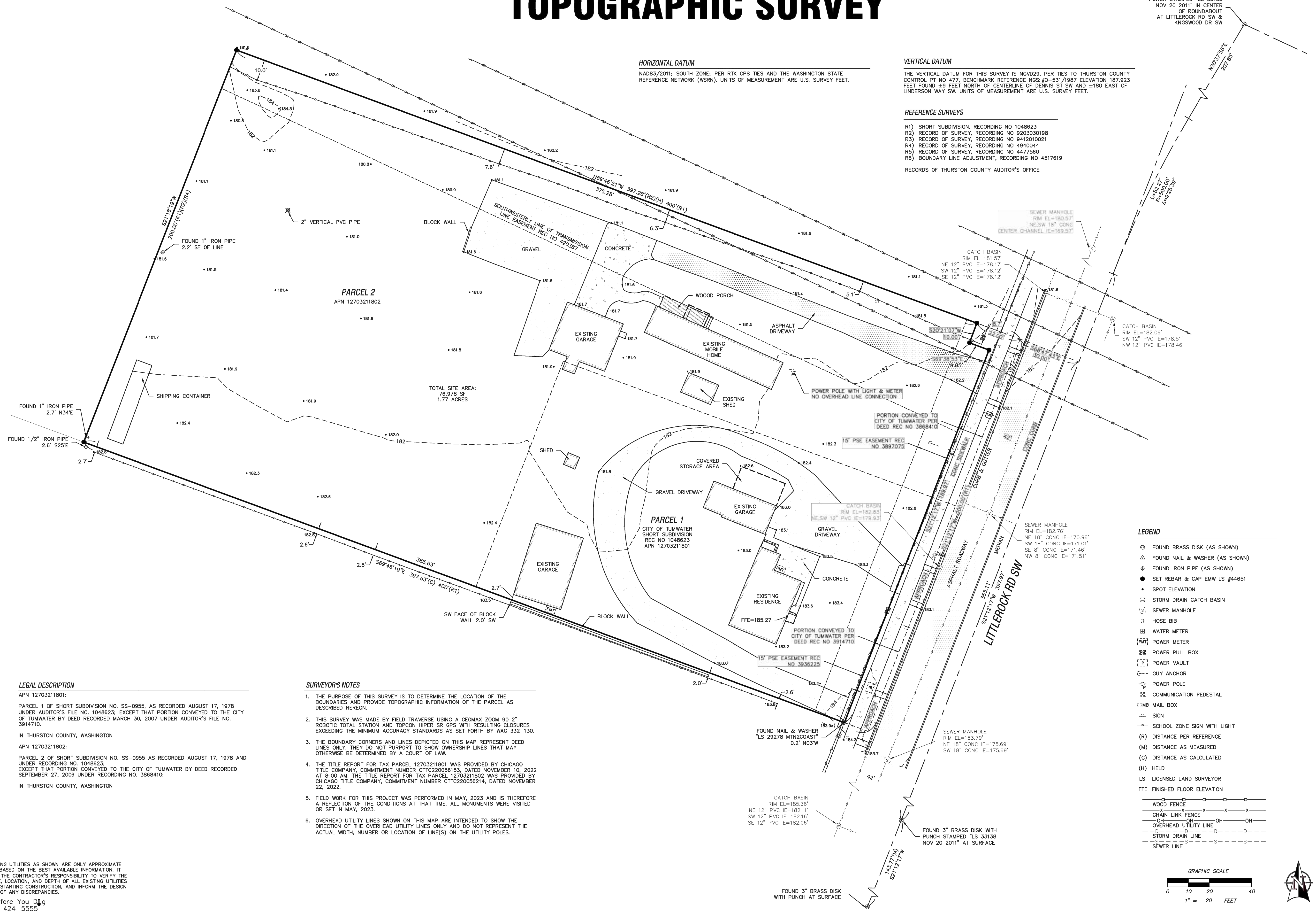
SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
CITY OF TUMWATER GENERAL NOTES

SHEET
GN-02

TOPOGRAPHIC SURVEY



HORIZONTAL DATUM

NAD83/2011; SOUTH ZONE; PER RTK GPS TIES AND THE WASHINGTON STATE REFERENCE NETWORK (WSRN). UNITS OF MEASUREMENT ARE U.S. SURVEY FEET.

VERTICAL DATUM

THE VERTICAL DATUM FOR THIS SURVEY IS NGVD29, PER TIES TO THURSTON COUNTY CONTROL PT NO 477, BENCHMARK REFERENCE NGS: #Q-531/1987 ELEVATION 187.923 FEET FOUND ±9 FEET NORTH OF CENTERLINE OF DENNIS ST SW AND ±180 EAST OF LINDERSON WAY SW. UNITS OF MEASUREMENT ARE U.S. SURVEY FEET.

REFERENCE SURVEYS

R1) SHORT SUBDIVISION, RECORDING NO 1048623
R2) RECORD OF SURVEY, RECORDING NO 9203030198
R3) RECORD OF SURVEY, RECORDING NO 9412010021
R4) RECORD OF SURVEY, RECORDING NO 4940044
R5) RECORD OF SURVEY, RECORDING NO 4477560
R6) BOUNDARY LINE ADJUSTMENT, RECORDING NO 4517619

RECORDS OF THURSTON COUNTY AUDITOR'S OFFICE

LEGAL DESCRIPTION

APN 12703211801:

PARCEL 1 OF SHORT SUBDIVISION NO. SS-0955, AS RECORDED AUGUST 17, 1978 UNDER AUDITOR'S FILE NO. 1048623; EXCEPT THAT PORTION CONVEYED TO THE CITY OF TUMWATER BY DEED RECORDED MARCH 30, 2007 UNDER AUDITOR'S FILE NO. 3914710.

IN THURSTON COUNTY, WASHINGTON

APN 12703211802:

PARCEL 2 OF SHORT SUBDIVISION NO. SS-0955 AS RECORDED AUGUST 17, 1978 AND UNDER RECORDING NO. 1048623;
EXCEPT THAT PORTION CONVEYED TO THE CITY OF TUMWATER BY DEED RECORDED SEPTEMBER 27, 2006 UNDER RECORDING NO. 3868410;

IN THURSTON COUNTY, WASHINGTON

SURVEYOR'S NOTES

1. THE PURPOSE OF THIS SURVEY IS TO DETERMINE THE LOCATION OF THE BOUNDARIES AND PROVIDE TOPOGRAPHIC INFORMATION OF THE PARCEL AS DESCRIBED HEREON.
2. THIS SURVEY WAS MADE BY FIELD TRAVERSE USING A GEOMAX ZOOM 90 2" ROBOTIC TOTAL STATION AND TOPCON HIPER SR GPS WITH RESULTING CLOSURES EXCEEDING THE MINIMUM ACCURACY STANDARDS AS SET FORTH BY WAC 332-130.
3. THE BOUNDARY CORNERS AND LINES DEPICTED ON THIS MAP REPRESENT DEED LINES ONLY. THEY DO NOT PURPORT TO SHOW OWNERSHIP LINES THAT MAY OTHERWISE BE DETERMINED BY A COURT OF LAW.
4. THE TITLE REPORT FOR TAX PARCEL 12703211801 WAS PROVIDED BY CHICAGO TITLE COMPANY, COMMITMENT NUMBER CTTC220056153, DATED NOVEMBER 10, 2022 AT 8:00 AM. THE TITLE REPORT FOR TAX PARCEL 12703211802 WAS PROVIDED BY CHICAGO TITLE COMPANY, COMMITMENT NUMBER CTTC220056214, DATED NOVEMBER 22, 2022.
5. FIELD WORK FOR THIS PROJECT WAS PERFORMED IN MAY, 2023 AND IS THEREFORE A REFLECTION OF THE CONDITIONS AT THAT TIME. ALL MONUMENTS WERE VISITED OR SET IN MAY, 2023.
6. OVERHEAD UTILITY LINES SHOWN ON THIS MAP ARE INTENDED TO SHOW THE DIRECTION OF THE OVERHEAD UTILITY LINES ONLY AND DO NOT REPRESENT THE ACTUAL WIDTH, NUMBER OR LOCATION OF LINE(S) ON THE UTILITY POLES.

NOTE:
THE EXISTING UTILITIES AS SHOWN ARE ONLY APPROXIMATE AND ARE BASED ON THE BEST AVAILABLE INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE SIZE, TYPE, LOCATION, AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO STARTING CONSTRUCTION, AND INFORM THE DESIGN ENGINEER OF ANY DISCREPANCIES.

Call Before You Dig
1-800-424-5555

LEGEND

- FOUND BRASS DISK (AS SHOWN)
- FOUND NAIL & WASHER (AS SHOWN)
- FOUND IRON PIPE (AS SHOWN)
- SET REBAR & CAP EMW LS #44651
- SPOT ELEVATION
- STORM DRAIN CATCH BASIN
- SEWER MANHOLE
- HOSE BIB
- WATER METER
- PMT POWER METER
- POWER PULL BOX
- P POWER VAULT
- GUY ANCHOR
- POWER POLE
- COMMUNICATION PEDESTAL
- MB MAIL BOX
- SIGN
- SCHOOL ZONE SIGN WITH LIGHT
- (R) DISTANCE PER REFERENCE
- (M) DISTANCE AS MEASURED
- (C) DISTANCE AS CALCULATED
- (H) HELD
- LS LICENSED LAND SURVEYOR
- FFE FINISHED FLOOR ELEVATION
- WOOD FENCE
- x CHAIN LINK FENCE
- OH OVERHEAD UTILITY LINE
- D STORM DRAIN LINE
- S SEWER LINE

SHT. 1 OF 1

A PORTION OF THE NE 1/4 & NW 1/4 OF THE NW 1/4 OF SECTION 3, T17N, R2W, W.M.

FOR: TREVOR COLBY

CITY OF TUMWATER, THURSTON COUNTY, WA

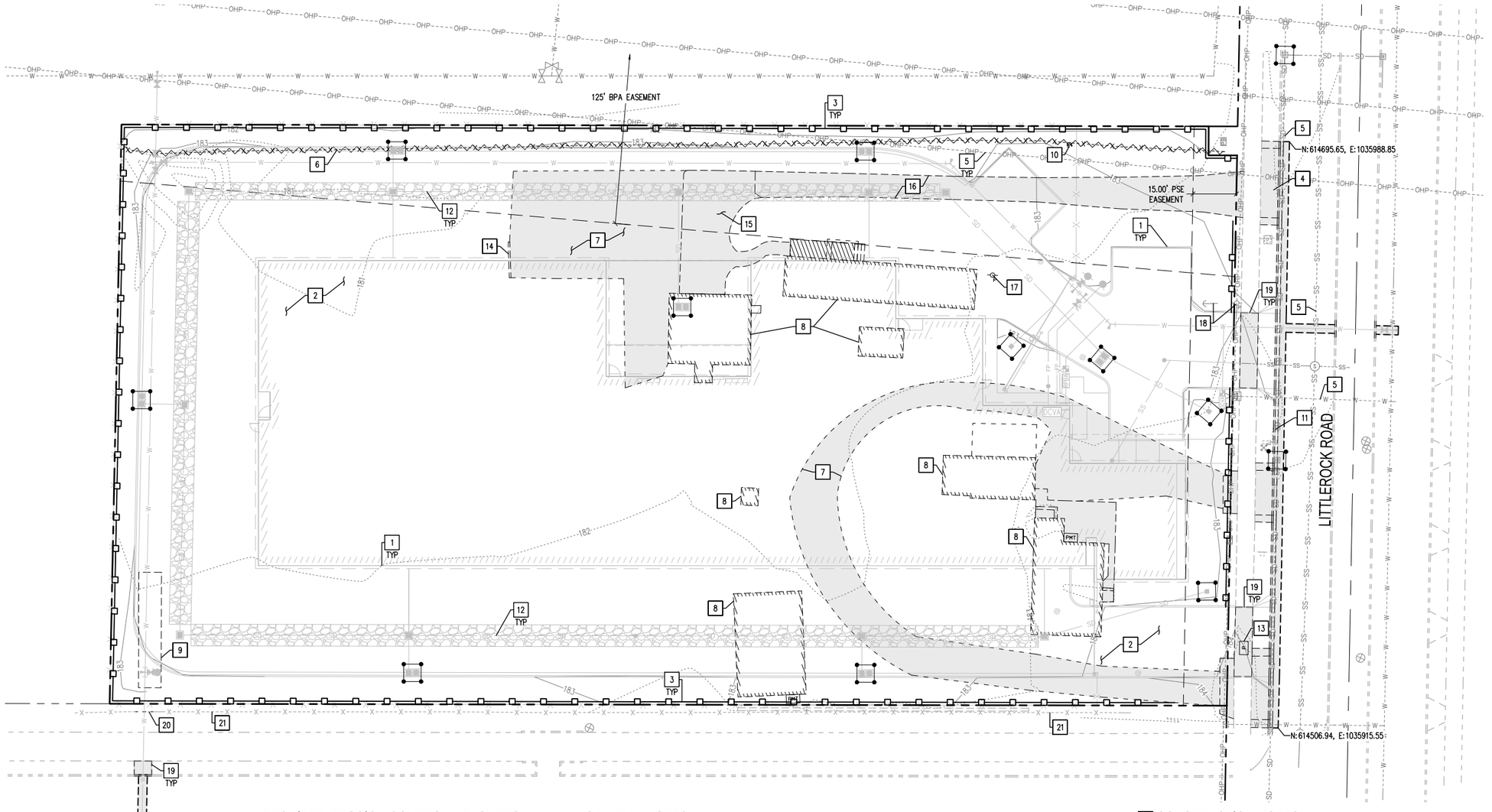
TOPOGRAPHIC SURVEY

DRAFTED: JR
DATE: 7/17/2023
SCALE: 1"=20'
CHECKED: EW
JOB NO.: COLBT-230222
FIELD CREW: ES, MR

EVAN M. WAHLSTROM
STATE OF WASHINGTON
44651
REGISTERED
PROFESSIONAL LAND SURVEYOR
7/17/2023

6115 & 6119 LITTLEROCK RD
TUMWATER, WA 98512
TAX PARCEL NO. 12703211802 & 12703211801

informed land survey
PO Box 5137
Tacoma, WA 98415-0137
Phone: 253-627-2070
admin@i-landsurvey.com
www.i-landsurvey.com
LAND SURVEYING • MAPPING • CONSTRUCTION LAYOUT



LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING CURB
- EXISTING BUILDING
- EXISTING FENCE
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING STORM LINE
- EXISTING POWER POLE
- EXISTING POWER VAULT
- EXISTING PHONE PEDESTAL
- EXISTING CATCH BASIN
- EXISTING SEWER MANHOLE
- EXISTING WATER METER
- EXISTING GATE VALVE
- HIGH VISIBILITY SILT FENCE: SEE EC-02
- SAWCUT (FULL DEPTH)
- ASPHALT, GRAVEL, CONCRETE, CURB & GUTTER, AND BASE MATERIAL TO BE REMOVED, INCLUDING HAUL TO A CONTRACTOR PROVIDED WASTE SITE
- PROPOSED STORM LINE
- PROPOSED CATCH BASIN
- INLET PROTECTION: SEE EC-02
- APPROXIMATED LINEWORK FOR EXIST. NON-SURVEYED IMPROVEMENTS

REQUIRED EROSION CONTROL MEASURES

CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES FOR ALL SLOPES DURING AND AFTER CONSTRUCTION PER THE TABLE BELOW

SLOPE	
4:1–2:1 (25%–50%)	TENSAR ROLLMAX SC150BN
2:1–1:1 (50%–100%)	TENSAR ROLLMAX C125BN

GENERAL NOTES

1. CONTRACTOR SHALL SECURE ALL STORAGE AREAS
2. CONTRACTOR SHALL PROVIDE ALL EROSION CONTROL MEASURES FOR STORAGE AND STOCKPILE AREAS
3. ALL MATERIALS STORED ON-SITE SHALL HAVE PROPER ENCLOSURES AND/OR COVERINGS
4. SEE LANDSCAPE PLANS FOR SEEDING AND PLANTING REQUIREMENTS
5. CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES PRIOR TO COMMENCING WITH ANY SITE DISTURBING ACTIVITIES
6. SIDEWALK, DRIVEWAYS, AND CURBING THAT ARE TO BE REMOVED SHALL BE SAWCUT AND REMOVED TO THE NEAREST FULL DEPTH EXPANSION JOINT REGARDLESS OF THE DEMOLITION LIMITS THAT ARE SHOWN ON THE PLANS. SAWCUTTING BETWEEN JOINTS SHALL NOT BE ALLOWED
7. THE CONTRACTOR SHALL INSTALL OR CONSTRUCT ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED TO SATISFY THE REQUIREMENTS OF THE STATE'S CONSTRUCTION STORMWATER DISCHARGE PERMIT AT NO ADDITIONAL COST TO THE OWNER. THE SHOWN BMPS ARE THE MINIMUM REQUIRED BMPS TO START CONSTRUCTION ACTIVITIES.
8. CONTRACTOR TO REMOVE ALL EXISTING UTILITIES LOCATED UNDER THE BUILDING. OTHER UTILITIES FOUND MAY BE ABANDONED IN PLACE PROVIDED THEY DO NOT CONFLICT WITH ANY PROPOSED UTILITIES OR OTHER PROPOSED IMPROVEMENTS. UTILITIES TO ABANDONED IN PLACE TO BE CUT AND CAPPED. LAST 2 FEET OF PIPE TO BE FILLED WITH CDF.
9. CONTRACTOR TO REMOVE EXISTING SEPTIC SYSTEMS SERVING THE BUILDINGS IN ACCORDANCE WITH WASHINGTON STATE AND THURSTON COUNTY DEPARTMENT OF HEALTH STANDARDS.
10. RECORDS SHOW BOTH PROPERTIES WERE SERVED BY ON-SITE SEPTIC SYSTEMS. SEPTIC TANKS AND DRAINFIELDS WERE NOT IDENTIFIED DURING SURVEY. CONTRACTOR SHALL LOCATE AND ABANDON PER DOH REQUIREMENTS (WAC 246-272A-300) AND REMOVE COMPONENTS AS NECESSARY FOR CONSTRUCTION.
11. LINEWORK OUTSIDE THE LIMITS OF SURVEY HAS BEEN ADDED TO DEPICT APPROXIMATE EXTENT OF RESTORATION REQUIRED FOR UTILITY CONNECTIONS TO THE SOUTHERN PROPERTY AND WITHIN LITTLEROCK ROAD. CONTRACTOR TO VERIFY AND NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN APPROXIMATE LINEWORK AND FIELD CONDITIONS PRIOR TO BEGINNING WORK IN THESE LOCATIONS. FOR SURVEYED INFORMATION, SEE SURVEY SV-01

[X] CONSTRUCTION NOTES

1. PROPOSED SITE IMPROVEMENTS SHOWN FOR REFERENCE ONLY
2. CLEAR, GRUB, AND EXCAVATE AS NECESSARY FOR SITE AND FRONTAGE IMPROVEMENTS (TYP). EXCESS MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LOCAL, COUNTY, STATE, AND FEDERAL LAWS AND REGULATIONS AT A CONTRACTOR PROVIDED WASTE SITE
3. HIGH VISIBILITY SILT FENCE: SEE EC-02
4. UTILIZE EXISTING DRIVEWAY FOR CONSTRUCTION ENTRANCE OR INSTALL STABILIZED CONSTRUCTION ENTRANCE PER DETAIL ON EC-02
5. PROTECT EXISTING UTILITY IN-PLACE. REPLACE IN-KIND IF DAMAGED
6. REMOVE AND DISPOSE OF EXISTING FENCE
7. REMOVE AND DISPOSE OF EXISTING GRAVEL DRIVEWAY
8. REMOVE AND DISPOSE OF EXISTING STRUCTURE INCLUDING BUILDING FOUNDATION, DECKS, PORCHES, CONCRETE PADS, AND AWNINGS. CONTRACTOR TO DISCONNECT AND REMOVE ALL UTILITIES SERVING THE BUILDING TO BE REMOVED
9. REMOVE AND DISPOSE OF EXISTING SHIPPING CONTAINER
10. REMOVE AND DISPOSE OF EXISTING HOSE BIB. WATER SERVICE LINE TO BE CAPPED AND ABANDONED IN PLACE IN ACCORDANCE WITH NOTE 8 OF THE GENERAL NOTES
11. REMOVE AND DISPOSE OF EXISTING CURB, GUTTER, AND DRIVEWAY APPROACHES ALONG THE PROPERTY FRONTAGE. SAWCUT SHOWN 2' FROM EDGE OF GUTTER
12. PROTECT FUTURE INFILTRATION GALLERIES DURING CONSTRUCTION. CONTRACTOR TO AVOID STOCKPILING MATERIAL AND PLACING HEAVY EQUIPMENT IN AREA OF FUTURE INFILTRATION TO MAXIMUM EXTENT PRACTICABLE
13. EXISTING POWER VAULT TO BE RELOCATED. RELOCATION TO BE COORDINATED WITH PSE PRIOR TO CONSTRUCTION
14. REMOVE & DISPOSE OF EXISTING BLOCK WALL
15. REMOVE & DISPOSE OF EXISTING CONCRETE DRIVEWAY
16. REMOVE & DISPOSE OF EXISTING ASPHALT DRIVEWAY
17. REMOVE & DISPOSE OF EXISTING POWER POLE, LIGHT, AND METER
18. PROTECT EXISTING UTILITY POLE AND GUY WIRE IN-PLACE
19. SAWCUT, REMOVE, AND REPLACE SIDEWALK TO NEAREST CONTROL JOINT
20. REMOVE AND REINSTALL EXISTING FENCE AS NECESSARY FOR WATER MAIN INSTALLATION
21. PROTECT EXISTING FENCE IN-PLACE. REPLACE IN-KIND IF DAMAGED

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 11:56:58am - User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 EC-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

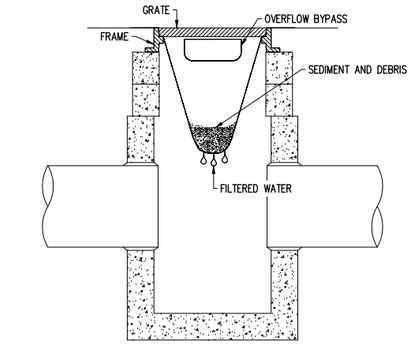
TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
EROSION CONTROL & DEMOLITION PLAN

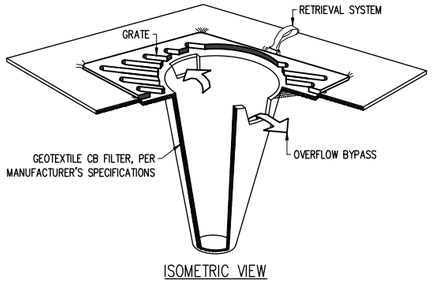
SHEET
EC-01

GENERAL EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL FOLLOW EROSION CONTROL PRACTICES OUTLINED IN THE MOST CURRENT EDITION OF THE CITY OF TUMWATER DRAINAGE DESIGN AND EROSION CONTROL MANUAL AND THE SWPPP.
2. EROSION CONTROL MEASURES ARE NOT LIMITED TO THE ITEMS ON THESE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES. NO SILTATION OF EXISTING OR PROPOSED DRAINAGE FACILITIES SHALL BE ALLOWED. CARE SHALL BE TAKEN TO PREVENT MIGRATION OF SILTS TO OFF-SITE PROPERTIES.
3. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE BEGINNING OF CONSTRUCTION. THE PROJECT ENGINEER AND THE REVIEWING AGENCY SHALL INSPECT AND APPROVE THE INSTALLATION OF EROSION CONTROL MEASURES PRIOR TO BEGINNING CONSTRUCTION.
   A. INSTALL INLET SEDIMENTATION AS SPECIFIED AT ALL CATCH BASIN LOCATIONS IMMEDIATELY UPON ARRIVAL AT PROJECT/CONSTRUCTION SITE.
   B. STABILIZED CONSTRUCTION ENTRANCE SHALL CONFORM TO DETAIL ON THIS SHEET. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ALL INGRESS/EGRESS POINTS TO CONSTRUCTION SITE.
4. ALL EROSION/SEDIMENTATION CONTROL FACILITIES SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL CONSTRUCTION IS COMPLETE AND THE SITE HAS BEEN STABILIZED. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, REPLACEMENT, AND ADDITIONS TO THE SYSTEM AS REQUIRED BY THE OWNER, ENGINEER, OR THE AUTHORITY HAVING JURISDICTION.
5. THE CONTRACTOR SHALL MAKE A DAILY SURVEILLANCE OF ALL EROSION CONTROL MEASURES AND MAKE ANY NECESSARY REPAIRS OR ADDITIONS TO THE EROSION CONTROL MEASURES AS REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL EROSION CONTROL MEASURES AS DETERMINED NECESSARY BY THE INSPECTOR AND/OR PROJECT ENGINEER. FAILURE TO COMPLY WITH ALL LOCAL AND STATE EROSION CONTROL REQUIREMENTS MAY RESULT IN CIVIL PENALTIES BEING LEVIED AGAINST THE CONTRACTOR.
6. PRIOR TO CLEARING AND GRADING THE CONTRACTOR SHALL PROTECT TREES TO BE SAVED WITH HIGH VISIBILITY FENCING AT THE ROOT PROTECTION DELINEATION OR OTHERWISE PROTECTED AS DIRECTED BY THE ENGINEER, CITY STAFF, OR OWNERS REPRESENTATIVE. CLEARING AND GRADING LIMITS SHALL BE STAKED IN THE FIELD PRIOR TO EXCAVATION.
7. ALL STORM DRAINAGE INLETS RECEIVING RUNOFF FROM THE PROJECT DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER WILL BE FILTERED BEFORE ENTERING THE CONVEYANCE SYSTEM.
8. ALL OFF-SITE CATCH BASINS IMMEDIATELY ADJACENT TO THE PROPOSED SITE SHALL BE PROTECTED FROM SILTATION.
9. THE CONSTRUCTION OF TRENCHES (E.G., PIPES, UNDERGROUND UTILITY LINES AND STRUCTURES) SHALL BE SUBJECT TO THE FOLLOWING CRITERIA:
   A. NO MORE THAN 300 FEET OF TRENCH ON A DOWNSLOPE OF MORE THAN FIVE PERCENT SHALL BE OPENED AT ONE TIME.
   B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
10. TRENCH DEWATERING DEVICES SHALL BE DISCHARGED IN A MANNER THAT WILL NOT ADVERSELY AFFECT STREAMS, DRAINAGE SYSTEMS, OR OFF-SITE PROPERTIES.
11. TRACKING OF SOIL, MUD, OR DEBRIS OFF-SITE IS NOT ALLOWED. SOIL, MUD, OR DEBRIS TRACKED ONTO A PUBLIC ROADWAY, SHALL BE REMOVED BY THE END OF THAT WORKING DAY. TO PREVENT THE TRACKING OF SOIL, MUD, OR DEBRIS ONTO PUBLIC ROADWAYS, SWEEPING OR WASHING OF THE VEHICLE'S TIRES MAY BE REQUIRED PRIOR TO ENTERING A PUBLIC ROADWAY.
12. ALL DISTURBED AREAS SHALL BE HYDROSEEDED WITH EROSION CONTROL SEED MIX. INCLUDING BUT NOT LIMITED TO ROADWAY EMBANKMENTS, SHOULDERS, UTILITY EASEMENTS, STAGING AREAS, CONSTRUCTED WETLANDS AND CUT/FILL SLOPES.
13. ALL SEEDED OR SODDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE VEGETATIVE COVERAGE IS COMPLETE. AREAS SHALL BE REPAIRED, RESEEDED, AND FERTILIZED AS REQUIRED.
14. DROP-IN CATCH BASIN FILTERS MAY BE USED IN PLACE OF OTHER STANDARD INLET PROTECTION PRACTICES. THIS INLET PROTECTION TECHNOLOGY CAN BE USED IN SITUATIONS WHERE RIGHT-OF-WAY FLOODING WOULD BE PROBLEMATIC.
15. TO MAINTAIN FUNCTION, THE CONTRACTOR SHALL REMOVE AND CLEAN OR REPLACE FILTERS AFTER EACH STORM EVENT. CONTACT THE JURISDICTION TO DETERMINE ITS ACCEPTANCE OF SPECIFIC FILTER PRODUCTS, PRIOR TO INSTALLATION.
16. NO MATERIAL SHALL BE STOCKPILED ON PAVEMENT WITHOUT AUTHORIZATION FROM THE PROJECT ENGINEER OR OWNERS REPRESENTATIVE WHICH WILL BE CONDITIONAL ON IMPLEMENTATION OF A PROCEDURE TO PREVENT SEDIMENT TRANSPORT.
17. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED OR AFTER THE MEASURES ARE NO LONGER NEEDED. SEDIMENT COLLECTED IN TRAPS, PONDS, OR SILT FENCE SHALL BE REMOVED AND DISPOSED IN AN APPROVED MANNER OR STABILIZED ON SITE. DISTURBED SOIL AREAS RESULTING FROM SEDIMENT REMOVAL SHALL BE PERMANENTLY STABILIZED WITHIN SEVEN (7) DAYS.

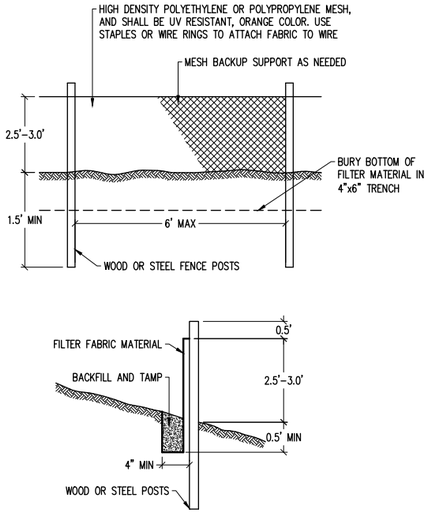


CROSS SECTION

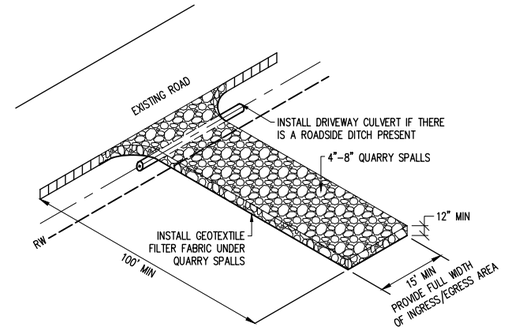


ISOMETRIC VIEW

INLET PROTECTION
NTS



HIGH VISIBILITY SILT FENCE
NTS



NOTES
1. INSTALL CONSTRUCTION ENTRANCE AT LOCATION WHERE ACCESS OFF OF A PAVED ROADWAY BEGINS.
2. DRIVEWAY SHALL MEET THE REQUIREMENTS OF THE PERMITTING AGENCY
3. IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD

STABILIZED CONSTRUCTION ENTRANCE
NTS

CALL BEFORE YOU DIG
THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 11:52:04am - User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 EC-02.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
--
SUBMITTAL DATES
OTB DATE
--

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

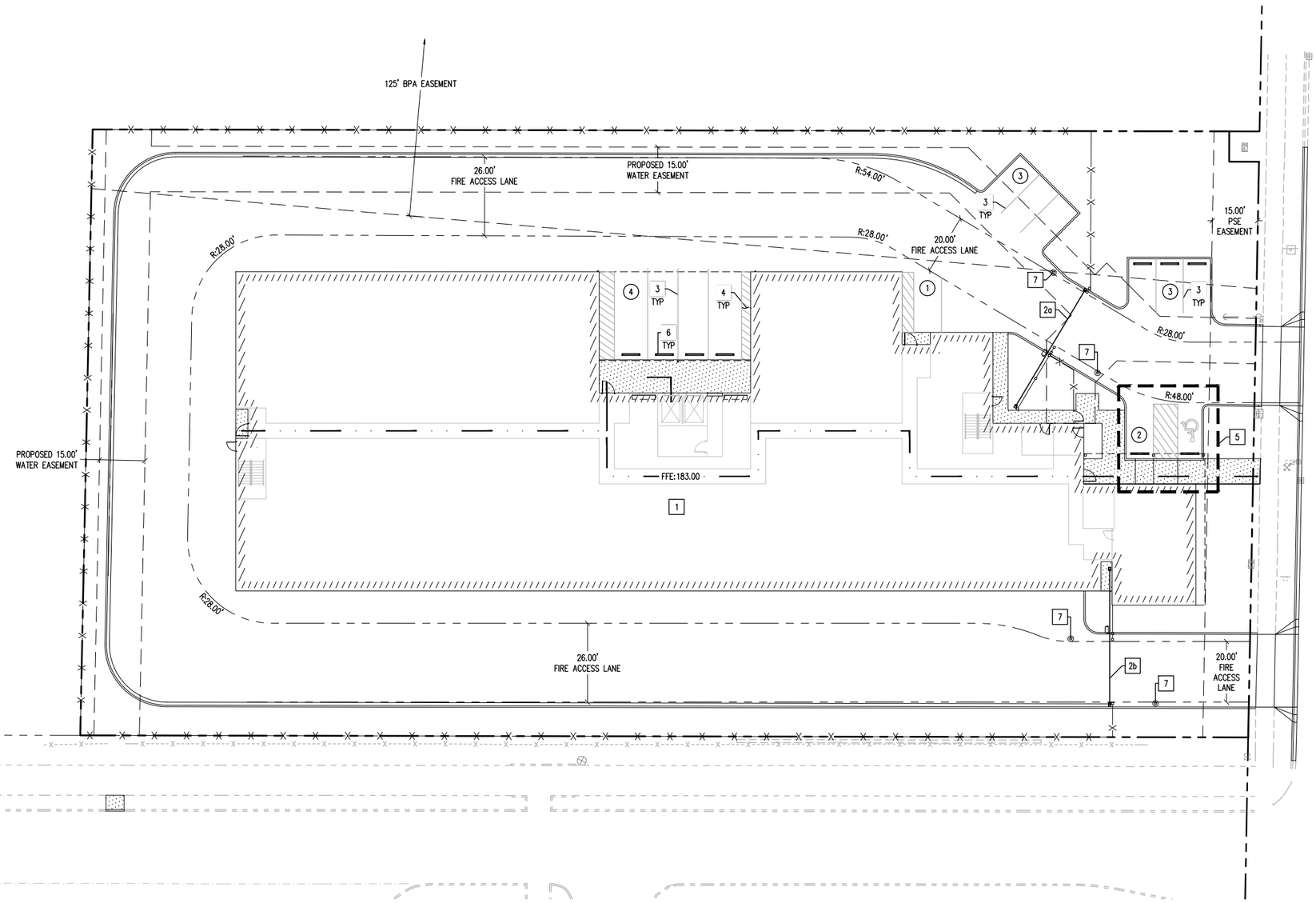
STAMP
WHITNEY E. DUMP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
EROSION CONTROL NOTES & DETAILS

SHEET
EC-02



N

0 20 40

SCALE IN FEET

LEGEND

- PROPERTY LINE
- EASEMENT
- SETBACK LINE
- EXISTING CURB
- PROPOSED BUILDING
- ROOF OVERHANG
- FIRE LANE
- 8' TALL HIGH SECURITY PERIMETER FENCE: SEE ARCHITECTURAL PLANS
- EXTRUDED CONCRETE CURB
- CEMENT CONCRETE CURB & GUTTER
- CEMENT CONCRETE SIDEWALK
- (XX) STALL COUNT
- ADA PATHWAY

X CONSTRUCTION NOTES

1. STORAGE FACILITY: SEE ARCHITECTURAL PLANS
2. SECURITY GATE: SEE ARCHITECTURAL PLANS
   a. ENTRY & EXIT
   b. EXIT ONLY
3. 4" WIDE STRIPE
   2 COATS OF WHITE PAINT
   W/ 7 MIL DFT PER COAT (MIN)
4. 4" WIDE 45° STRIPING AT 48" O.C.
   2 COATS OF WHITE PAINT
   W/ 7 MIL DFT PER COAT (MIN)
5. ACCESSIBLE PARKING STALL: SEE SP-03
6. CEMENT CONCRETE WHEELSTOP: SEE SP-03
7. KEY PAD FOR SECURITY GATE: SEE ARCHITECTURAL PLANS

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 13, 2023 - 4:39:19pm - User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SP-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

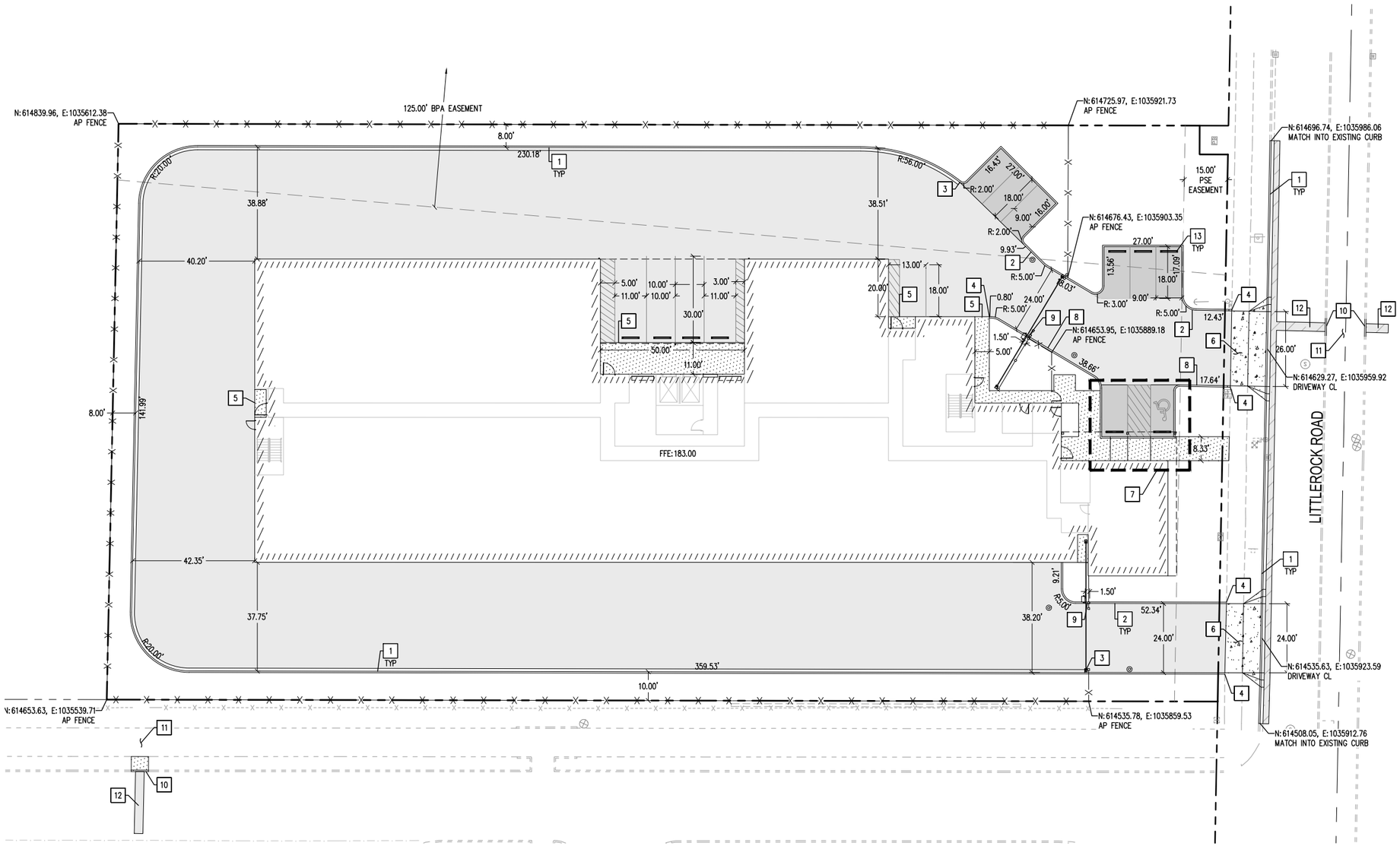
STAMP
WHITNEY E. DUMP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
SITE PLAN

SHEET
SP-01



N

0 20 40

SCALE IN FEET

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CURB
- PROPOSED BUILDING
- 8' TALL PERIMETER FENCE: SEE ARCHITECTURAL PLANS
- CONCRETE CURB AS NOTED
- CEMENT CONCRETE CURB & GUTTER PER TUMWATER STD. DWG ST-7: SEE SP-04
- CEMENT CONCRETE SIDEWALK PER TUMWATER STD. DWG. ST-4: SEE SP-04
- MODIFIED WSDOT TYPE 3 CONCRETE DRIVEWAY: SEE SP-03
- HEAVY DUTY ASPHALT PAVEMENT PER SECTION ON SP-03
- LIGHT DUTY ASPHALT PAVEMENT PER SECTION ON SP-03
- MATCH EXISTING ASPHALT PAVEMENT SECTION IN ROW

X CONSTRUCTION NOTES

1. CEMENT CONCRETE CURB & GUTTER PER TUMWATER STD. DWG. ST-7: SEE SP-04
2. EXTRUDED CONCRETE CURB: SEE SP-03
3. TRANSITION BETWEEN CURB & GUTTER AND EXTRUDED CURB
4. CHAMFER CURB AT 2:1
5. SIDEWALK FLUSH WITH PAVING
6. MODIFIED WSDOT TYPE 3 CONCRETE DRIVEWAY: SEE SP-03
7. ACCESSIBLE PARKING STALL: SEE SP-03
8. BARRIER CURB: SEE SP-03
9. PROVIDE CURB CUT FOR SLIDING GATE
10. MATCH EXISTING CURB IN KIND
11. RESTORE EXISTING LANDSCAPING IN KIND
12. PERPENDICULAR TRENCH RESTORATION PER TUMWATER STD. DWG. ST-14: SEE SP-04
13. PRECAST CONCRETE WHEESTOP: SEE SP-03

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 11:57:24am – User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SP-02.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

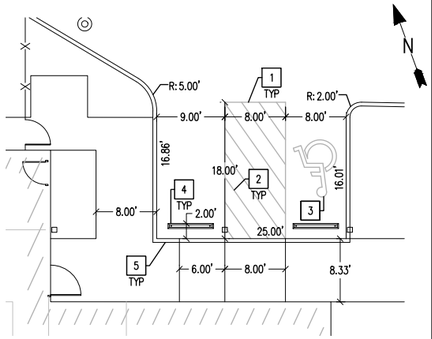
STAMP
WHITNEY E. DUSHAW
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
HORIZONTAL CONTROL & PAVING PLAN

SHEET
SP-02

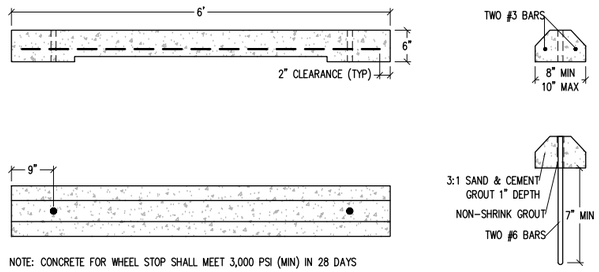


X CONSTRUCTION NOTES

1. 4" WIDE STRIPING
   2 COATS OF WHITE PAINT (MIN)
   W/ 7 MIL DFT PER COAT
2. 4" WIDE 45° STRIPING AT 48" O.C.
   2 COATS OF WHITE PAINT (MIN)
   W/ 7 MIL DFT PER COAT
3. ACCESSIBILITY SYMBOL: PER DETAIL THIS SHEET
4. PRECAST CEMENT CONCRETE WHEELSTOP: PER DETAIL THIS SHEET
5. FOR CURB AND GRADING INFORMATION, SEE GRADING ENLARGEMENT: SEE CG-01

ACCESSIBLE PARKING STALL

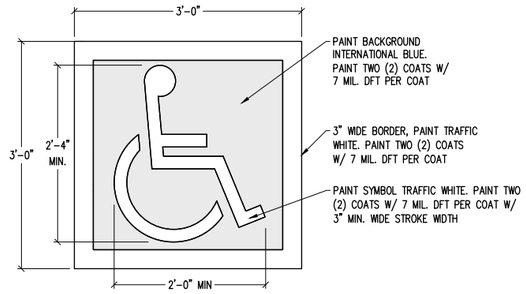
1" = 10'



NOTE: CONCRETE FOR WHEEL STOP SHALL MEET 3,000 PSI (MIN) IN 28 DAYS

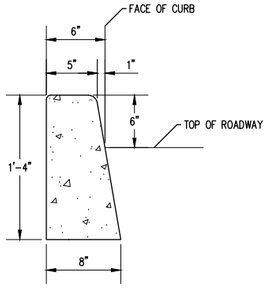
PRECAST CEMENT CONCRETE WHEELSTOP

NTS



ACCESSIBILITY SYMBOL

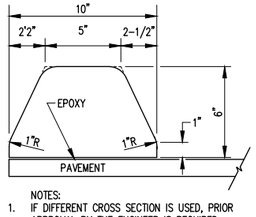
NTS



NOTES:
1. CONCRETE SHALL BE 4,000 PSI.
2. EXPANSION JOINT MATERIAL TO BE ⅜" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE SPACE EVERY 15'.

CEMENT CONCRETE BARRIER CURB

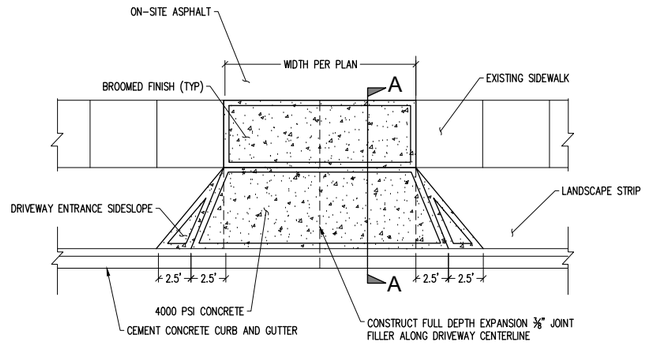
NTS



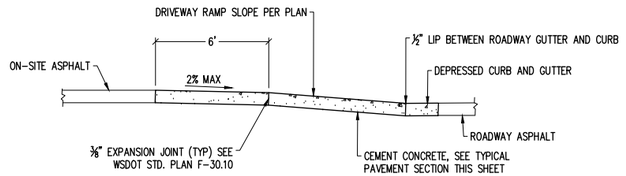
NOTES:
1. IF DIFFERENT CROSS SECTION IS USED, PRIOR APPROVAL BY THE ENGINEER IS REQUIRED.
2. CONCRETE SHALL BE 4,000 PSI

EXTRUDED CURB

NTS



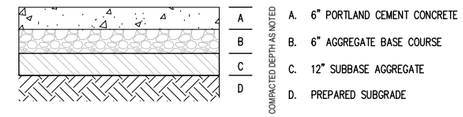
DRIVEWAY PLAN VIEW



DRIVEWAY CROSS SECTION A-A

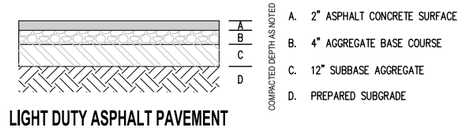
MODIFIED WSDOT TYPE 3 CONCRETE DRIVEWAY

NTS



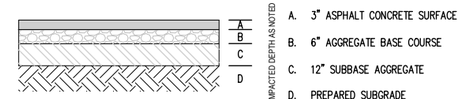
A. 6" PORTLAND CEMENT CONCRETE
B. 6" AGGREGATE BASE COURSE
C. 12" SUBBASE AGGREGATE
D. PREPARED SUBGRADE

CEMENT CONCRETE PAVEMENT



A. 2" ASPHALT CONCRETE SURFACE
B. 4" AGGREGATE BASE COURSE
C. 12" SUBBASE AGGREGATE
D. PREPARED SUBGRADE

LIGHT DUTY ASPHALT PAVEMENT



A. 3" ASPHALT CONCRETE SURFACE
B. 6" AGGREGATE BASE COURSE
C. 12" SUBBASE AGGREGATE
D. PREPARED SUBGRADE

HEAVY DUTY ASPHALT PAVEMENT

NOTES
1. MATERIALS, COMPACTION, AND CONSTRUCTION OF PAVEMENTS FOR THE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE GEOTECHNICAL ENGINEERING REPORT THAT WAS FINALIZED BY SOUTH SOUND GEOTECHNICAL CONSULTING ON MAY 11, 2023 (THE GEOTECH REPORT).

TYPICAL PAVEMENT SECTIONS

NTS

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

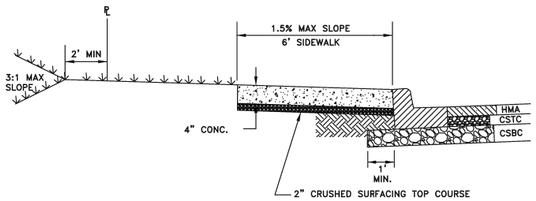
STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

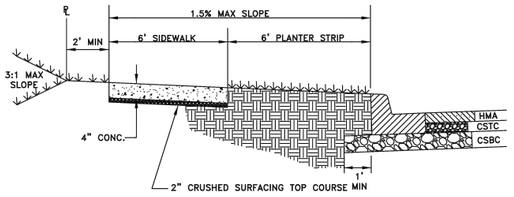
SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
SITE & PAVING DETAILS

SHEET
SP-03





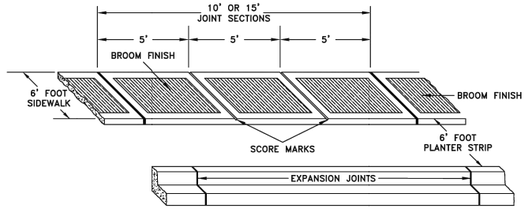
GENERAL NOTES:

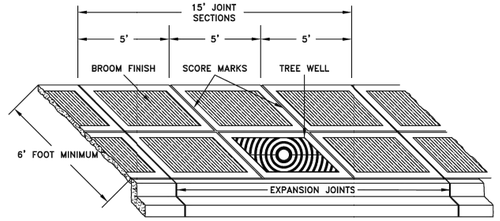
1. FORMS SHALL BE WOOD OR METAL AND SHALL EXTEND FOR THE FULL DEPTH OF THE CONCRETE.
2. ALL FORMS SHALL BE CLEAN, STRAIGHT, FREE FROM WARP, AND OF SUFFICIENT STRENGTH TO RESIST THE PRESSURE OF THE CONCRETE WITHOUT SPRING.
3. CONCRETE DRIVEWAYS REQUIRE A MINIMUM DEPTH OF 6".
4. THE TOP OR TOE OF ALL SLOPES SHALL BEGIN 2' BACK OF THE SIDEWALK.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

SIDEWALK

APPROVED BY:				DWG. NO.
CITY ENGINEER				ST-4
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	MW	JAN. 2015	





* USE DECORATIVE SCORE MARKS FOR NEW SIDEWALK IN:
CAPITOL BOULEVARD – BREWERY DISTRICT – TOWN CENTER

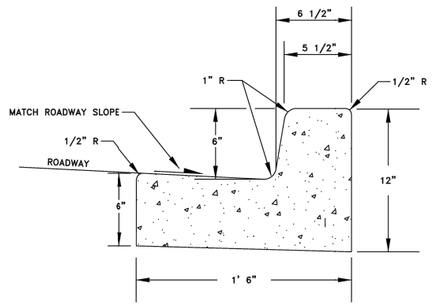
GENERAL NOTES:

1. FORMS SHALL BE WOOD OR METAL AND SHALL EXTEND FOR THE FULL DEPTH OF THE CONCRETE.
2. ALL FORMS SHALL BE STRAIGHT, FREE FROM WARP AND OF SUFFCIENT STRENGTH TO RESIST THE PRESSURE OF THE CONCRETE WITHOUT SPRING.
3. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE AND INSTALLED FLUSH OR 1/4" BELOW FINISH GRADE.
4. FORM AND SUBGRADE INSPECTION ARE REQUIRED BEFORE PLACING CONCRETE.
5. SCORE MARKS SHALL BE 1/8" TO 1/4" WIDE AND A MINIMUM OF 1" DEEP.
6. EXPANSION JOINTS SHALL BE INSTALLED IN THE CURB & GUTTER AND SIDEWALK AT THE PC AND PT FOR ALL CURB RETURNS. EXPANSION JOINTS SHALL BE PLACED IN THE SIDEWALK AT THE SAME LOCATIONS AS THOSE IN THE CURB & GUTTER WHEN THE SIDEWALK IS ADJACENT TO CURB & GUTTER, OR UNLESS OTHERWISE DIRECTED BY THE CITY.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

SIDEWALK SPACING
EXPANSION JOINTS & SCORE MARKS

APPROVED BY:				DWG. NO.
CITY ENGINEER				ST-5
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	MW	JAN. 2015	



TYPE 1

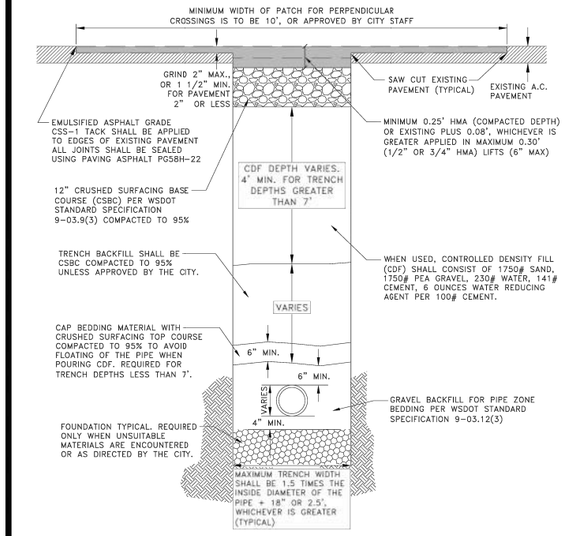
GENERAL NOTES:

1. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOLDED. JOINT FILLER FULL THICKNESS OF CONCRETE SPACING.
2. FORM AND SUBGRADE INSPECTION REQUIRED BEFORE PLACING CONCRETE.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

CEMENT CONCRETE CURB & GUTTER

APPROVED BY:				DWG. NO.
CITY ENGINEER				ST-7
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	MW	JAN. 2015	



GENERAL NOTES:

1. ALL MATERIALS EXCEPT H.M.A. SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY AS DETERMINED BY ASTM D1557.
2. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF TUMWATER STANDARDS.
3. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
4. SAW CUT PAVEMENT TO MAX. TRENCH WIDTH. BACKFILL AND PAVE TO TOP OF EXISTING PAVEMENT FOR TRENCH WIDTH. ALLOW 24 HOURS MINIMUM FOR TRENCH PATCH TO CURE. GRIND AND PAVE FINAL PATCH AS SHOWN.

ST-14.DWG

CITY OF TUMWATER, WASHINGTON
TRANSPORTATION AND ENGINEERING DEPARTMENT

PERPENDICULAR TRENCH RESTORATION
ARTERIALS, BLVDS. & COLLECTORS

APPROVED			DWG. NO.
ENGINEERING SERVICES MANAGER			ST-14
DES	DWN	CK'D	DATE
T.E.D.	JN	BH	AUG 2020

REVISIONS

DATES	

Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

12/04/2023

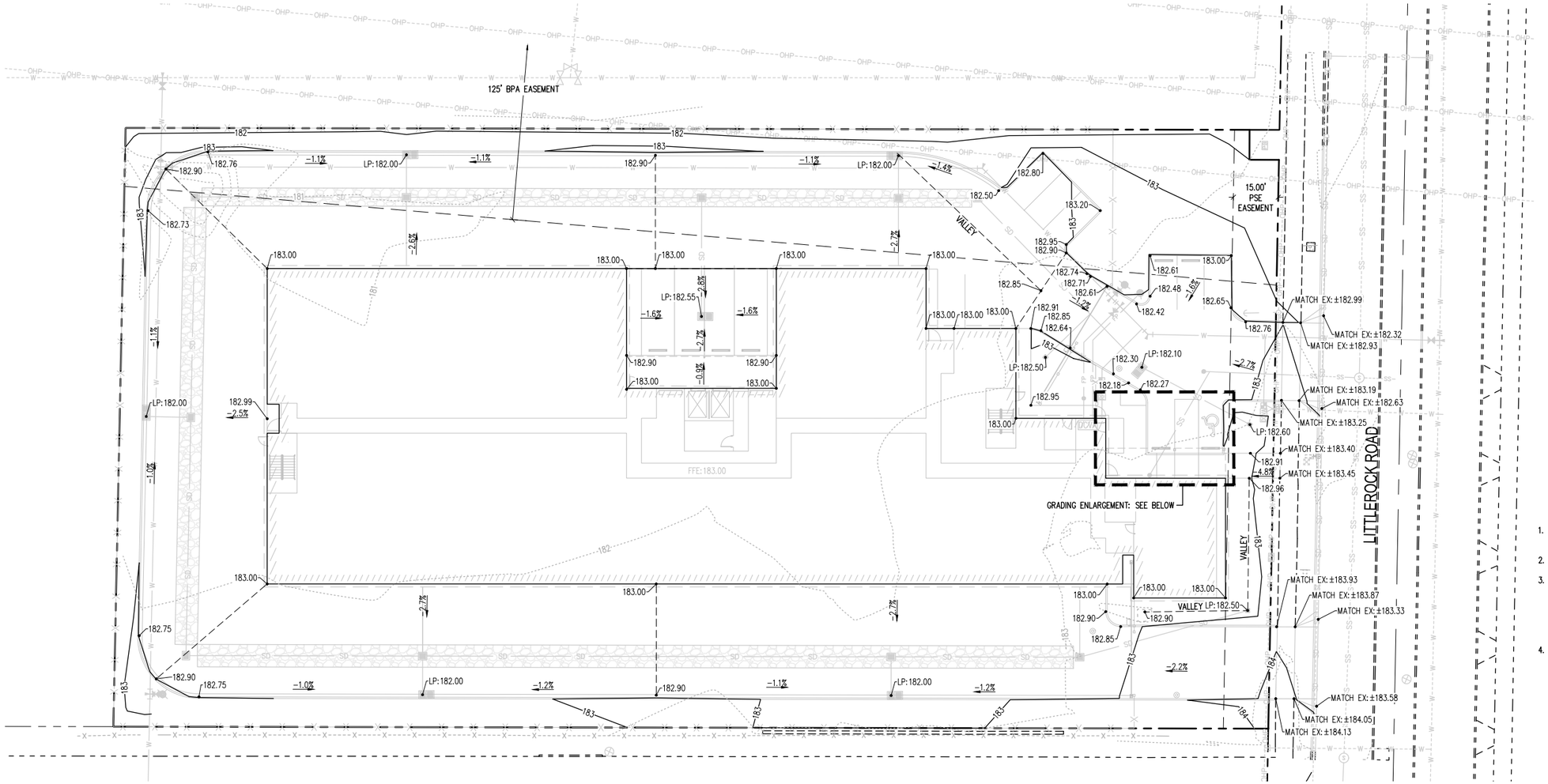
PROJECT
SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
SITE & PAVING DETAILS

SHEET
SP-04

Dec 04, 2023 11:57:33am – User: whitney
N:\2 – PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SP-03.DWG



N

0 20 40

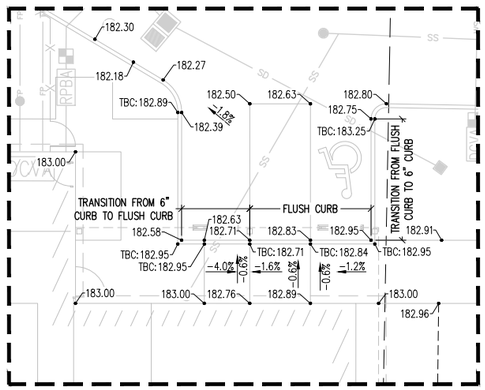
SCALE IN FEET

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CONTOURS
- PROPOSED CONTOURS
- GRADE BREAK
- EXISTING CURB
- EXISTING STORM LINE
- EXISTING CATCH BASIN
- PROPOSED BUILDING
- CONCRETE CURB
- CONCRETE CURB & GUTTER
- STORM LINE
- CATCH BASIN
- XX.XX SPOT ELEVATION
- -X.X% SLOPE LABEL

GENERAL NOTES

1. SPOT ELEVATIONS REPRESENT FINISHED GRADE AT FLOW LINE UNLESS OTHERWISE NOTED
2. CATCH SLOPES TO EXISTING GRADE SHALL NOT EXCEED 3:1
3. CONTRACTOR SHALL NOT ALLOW WATER TO POND AT SUBGRADE OR BASE MATERIAL ADJACENT TO CURB INLETS AND CATCH BASINS PRIOR TO PLACEMENT OF PAVEMENT. TEMPORARY PROVISIONS SUCH AS DEWATERING AND INSTALLATION OF SUBDRAINS SHALL BE TAKEN TO KEEP THE SUBGRADE DRY DURING CONSTRUCTION.
4. ACRONYMS FOR SPOT ELEVATIONS:
   - BW: BOTTOM OF WALL
   - HP: HIGH POINT
   - LP: LOW POINT
   - MATCH EX: MATCH EXISTING GRADE
   - TBC: TOP BACK OF CURB
   - TW: TOP OF WALL
   - SW: SIDEWALK



GRADING ENLARGEMENT

1" = 10'

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 11:52:54am - User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 CG-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

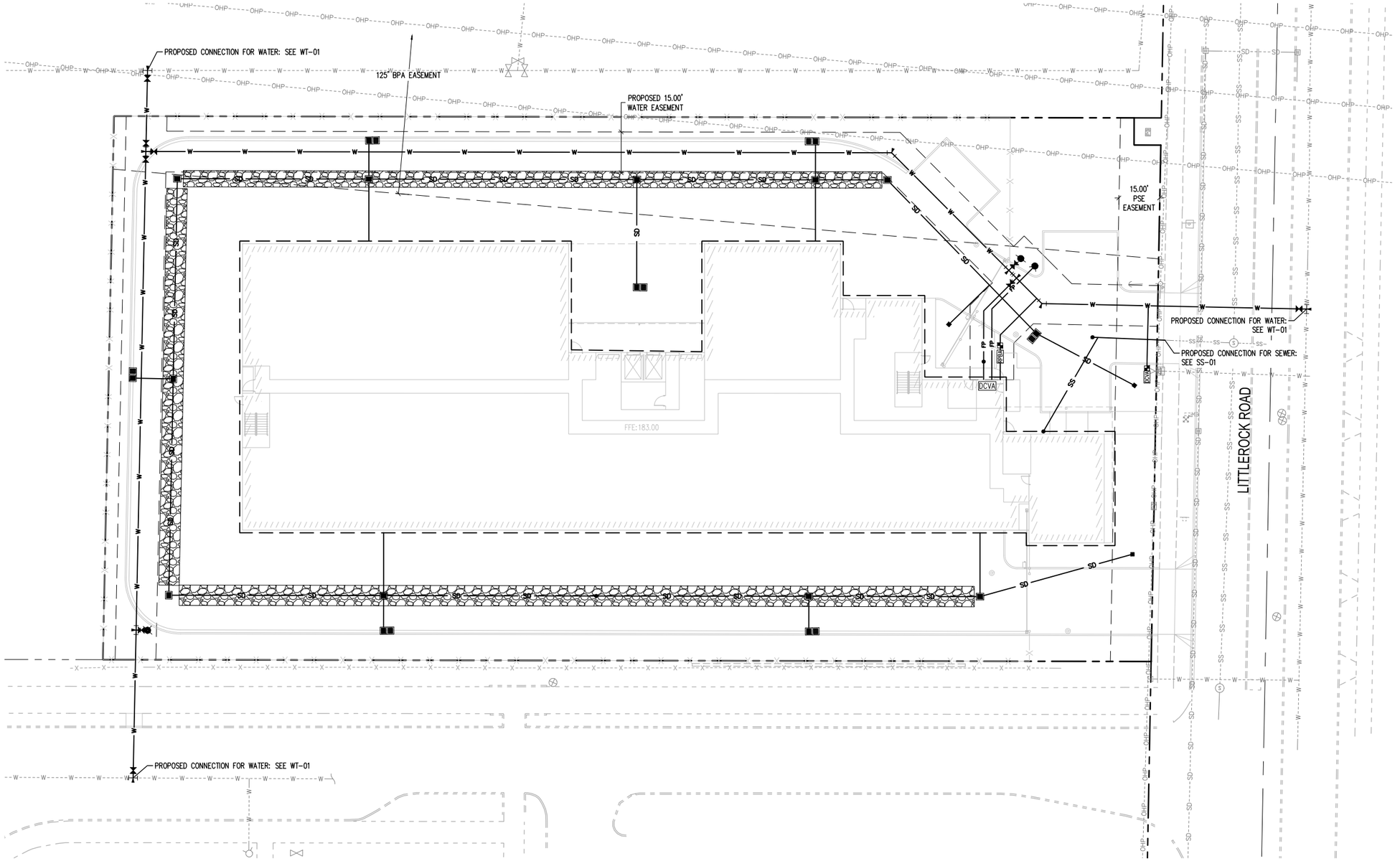
STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
GRADING PLAN

SHEET
CG-01



N

0 20 40

SCALE IN FEET

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CURB
- EXISTING OVERHEAD POWER LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING STORM LINE
- EXISTING POWER POLE
- EXISTING POWER VAULT
- EXISTING PHONE PEDESTAL
- EXISTING CATCH BASIN
- EXISTING SEWER MANHOLE
- EXISTING WATER METER
- EXISTING GATE VALVE
- PROPOSED BUILDING
- SD STORM LINE
- W WATER LINE
- WS WATER SERVICE LINE
- SS SEWER LINE

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

REVISIONS

PROJECT NO.
163.001

DRAWN
C. DAHM

CHECKED
–

SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP

WHITNEY E. DUPUP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER

12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

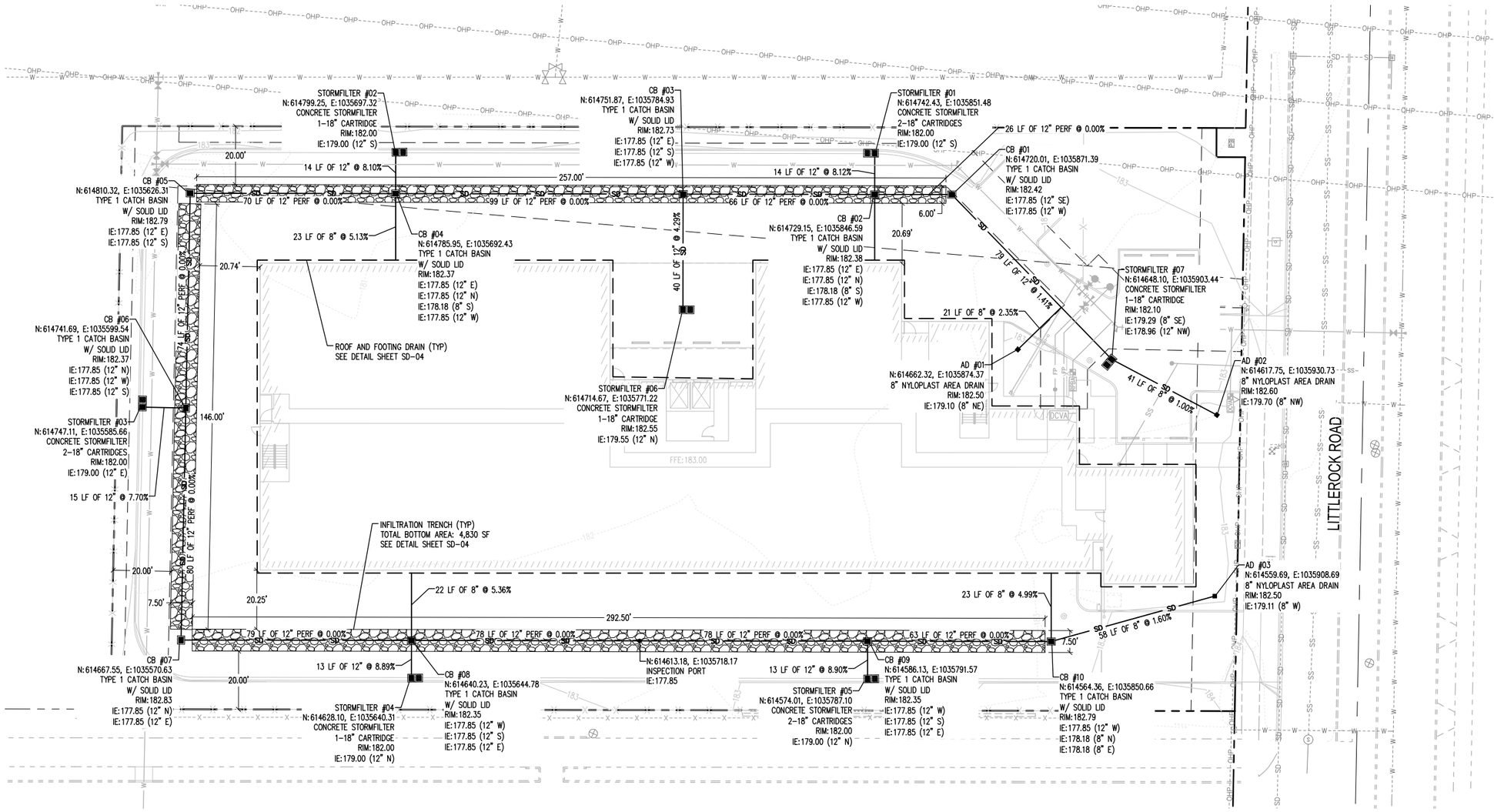
SHEET TITLE

UTILITY PLAN

SHEET

UT-01

Dec 04, 2023 11:58:08am – User whitney
N:\2 – PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 UT-01.DWG



LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING STORM LINE
- EXISTING CATCH BASIN
- EXISTING CURB
- PROPOSED BUILDING
- CONCRETE CURB
- CONCRETE CURB & GUTTER
- WATER LINE
- WATER SERVICE LINE
- SEWER LINE
- SD — ADS N-12 STORM LINE UNLESS OTHERWISE NOTED
- ROOD DOWNSPOUT & FOTING DRAIN: SEE SD-04
- INFILTRATION TRENCH: SEE SD-04
- TYPE 1 CATCH BASIN PER WSDOT STD. PLAN B-5.20-03 SEE SD-05
- CONCRETE CATCH BASIN STORMFILTER SEE SD-04
- NYLOPLAST DRAIN BASIN WITH DOMED LID SEE SD-04
- INSPECTION PORT: SEE SD-04

GENERAL NOTES

1. ALL STORMFILTER CB'S TO HAVE ANTI-DUMP MESSAGE PER TUMWATER STD. DWG. SD-1: SEE SD-04

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 11:58:23am – User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SD-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUMP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

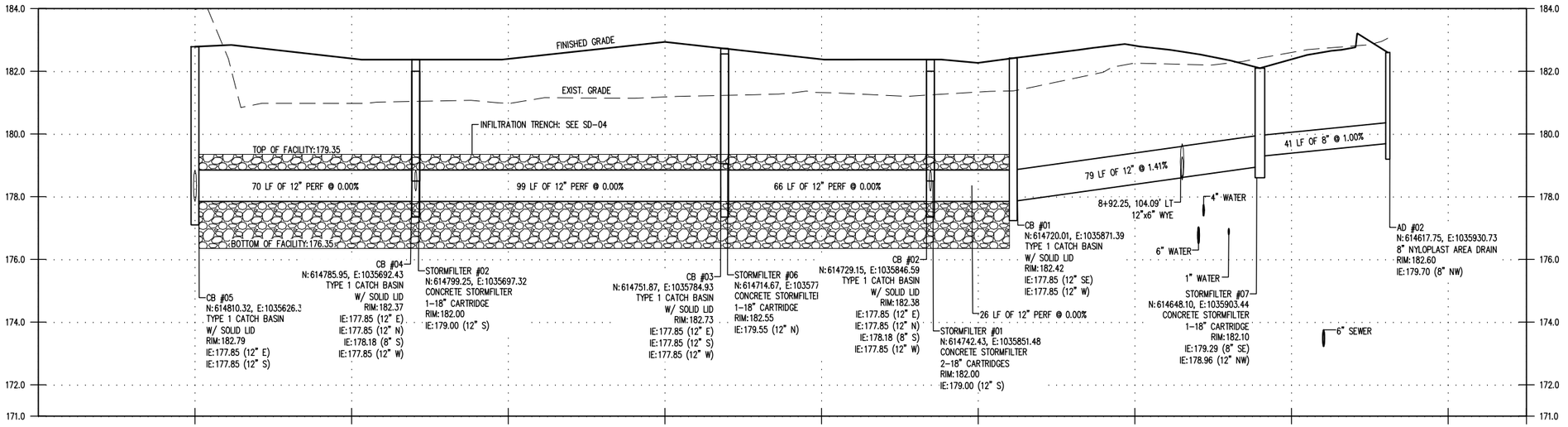
SHEET TITLE
STORMWATER PLAN

SHEET
SD-01

V 0 2 4

H 0 20 40

SCALE IN FEET



STORM PROFILE NORTH

REVISIONS

PROJECT NO.
163.001

DRAWN
C. DAHM

CHECKED
–

SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

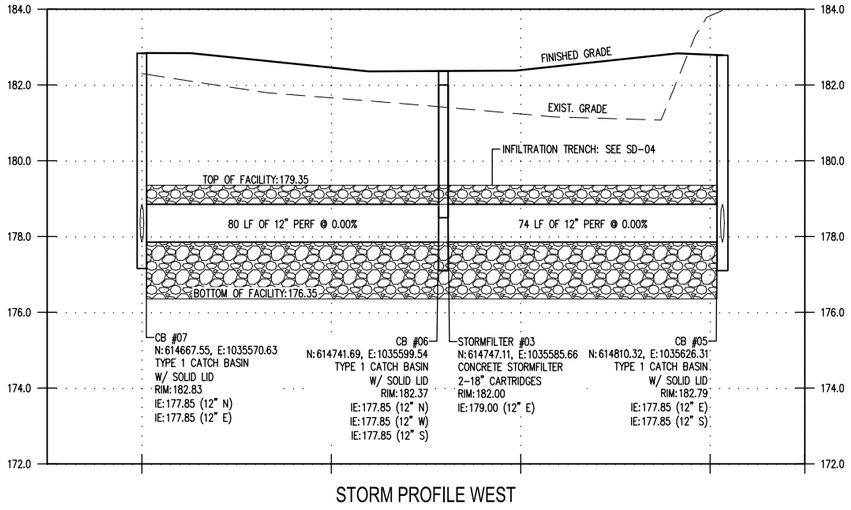
STAMP
WHITNEY E. DUMAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

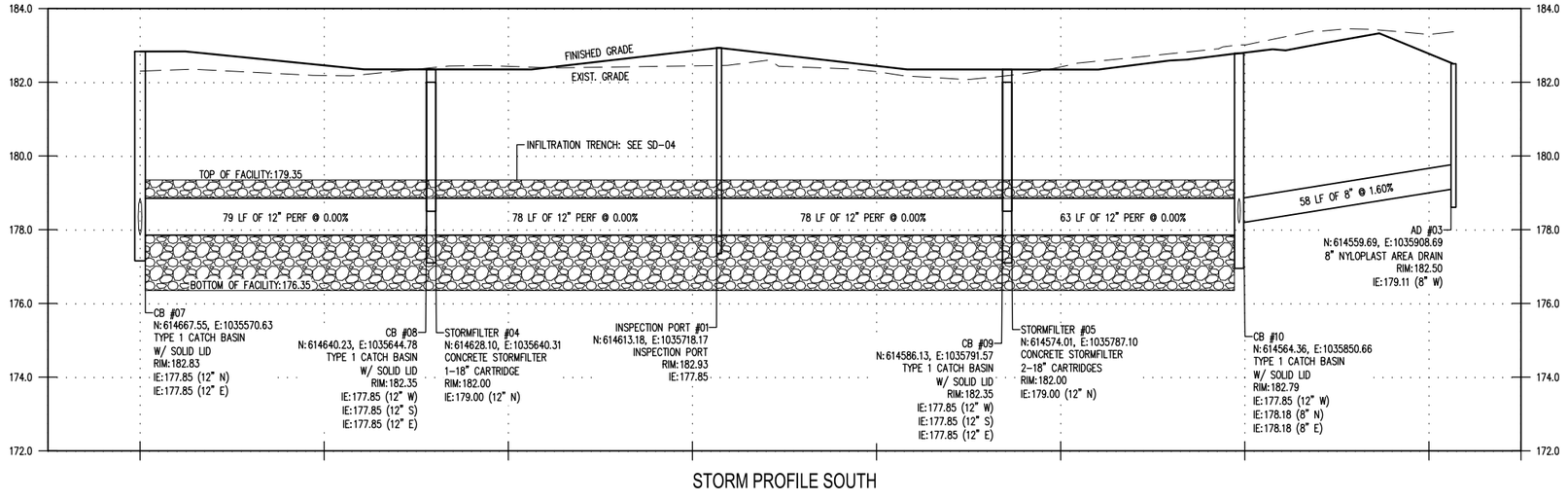
TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
STORMWATER PROFILES

SHEET
SD-02



STORM PROFILE WEST



STORM PROFILE SOUTH

V
0 2 4

H
0 20 40

SCALE IN FEET

REVISIONS

PROJECT NO.
163.001

DRAWN
C. DAHM

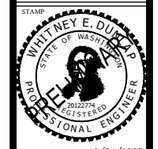
CHECKED
–

SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP



12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

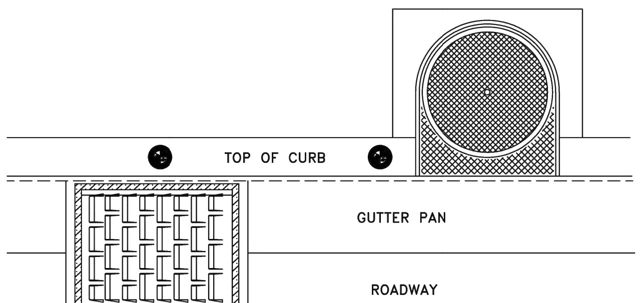
SHEET TITLE

STORMWATER PROFILES

SHEET

SD-03

Dec 04, 2023 11:58:35am – User whitney
N:\2 – PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SD-02.DWG



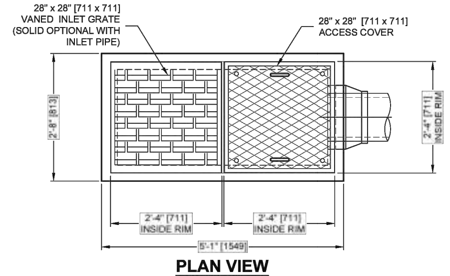
GENERAL NOTES:

1. ALL DECALS SHALL BE DAS #4.0 TUM-FW MANUFACTURER SPECIFIC.
2. DECALS AND DAS CURB MARKER ADHESIVE (#RS-222) SHALL BE PURCHASED AND AFFIXED BY THE CONTRACTOR/DEVELOPER.
3. DECALS SHALL BE ADHERED TO CLEAN, DRY CONCRETE (EXCLUSIVELY WITH SPECIFIED ADHESIVE) A MINIMUM OF 1" FROM EDGE OF CURB.
4. FINISHED PRODUCT SHALL BE INSPECTED AS PART OF THE CITY'S FINAL WALK THROUGH PROCESS.

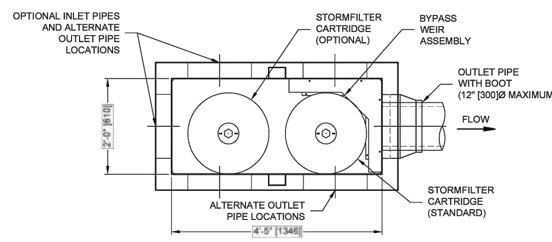
CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

CATCH BASIN ANTI-DUMP MESSAGE TYPE II

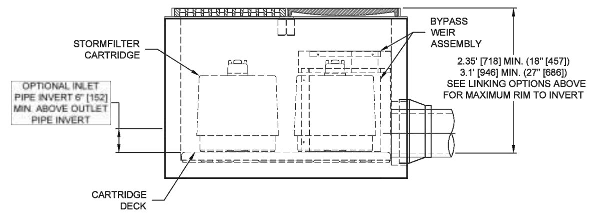
APPROVED				DWG. NO.
CITY ENGINEER				SD-1
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	FEB. 2014	



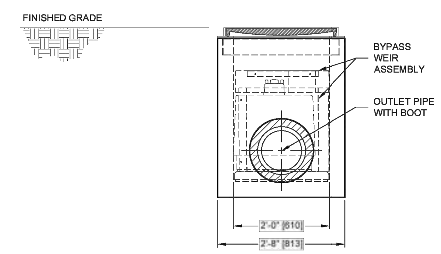
PLAN VIEW



PLAN VIEW
CASTINGS NOT SHOWN



ELEVATION VIEW



RIGHT SIDE VIEW

The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,624,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

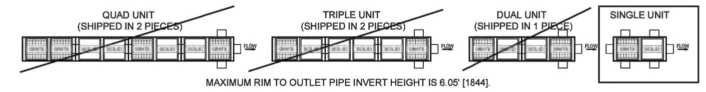
STORMFILTER DESIGN NOTES

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

CARTRIDGE SIZE (in. [mm])	27 [686]			18 [457]		
RECOMMENDED HYDRAULIC DROP (ft. [mm])	3.05 [930]			2.3 [701]		
SPECIFIC FLOW RATE (gpm/sf [L/s/m²])	2 [1.36]	1.67* [1.13]*	1 [0.68]	2 [1.36]	1.67* [1.13]*	1 [0.68]
CARTRIDGE FLOW RATE (gpm [L/s])	22.5 [1.4]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.47]

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

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



MAXIMUM RIM TO OUTLET PIPE INVERT HEIGHT IS 6.05' [1844].

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. ALTERNATE DIMENSIONS ARE MILLIMETERS [mm] UNLESS NOTED OTHERWISE.
4. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
5. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES [178]. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM [L/S]) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF [m²]).
8. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 0'-2" [51] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

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

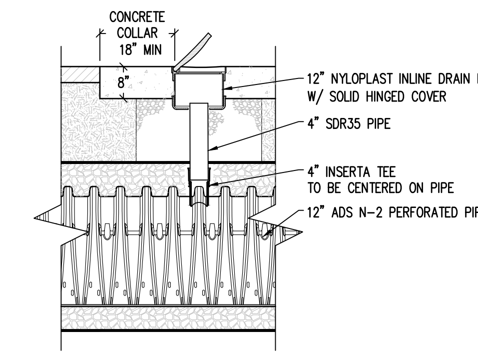
SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			see plans for elevations
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
CARTRIDGE SIZE (27, 18)			
CARTRIDGE FLOW RATE			
MEDIA TYPE (PERLITE, ZPG, PSORB)			
NUMBER OF CARTRIDGES REQUIRED			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES/SPECIAL REQUIREMENTS:			

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
11815 NE Glenn Widing Drive, Portland, OR 97220
800-548-4667 503-240-3393 800-561-1271 FAX

CONCRETE CATCHBASIN
STORMFILTER
STANDARD DETAIL

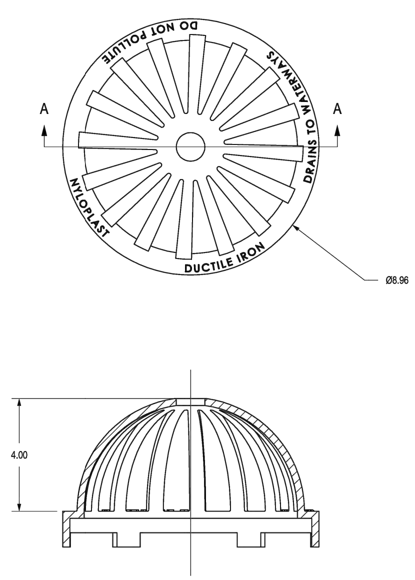
I:\COMMON\CAD\TREATMENT\10 STORMFILTER\40 STANDARD DRAWINGS\SFCB\SFCB-C\DWG\WEST DWG - CONTECH FORM AT CASCADE PRECAST\SFCB-C-DTL.DWG 12/16/2022 7:31 AM



INSPECTION PORT
NTS

0899CGDF

APPROX. DRAIN AREA = 53.24 SQ IN
APPROX. WEIGHT = 4.94 LBS

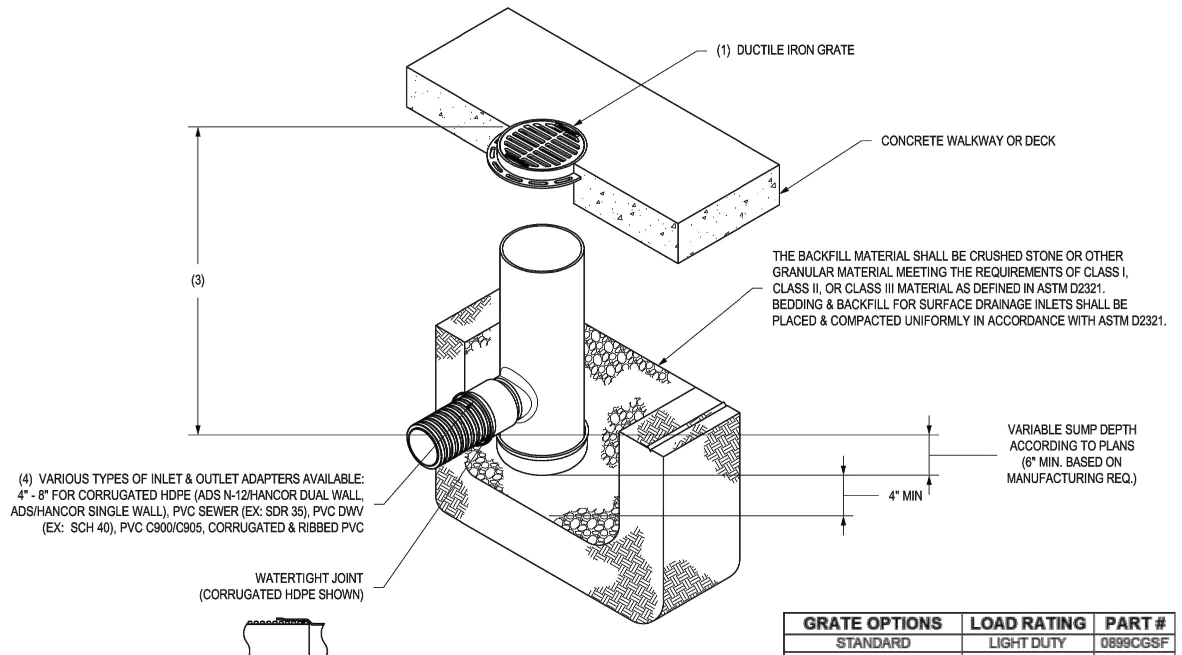


SECTION A-A

DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST

DRAWN BY NMH | DATE 6-22-18 | REVISED BY NMH | DATE 6-22-18 | DWG SIZE A
MATERIAL: DUCTILE IRON | PROJECT NO./NAME | SCALE NTS | SHEET 1 OF 1
ADS Nyloplast — 3130 VERONA AVE, BUFORD, GA 30518, PHN (770) 932-2443, FAX (770) 932-2490, www.nyloplast-us.com
TITLE: 8 IN DOME GRATE - TYPE B
DWG NO. 7001-110-539 REV A

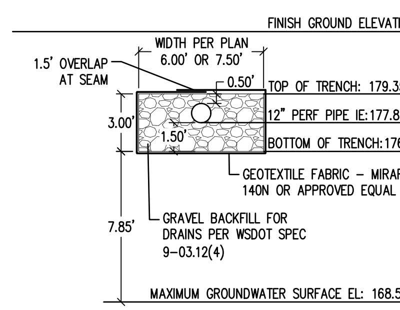
NYLOPLAST 8" DRAIN BASIN: 2808AG _ _ X



GRATE OPTIONS	LOAD RATING	PART #
STANDARD	LIGHT DUTY	0899CGSF
SOLID COVER	LIGHT DUTY	0899CGCF
BRONZE	N/A	0899CGBF
DOME	N/A	0899CGDF
DROP IN GRATE	LIGHT DUTY	0801DI

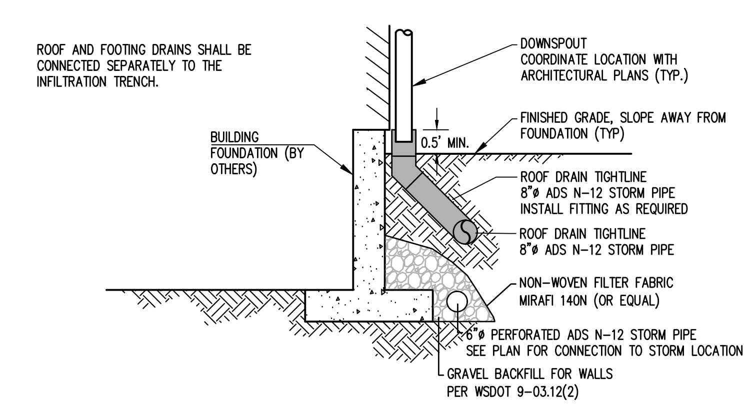
1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - CUSTOM DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
3 - STANDARD DRAIN BASIN HAS FIXED ADAPTER LOCATIONS OF 0° & 180°. CUSTOM DRAIN BASIN ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL) & PVC SEWER (4" - 24").

DRAWN BY NMH | DATE 6-25-18 | APPD BY NMH | DATE 6-25-18 | DWG SIZE A
MATERIAL | PROJECT NO./NAME | SCALE 1:12 | SHEET 1 OF 1
ADS Nyloplast — 3130 VERONA AVE, BUFORD, GA 30518, PHN (770) 932-2443, FAX (770) 932-2490, www.nyloplast-us.com
TITLE: 8 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-272 REV F



INFILTRATION TRENCH DETAIL
1" = 5'

ROOF AND FOOTING DRAINS SHALL BE CONNECTED SEPARATELY TO THE INFILTRATION TRENCH.



ROOF DOWNSPOUT & FOOT DRAIN DETAIL
NTS

REVISIONS

PROJECT NO. 163.001
DRAWN C. DAHM
CHECKED –
SUBMITTAL DATES
OTB DATE –

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP — STATE OF WASHINGTON — 20122774 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
STORMWATER DETAILS

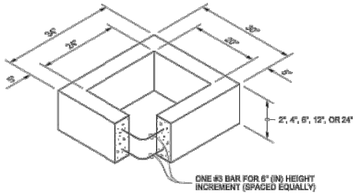
SHEET
SD-04

Dec 04, 2023 11:58:45am - User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SD-04.DWG

DRAWN BY: FERN LIDDELL

~~FRAME AND VANED GRATE~~

INSTALL RECTANGULAR SOLID METAL COVER PER WSDOT STD. PLAN B-3020-04



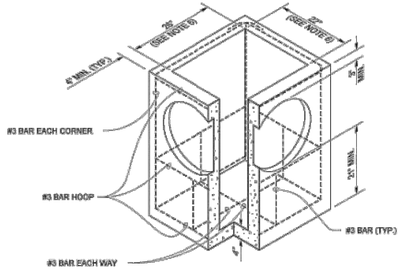
RECTANGULAR ADJUSTMENT SECTION

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER (INCHES)
REINFORCED OR PLAIN CONCRETE	12'
ALL METAL PIPE	15'
CPSSP * (STD. SPEC. SECT. 9-05.20)	12'
SOLID WALL PVC (STD. SPEC. SECT. 9-05.12(1))	15'
PROFILE WALL PVC (STD. SPEC. SECT. 9-05.12(2))	15'

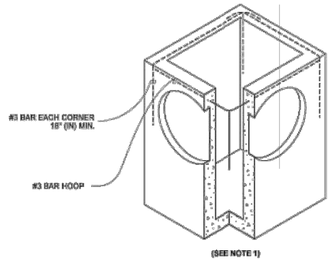
* CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES

1. As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
2. The knockout diameter shall not be greater than 20" (in). Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with **Standard Specification Section 9-04.3**.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5' (ft).
4. The frame and grate may be installed with the flange down, or integrally cast into the adjustment section with flange up.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1 : 24 or steeper.
6. The opening shall be measured at the top of the **Precast Base Section.**
7. All pickup holes shall be grouted full after the basin has been placed.



PRECAST BASE SECTION



ALTERNATIVE PRECAST BASE SECTION

Julie Heilman
2020.09.01 07:52:50 -07'00'

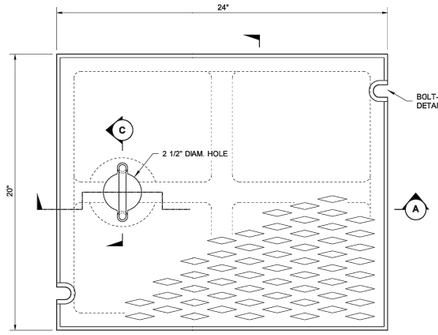
CATCH BASIN TYPE 1

STANDARD PLAN B-5.20-03

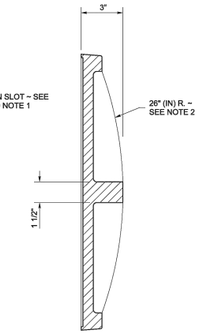
SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Roark, Steve
Digitally signed by Roark, Steve
Date: 2020.09.09 09:45:23 -07'00'
STATE DESIGN ENGINEER
Washington State Department of Transportation

DRAWN BY: FERN LIDDELL



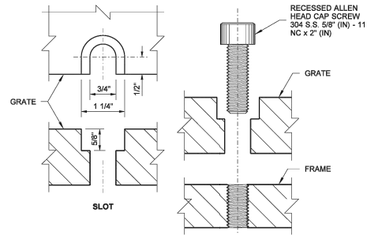
TOP



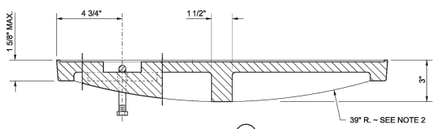
SECTION (B)

NOTES

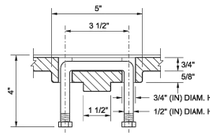
1. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 304 Stainless Steel (S.S.) 5/8" (in) - 11 NC × 2" (in) allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
2. Alternative reinforcing designs are acceptable in lieu of the rib design.
3. Refer to **Standard Specification Section 9-05.15** and **9-05.15(2)** for additional requirements.
4. For frame details, see **Standard Plan B-30.10.**



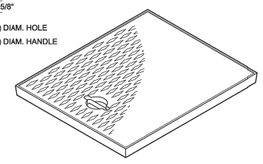
BOLT-DOWN DETAILS
SEE NOTE 1



SECTION (A)



SECTION (C)



ISOMETRIC

JULIE HEILMAN STATE OF WASHINGTON 41819 REGISTERED PROFESSIONAL ENGINEER

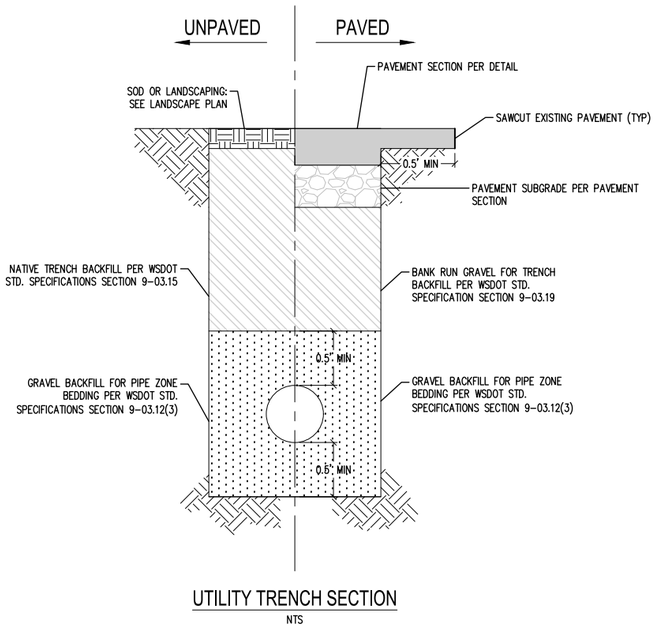
Heilman, Julie
Feb 20 2018 12:53 PM

RECTANGULAR SOLID METAL COVER

STANDARD PLAN B-30.20-04

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Cozzetto, Jeff
Feb 27 2018 7:57 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation



UTILITY TRENCH SECTION
NTS

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP

WHITNEY E. DUMP STATE OF WASHINGTON 20122774 REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY

12/04/2023

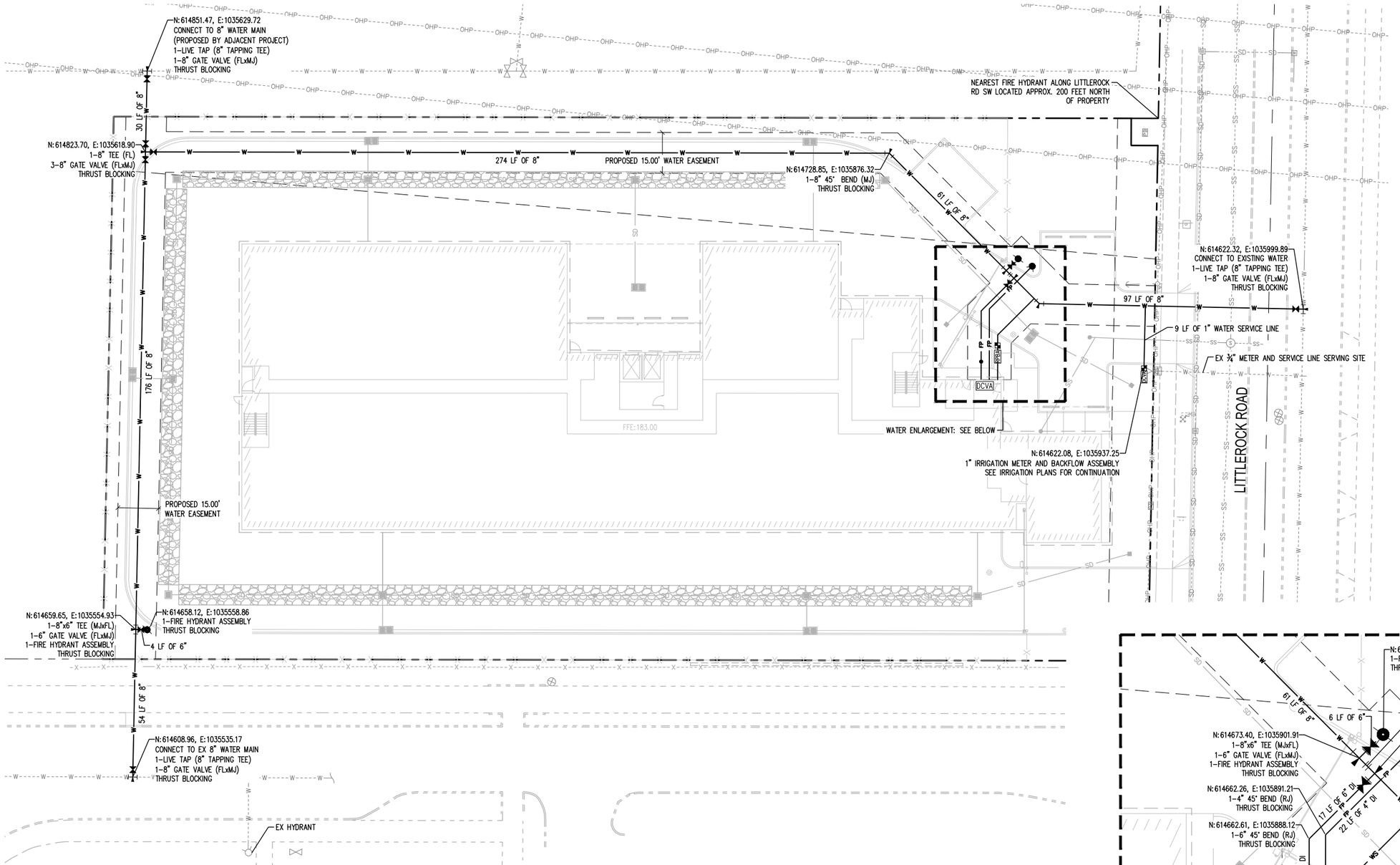
SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
STORMWATER DETAILS

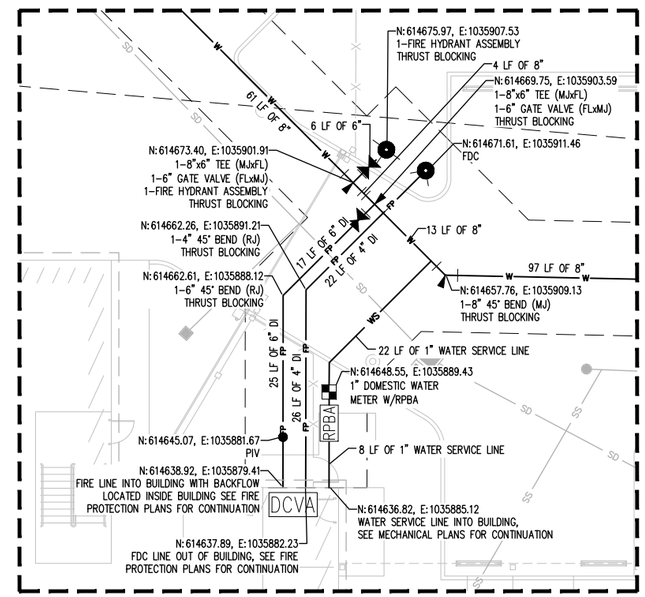
SHEET
SD-05

Dec 04, 2023 11:58:52am – User whitney
N:\2 – PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SD-04.DWG



LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CURB
- EXISTING WATER LINE
- EXISTING WATER METER
- EXISTING GATE VALVE
- PROPOSED BUILDING
- CONCRETE CURB
- CONCRETE CURB & GUTTER
- STORM LINE
- SEWER LINE
- ANSI/AWWA C-900 DR 18 PVC WATER LINE UNLESS OTHERWISE NOTED
- HDPE WATER SERVICE LINE UNLESS OTHERWISE NOTED
- DI FIRE LINE UNLESS OTHERWISE NOTED
- FIRE DEPARTMENT CONNECTION (FDC)
- POST INDICATOR VALVE (PIV)
- METER
- DOUBLE CHECK VALVE ASSEMBLY (DCVA)
- REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)
- VALVE
- FITTINGS
- FIRE HYDRANT



WATER ENLARGEMENT

1" = 10'

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 11:59:16am - User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 WT-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

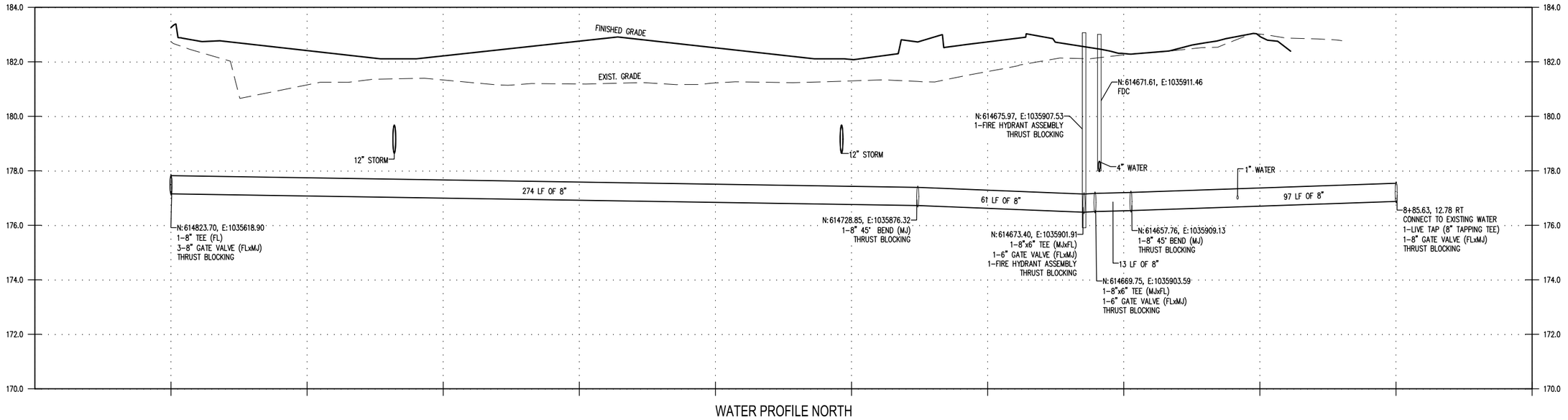
STAMP
WHITNEY E. DUMAS
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

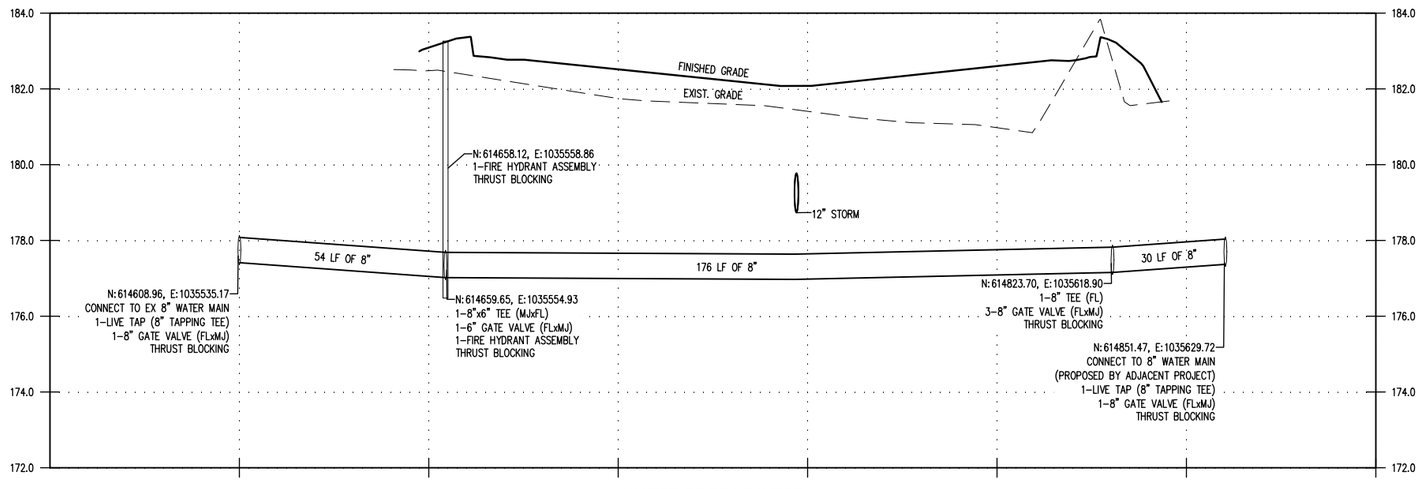
TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
WATER PLAN

SHEET
WT-01



WATER PROFILE NORTH



WATER PROFILE WEST

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

V 0 2 4
H 0 20 40
SCALE IN FEET

Dec 04, 2023 11:59:27am – User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 WT-02.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

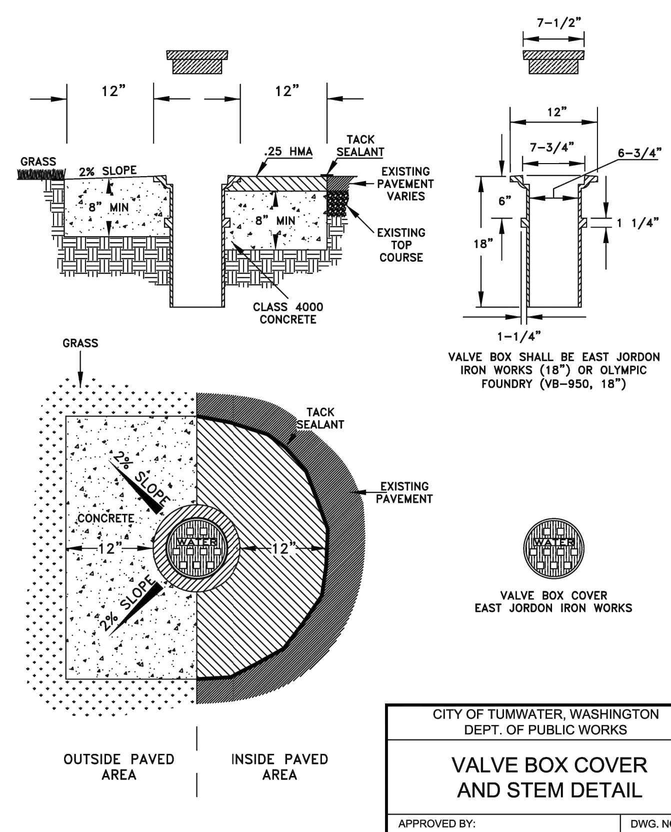
STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
WATER PROFILES

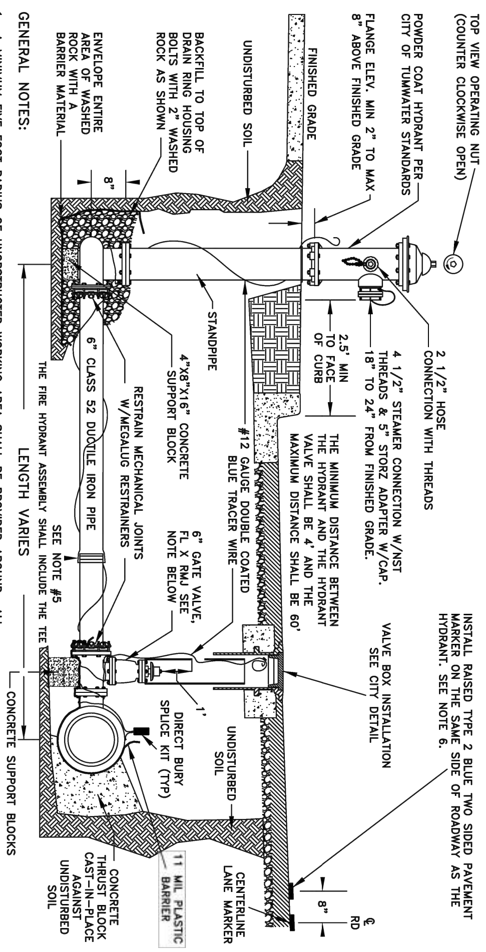
SHEET
WT-02



CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

VALVE BOX COVER AND STEM DETAIL

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-12.1
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JUNE 2014	



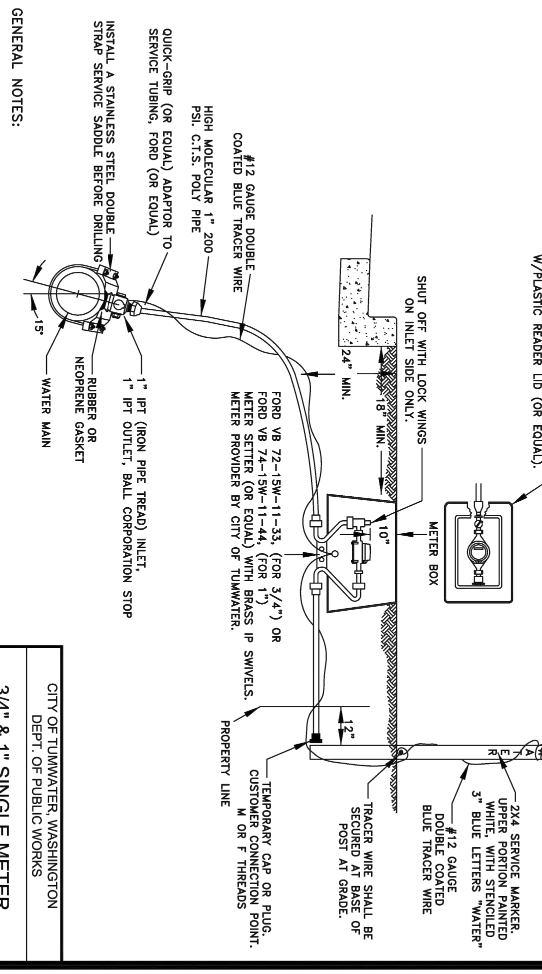
GENERAL NOTES:

1. A MINIMUM FIVE FOOT RADIUS OF UNOBSTRUCTED WORKING AREA SHALL BE PROVIDED AROUND ALL HYDRANTS. OBSTRUCTIONS INCLUDE, BUT ARE NOT BE LIMITED TO TREES, SHRUBS, PLANTS, VAULTS, FDC, METERS, WALLS, EMBANKMENTS, SIGN POSTS, ETC.
2. HYDRANT SHALL BE WATEROUS PACER, M & H RELIANT STYLE 929, AMERICAN AVK, KENNEDY K-81, MUELLER CENTURION, OR CLOW MEDALLION.
3. GATE VALVES SHALL BE RESILIENT WEDGE NRS WITH O-RING SEALS. VALVE ENDS SHALL BE MECHANICAL JOINT BY ANSI FLANGES. VALVES SHALL CONFORM TO AWWA C515 LATEST REVISION. VALVES SHALL BE MUELLER, M&H, KENNEDY, CLOW R/W, WATEROUS SERIES 2500 OR AMERICAN AVK.
4. REMOVE FACTORY CHAINS HOLDING CAPS.
5. WHEN DISTANCE BETWEEN FIRE HYDRANT AND VALVE EXCEEDS MORE THAN 1 STICK OF PIPE RESTRAINED JOINTS SHALL BE REQUIRED.
6. INSTALLATION OF A BLUE, TYPE 2, TWO WAY, REFLECTIVE HYDRANT MARKER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE HYDRANT MARKER SHALL BE ALIGNED WITH THE OUTSIDE EDGE OF THE LANE MARKER 8" FROM THE CENTERLINE.
7. CONTRACTOR REQUIRED TO MAINTAIN POWDER COATING UNTIL FINAL ACCEPTANCE BY CITY.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

FIRE HYDRANT ASSEMBLY

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-13
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



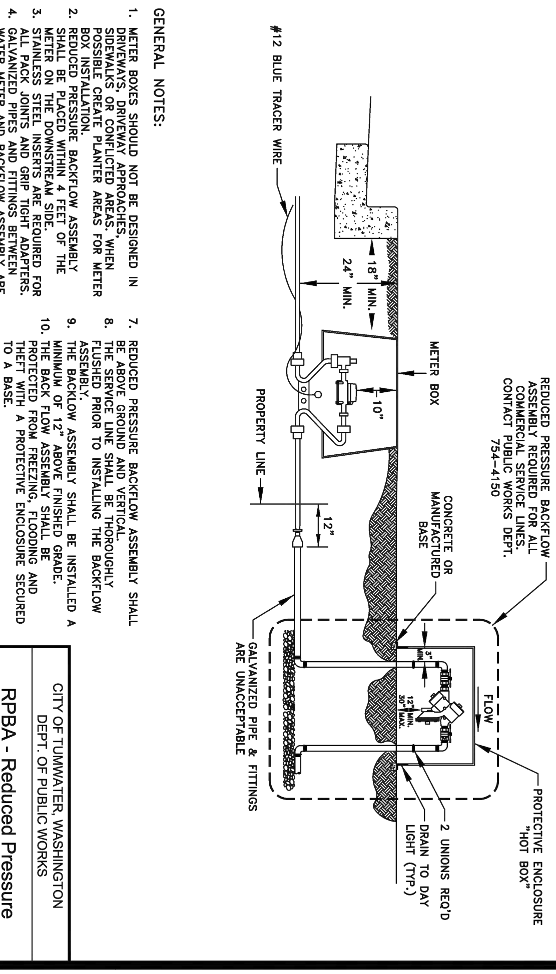
GENERAL NOTES:

1. METER BOXES SHOULD NOT BE DESIGNED IN DRIVEWAYS, DRIVEWAY APPROACHES, SIDEWALKS OR CONFLICTED AREAS. WHEN POSSIBLE CREATE PLANTER AREAS FOR METER BOX INSTALLATION.
2. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL PACK JOINTS AND GRIP TIGHT ADAPTERS.
3. ALL SERVICE SADDLES SHALL HAVE RUBBER GASKETS AND I.P. THREADS.
4. GALVANIZED PIPES AND FITTINGS BETWEEN WATER METER AND BACKFLOW ASSEMBLY ARE NOT ALLOWED.
5. SERVICE CLAMPS SHALL BE STAINLESS STEEL, DOUBLE STRAP. DIRECT TAPS ARE NOT ALLOWED.
6. DOUBLE INSULATED 12 GAUGE BLUE COATED COPPER U.S.E. TONING WIRE SPLICED TO MAINLINE TRACER WIRE ON ALL SERVICE LINES.
7. ALL SERVICE LINE FITTINGS SHALL BE BRASS.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

3/4" & 1" SINGLE METER SERVICE

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-21
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



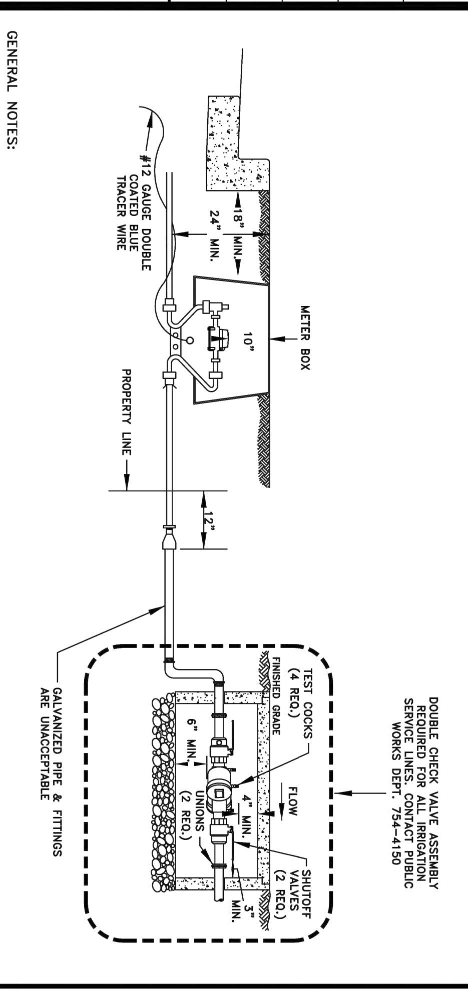
GENERAL NOTES:

1. METER BOXES SHOULD NOT BE DESIGNED IN DRIVEWAYS, DRIVEWAY APPROACHES, SIDEWALKS OR CONFLICTED AREAS. WHEN POSSIBLE CREATE PLANTER AREAS FOR METER BOX INSTALLATION.
2. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE PLACED WITHIN 4 FEET OF THE METER ON THE DOWNSTREAM SIDE.
3. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL PACK JOINTS AND GRIP TIGHT ADAPTERS.
4. GALVANIZED PIPES AND FITTINGS BETWEEN WATER METER AND BACKFLOW ASSEMBLY ARE NOT ALLOWED.
5. DOUBLE INSULATED 12 GAUGE BLUE COATED COPPER U.S.E. TONING WIRE SPLICED TO MAINLINE TRACER WIRE ON ALL SERVICE LINES.
6. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE A WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED MODEL.
7. REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE ABOVE GROUND AND VERTICAL.
8. THE SERVICE LINE SHALL BE THOROUGHLY FLUSHED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
9. THE BACKFLOW ASSEMBLY SHALL BE INSTALLED A MINIMUM OF 12" ABOVE FINISHED GRADE.
10. THE BACK FLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING, FLOODING AND THEFT WITH A PROTECTIVE ENCLOSURE SECURED TO A BASE.
11. THE PROTECTIVE ENCLOSURE SHALL HAVE A MINIMUM OF 12" CLEARANCE FROM ALL OTHER STRUCTURES.
12. A PLUMBING PERMIT IS REQUIRED.
13. THE BACKFLOW ASSEMBLY SHALL BE TESTED BY A CERTIFIED BACKFLOW ASSEMBLY TESTER AFTER INSTALLATION AND PRIOR TO ACCEPTANCE.
14. TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER CROSS CONNECTION SPECIALIST.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

RPBA - Reduced Pressure Backflow Assembly

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-21.1
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



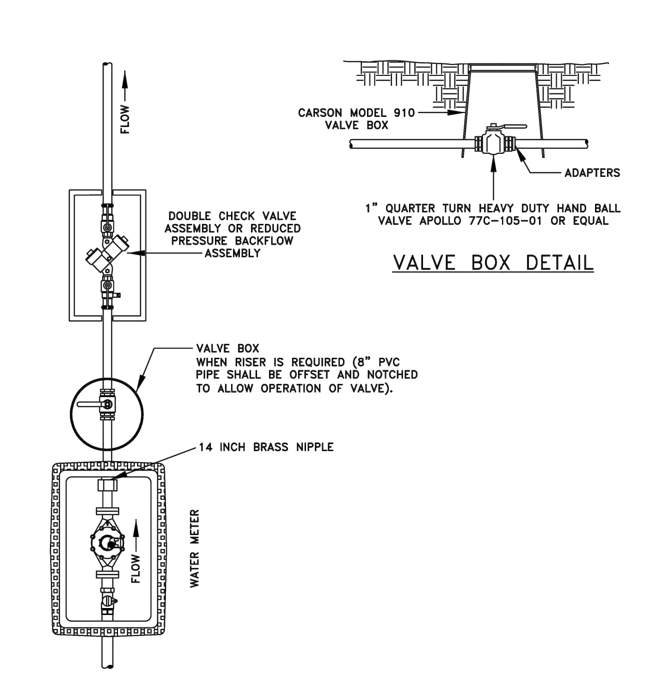
GENERAL NOTES:

1. METER BOXES SHOULD NOT BE DESIGNED IN DRIVEWAYS, DRIVEWAY APPROACHES, SIDEWALKS OR CONFLICTED AREAS. WHEN POSSIBLE CREATE PLANTER AREAS FOR METER BOX INSTALLATION.
2. STAINLESS STEEL INSERTS ARE REQUIRED FOR ALL PACK JOINTS AND GRIP TIGHT ADAPTERS.
3. GALVANIZED PIPES AND FITTINGS BETWEEN WATER METER AND BACKFLOW ASSEMBLY ARE NOT ALLOWED.
4. DOUBLE INSULATED 12 GAUGE BLUE COATED COPPER U.S.E. TONING WIRE SPLICED TO MAINLINE TRACER WIRE ON ALL SERVICE LINES.
5. DOUBLE CHECK VALVE ASSEMBLY SHALL BE A WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED MODEL.
6. DOUBLE CHECK VALVE ASSEMBLY IS TO LAY HORIZONTAL WITH THE GROUND.
7. THE WATER LINE SHALL BE THOROUGHLY FLUSHED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
8. THE DOUBLE CHECK VALVE ASSEMBLY SHALL NOT BE PLACED UNDERGROUND IN AN AREA SUBJECT TO FLOODING.
9. A PLUMBING PERMIT IS REQUIRED.
10. THE BACKFLOW ASSEMBLY SHALL BE TESTED BY A CERTIFIED BACKFLOW ASSEMBLY TESTER AFTER INSTALLATION AND PRIOR TO ACCEPTANCE.
11. TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER CROSS CONNECTION SPECIALIST.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

3/4" & 1" SINGLE METER SERVICE W/DCVA

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-21.2
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



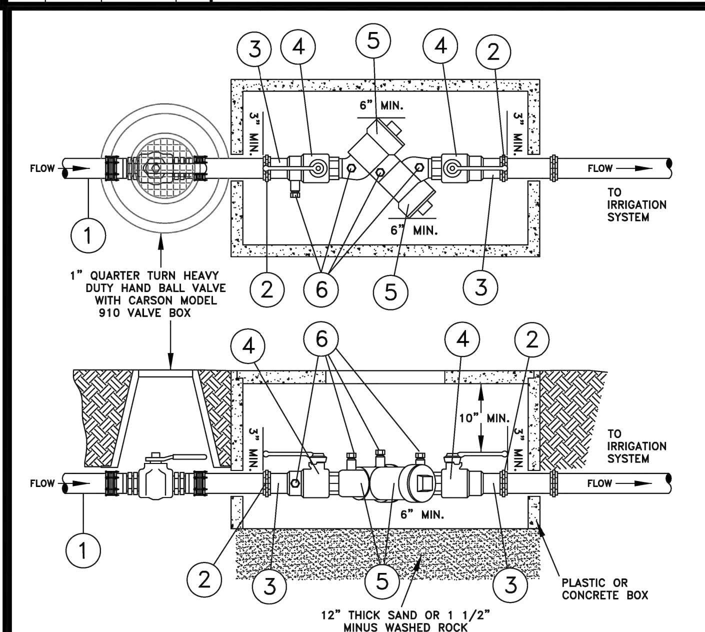
GENERAL NOTES:

1. METER BOXES SHOULD NOT BE DESIGNED IN DRIVEWAYS, DRIVEWAY APPROACHES, SIDEWALKS OR CONFLICTED AREAS. WHEN POSSIBLE CREATE PLANTER AREAS FOR METER BOX INSTALLATION.
2. DO NOT INSTALL IN AREAS SUBJECT TO FLOODING.
3. IF REDUCED PRESSURE DEVICE IS USED, RPBA BOX MUST BE FREE DRAINING.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

IRRIGATION SERVICE FOR COMMERICAL SITES

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-25
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



MATERIAL LIST:

1. SERVICE LINE
2. UNION
3. NIPPLE
4. SHUT-OFF VALVE
5. CHECK VALVES (D.O.H. APPROVED)
6. TEST COCKS

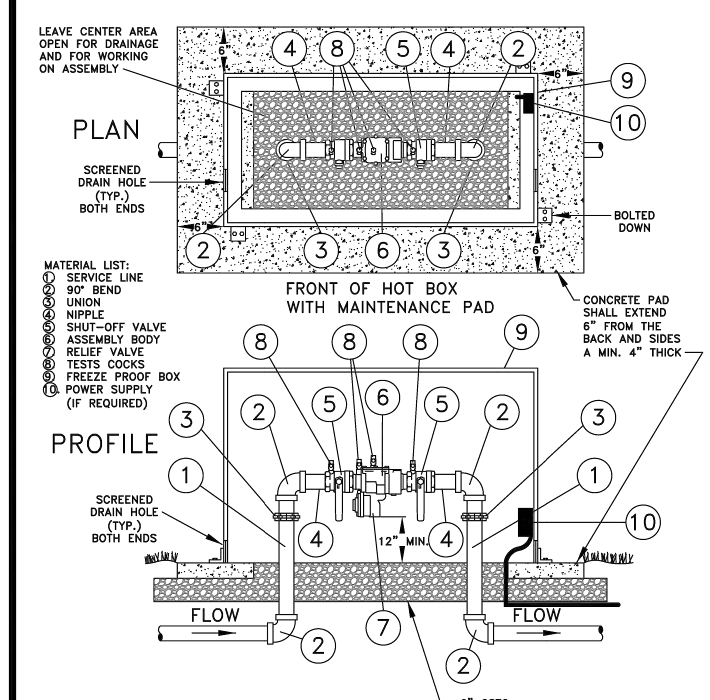
GENERAL NOTES:

1. THOROUGHLY FLUSH THE LINES PRIOR TO INSTALLING DCVA.
2. IF THE IRRIGATION SYSTEM IS TAPPED OFF OF THE DOMESTIC SERVICE LINE, A HEAVY DUTY HAND BALL VALVE MUST BE INSTALLED IN A OFFSET VALVE BOX (CARSON MODEL 910) WITHIN 18" BEFORE THE CHECK VALVE ASSEMBLY. SEE CITY DETAIL.
3. THE DEPTH OF THE VAULT SHALL NOT EXCEED 3.5'.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

DOUBLE CHECK VALVE ASSEMBLY FOR 2" OR SMALLER IRRIGATION

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-35
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	



MATERIAL LIST:

1. SERVICE LINE
2. 90° BEND
3. UNION
4. NIPPLE
5. SHUT-OFF VALVE
6. ASSEMBLY BODY
7. RELIEF VALVE
8. TESTS COCKS
9. FREEZE PROOF BOX
10. POWER SUPPLY (IF REQUIRED)

GENERAL NOTES:

1. ASSEMBLY SHALL BE D.O.H. APPROVED.
2. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION.
3. DO NOT INSTALL IN AREA SUBJECT TO FLOODING.
4. ALL PIPE AND FITTINGS SHALL BE BRASS.
5. DRAIN HOLE OPENINGS SHALL BE 1 1/2 TIMES THE DIAMETER OF SUPPLY LINE AND INCLUDE SCREENING.
6. ALL REDUCED PRESSURE BACKFLOW ASSEMBLIES SHALL BE INSTALLED IN A HOT BOX TO PREVENT THE UNIT FROM FREEZING.
THE HOT BOX MAY BE EQUIPPED WITH ELECTRICAL COMPONENTS (CONDUITS, WIRING, ETC.) AND POWER SUPPLIED BY THE OWNER WHEN NECESSARY OR REQUIRED.
7. ALL CITY OF TUMWATER DUMP STATION SITES SHALL BE EQUIPPED WITH A FACTORY HEATED HOT BOX, A 1 1/2" CONDUIT AND SHALL BE WIRED FROM THE CONTROL CABINET TO THE HOT BOX AND THERMOSTAT.

CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

REDUCED PRESSURE BACKFLOW ASSEMBLY FOR 2" OR SMALLER

APPROVED BY:				DWG. NO.
CITY ENGINEER				WA-36
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JULY 2014	

REVISIONS

PROJECT NO. 163.001
DRAWN C. DAHM
CHECKED –
SUBMITTAL DATES
OTB DATE –

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY
12/04/2023

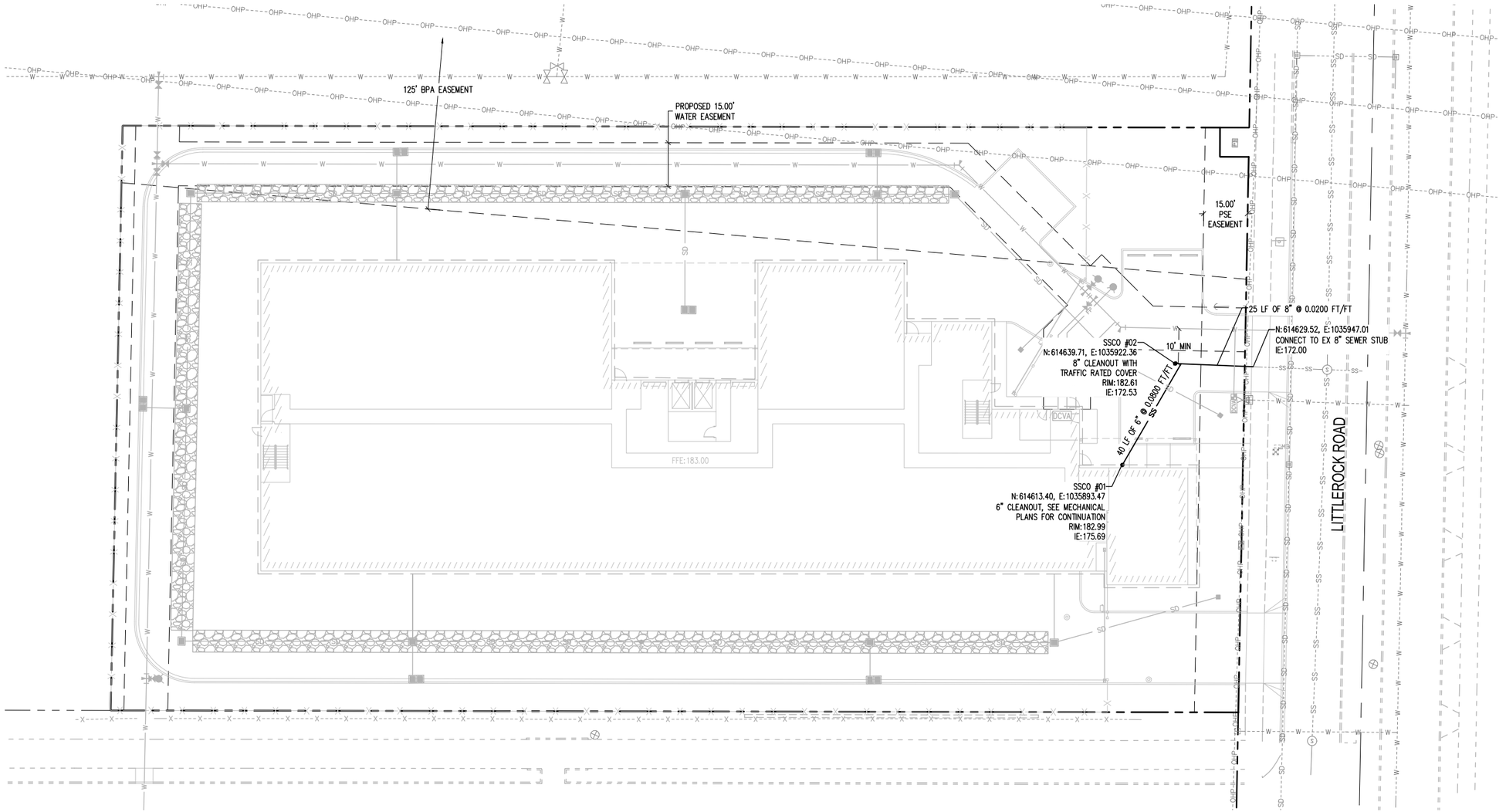
SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
WATER DETAILS

SHEET
WT-03

Dec 04, 2023 11:59:37am – User whitney
N:\2 – PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 WT-03.DWG



N

0 20 40

SCALE IN FEET

LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING CURB
- EXISTING SEWER LINE
- EXISTING SEWER MANHOLE
- PROPOSED BUILDING
- CONCRETE CURB
- CONCRETE CURB & GUTTER
- STORM LINE
- WATER LINE
- WATER SERVICE LINE
- ASTM D 3034 SDR 35 PVC SEWER LINE UNLESS OTHERWISE NOTED
- SEWER CLEANOUT: SEE SD-03

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 12:00:04pm - User: whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SS-01.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUMP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

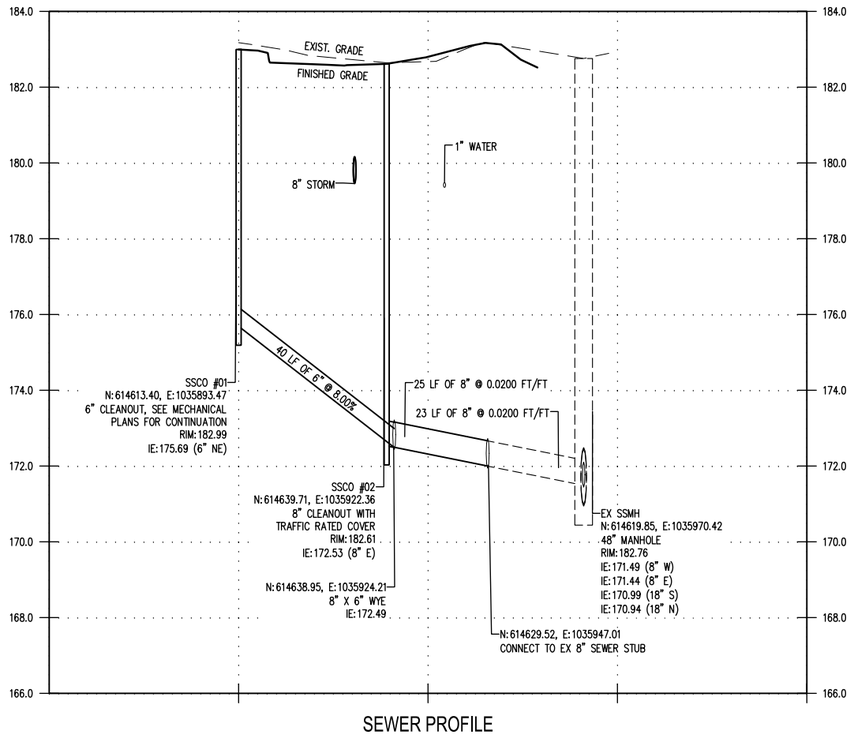
SHEET TITLE
SEWER PLAN

SHEET
SS-01

V 0 2 4

H 0 20 40

SCALE IN FEET



SEWER PROFILE

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 12:00:13pm - User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SS-02.DWG

REVISIONS

PROJECT NO.
163.001

DRAWN
C. DAHM

CHECKED
–

SUBMITTAL DATES

OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP

WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER

12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

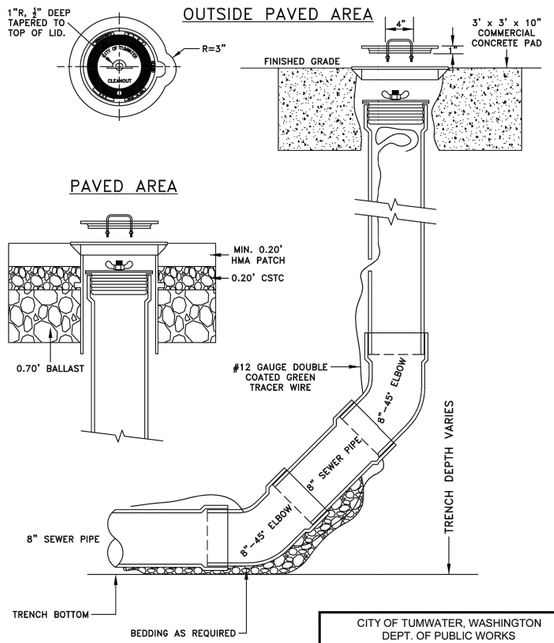
TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE

SEWER PROFILES

SHEET

SS-02



GENERAL NOTES:

1. SEWER MAINS LARGER THAN 8" IN DIAMETER WILL REQUIRE PLACEMENT OF MANHOLE.

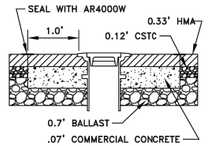
CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

CLEANOUT 8" SEWER MAIN

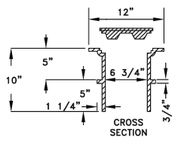
APPROVED
CITY ENGINEER

DWG. NO. SS-10

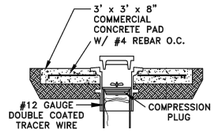
DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	MW	NOV. 2014	



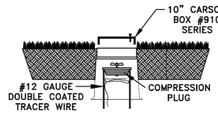
INSIDE PAVED ROADWAY



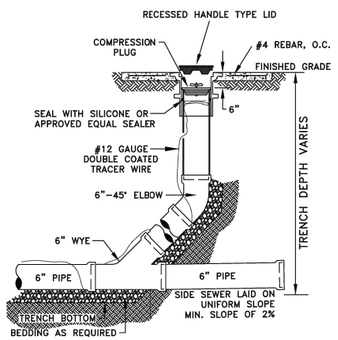
CAST IRON RING AND COVER



OUTSIDE PAVED AREA
IN LANDSCAPING AREAS



OUTSIDE PAVED AREA
LAWN AREA W/ CARSON BOX



GENERAL NOTES:

1. ALL SEWER PIPE SHALL BE ASTM 3034 SDR 35.
2. LOCATED IN CENTER OF CUL-DE-SAC WHEN APPROPRIATE.

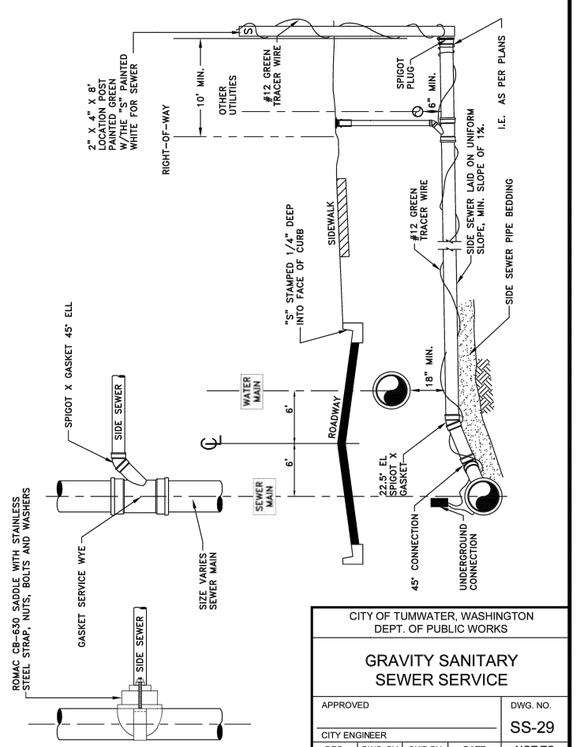
CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

6" LATERIAL CLEANOUT DUCTIAL IRON

APPROVED
CITY ENGINEER

DWG. NO. SS-11

DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	MW	NOV. 2014	



CITY OF TUMWATER, WASHINGTON
DEPT. OF PUBLIC WORKS

GRAVITY SANITARY SEWER SERVICE

APPROVED
CITY ENGINEER

DWG. NO. SS-29

DES.	DWG. BY	CK'D BY	DATE	NOT TO SCALE
PW	PW	KMC	JAN. 2012	

CALL BEFORE YOU DIG

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

VERTICAL DATUM
NGVD 29

Dec 04, 2023 - 12:02:21pm - User whitney
N:\2 - PROJECTS\163 TREVOR COLBY\163.001 6115 & 6119 LITTLEROCK ROAD\ACAD\163.001 SS-03.DWG

REVISIONS

PROJECT NO.
163.001
DRAWN
C. DAHM
CHECKED
–
SUBMITTAL DATES
OTB DATE
–

JSA CIVIL
Engineering | Planning | Management
111 TUMWATER BLVD SE, SUITE C210
TUMWATER, WA 98501

STAMP
WHITNEY E. DUNLAP
STATE OF WASHINGTON
20122774
REGISTERED
PROFESSIONAL ENGINEER
12/04/2023

SELF STORAGE FACILITY
COMMERCIAL DEVELOPMENT PROJECT
6115 & 6119 LITTLEROCK RD SW
TUMWATER, WA 98512

TREVOR COLBY
6820 6TH AVE, SUITE 201
TACOMA, WA 98406

SHEET TITLE
SEWER DETAILS

SHEET
SS-03