

TECHNICAL MEMORANDUM

REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA) IMPLEMENTATION REPORT



Historical Landfill (Former Solid Waste Disposal Area and Upland Solid Waste Disposal Cell)

Elk Ridge Estates
St. Helens, Oregon 97015

Agency Information
ECSI NO. 4857

Prepared for:

St. Helens Assets, LLC
P.O. Box 288
Washougal, Washington 98671

Issued on:

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This

Technical Memorandum
FINAL REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA)
IMPLEMENTATION REPORT

for:

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(Former Solid Waste Disposal Area and Upland Solid Waste Disposal Cell)

Elk Ridge Estates, St. Helens, Oregon 97015

Has been prepared for the sole benefit and use of our Client:

St. Helens Assets, LLC

P.O. Box 288
Washougal, Washington 98671

Issued January 30, 2023 by:



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DRAFT

List of Acronyms and Abbreviations

3J	3J Consulting Inc.
AASHTO	American Association of State Highway and Transportation Officials
ACS	Asphalt Concrete Soils Testing, Inc.
ASTM	American Society for Testing and Materials
BPA	Bonneville Power Administration
CI	cast iron
Client	St. Helens Assets, LLC
CMMP	Contaminated Media Management Plan
Compass	Compass Land Surveyors
cy	cubic yards
ENW	EVREN Northwest, Inc.
ESC	erosion and sediment control
ESCP	Erosion and Sediment Control Plan
FSWDA	Former Solid Waste Disposal Area
ID	inside diameter
JEI	Janz Enterprises, Inc.
NHM	Northwest Hydro-Mulchers, Inc.
NPDES	National Pollutant Discharge Elimination System
ODEQ	Oregon Department of Environmental Quality
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
SCMP	Soil Cap Management Plan
sf	square foot (feet)
USWDC	Upper Solid Waste Disposal Cell
WAM	Waste Authorization Manager

1.0 Introduction

This Remedial Design/Remedial Action (RD/RA) Implementation Report has been prepared by EVREN Northwest, Inc. (ENW) on behalf of St. Helens Assets, LLC (client) to document the capping for the former landfill areas¹ located northeast of Hankey Road and Barrick Lane in St. Helens, Oregon (see Figures 1 and 2) pursuant to ENW's RD/RA Work Plan.² This report documents the Elk Ridge Phase V – Storm Drain Relocation and Landfill Cap remedial action alternative completed between September 2022 and January 2023.

2.0 Remedial Action Major Elements

The major elements of the selected remedial action alternative, as detailed in ENW's RD/RA Work Plan, are as follows.

- Managed Soil Cap and Storm Drain Relocation
 - Former Solid Waste Disposal Area (FSWDA)
 - Pre-Construction - engineering, permitting, surveying, and import fill characterization.
 - Construction – erosion and sediment controls (ESCs), tree removal, existing ravine fill reconsolidation, storm water channel relocation and pond fill, public storm water pipeline continuation and trench spoils disposal, high-visibility demarcation fabric installation, and minimum 3-foot clean soil cap over regraded/reworked surface.
 - Post-Construction – surveying to confirm grades, post-grading ESCs.
 - Upland Solid Waste Disposal Cell (USWDC)
 - Pre-Construction – engineering, permitting, and import fill characterization.
 - Construction – ESC, high-visibility demarcation fabric installation, and existing soil cap augmentation to attain a minimum 3-foot clean fill cap over the entire USWDC.
 - Post-Construction – surveying to confirm cap thickness, post-grading ESCs.
- Soil Cap Management Plan (SCMP)

¹ Formally described as *Tract E, Elk Ridge Estates Phase 5 "Former Solid Waste Disposal Area (FSWDA)," and the "Upland Solid Waste Disposal Cell (USWDC)" in the Bonneville Power Administration (BPA) easement located on the northern part of the subject area.*

² ENW. November 24, 2021. *Remedial Design/Remedial Action Work Plan, Historical Landfill (Former Solid Waste Disposal Area and Upland Solid Waste Disposal Cell) at Elk Ridge Estates, St. Helens, Oregon 97051: Prepared for St. Helens Assets, LLC.*

- Ongoing Management of Soil According to Contaminated Media Management Plan (CMMP)
- Annual Inspections

A project photographic log, which documents key benchmarks achieved during implementation, is included as Attachment A.

3.0 Soil Cap Installation

3.1 FSWDA Installation Details

The following actions were completed as part of the soil capping of the FSWDA.

- Re-working the existing ravine fill prior to placing the capping material.
- Continuation of the public storm water pipeline with disposal of solid waste-impacted trench spoils at an off-site Resource Conservation and Recovery Act (RCRA) Subtitle D landfill, including:
 - Installation of an approximately 155-foot-long by 30-inch inside diameter (ID) dual-wall high-density polyethylene (HDPE) storm water pipe connected to an approximately 20-foot-deep by 60-inch ID precast concrete manhole, which is connected to the existing 24-inch ID storm water outfall pipe;
 - Constructing an approximately 450-foot-long by 20-foot-wide relocated storm water channel with rock check dams;
 - Constructing an approximately 550 square-foot (sf) by 3-foot-thick energy dissipation pad lined with class 250 riprap at the outfall;
- Installing a demarcation layer consisting of high-visibility orange non-woven fabric beneath the fill cap layer (including the storm water channel, and energy dissipation outfall pad).
- A 3-foot-thick cap consisting of an estimated 8,400 cubic yards (cy) of imported clean fill soil from Elk Ridge Estates Phase VI development area placed in 12-inch lifts compacted to 95% relative maximum density per American Association of State Highway and Transportation Officials (AASHTO) T-99.
- Implementation of erosion control measures, such as seeding/applying mulch (for vegetative cover), cat tracking (to create ruts or grooves perpendicular to the slope, sediment fencing and placement of straw wattles.

3.2 USWDC

The following actions were completed as part of the soil capping of the USWDC.

- Re-working the existing fill area prior to placing the capping material.
- Installing a demarcation layer consisting of high-visibility orange non-woven fabric beneath the fill cap layer.
- A 3-foot-thick cap consisting of an estimated 1,950 CYs of imported clean fill soil from Elk Ridge Estates Phase VI development area placed in 12-inch lifts compacted to 95% relative maximum density per American Association of State Highway and Transportation Officials (AASHTO) T-99.

- Implementation of erosion control measures, such as seeding/applying mulch (for vegetative cover), cat tracking (to create ruts or grooves perpendicular to the slope, sediment fencing and placement of straw wattles.

3.3 Permitting

The necessary permits were all acquired prior to breaking ground:

- National Pollutant Discharge Elimination System (NPDES) 1200-C Construction Storm-Water permit, issued June 28, 2022 from Oregon Department of Environmental Quality (ODEQ), Permit/PLC No. NGEN12C-ORR10H298.
- Contract for Construction of Required Improvement, Elk Ridge Phase V – Storm Drain Relocation & Landfill Cap (Completion of Work from Original Bond Agreement), Project No. P-371F, between St. Helens Assets, LLC and City of St. Helens, Performance Bond Agreement dated 8/29/2022.
- Land Use Agreement, Consent to Use of Bonneville Power Administration’s (BPA’s) Easement Area, issued November 21, 2022 by the Department of Energy, Bonneville Power Administration, Vancouver, WA, BPA Case No. 20230002, Tract No. SJ-A-24-A-274.
 - To meet BPA’s requirements for working under their transmission lines, the previously placed soil cap was stripped off the existing USWDC prior to reconsolidating the solid waste, placing a high-visibility demarcation geotextile, and placing a compacted 3-foot-thick, clean soil cap. Due to the delay in reaching a land use agreement, construction of the managed cap at the USWDC occurred during the rainy season, which ENW had hoped to avoid.

3.4 Import Fill Soil

Imported soil consisted of soil derived from the development of residential homes in Elk Ridge Estates’ future Phase VI development area. Therefore, since this fill soil is derived from the adjacent Elk Ridge development area, no characterization is currently required.

The approved source area for the clean soil cap for the FSWDA was within Phase VI of the Elk Ridge Estates Development near the northwest end of Valley View Drive. Danielson Contractors was responsible for the NPDES 1200-C Construction Storm-Water Permit³ and Erosion and Sediment Control Plan (ESCP) for soil removal and loading activities in Phase VI. Dump trucks contracted by JEI transported clean soil from this source via a haul route that followed Valley View Drive, Elk Meadows Drive, and Wapiti Drive to the gated entrance at the east end of Barrick Lane according to the approved Traffic Control Plan. The streets along the haul route were washed, as needed.

3.5 Construction

All construction activities were overseen by ENW. Onsite construction activities started in August 2022 and were completed in December 2022. ENW proved ODEQ consecutive weekly progress reports (15

³ NPDES 1200-C Construction Storm-Water permit, initially issued on April 25, 2013 from ODEQ, EPA No. ORR10D415, File No. 122878.

total).⁴ Highlights of construction activities presented in those weekly updates are briefly summarized in this section. Site photographs representative of construction activities conducted during the implementation period are included in Attachment A. A stamped engineering As-Built for the final fill cap surface including elevation reference points documenting cap thickness in several areas are provided in Attachment B.

3.5.1 Pre-Grading Erosion and Sediment Controls

Erosion control measures were installed around the perimeter prior to breaking ground at the FSWDA on September 7, 2022 and USWDC on December 6, 2022.

FSWDA. Access was via Barrick Lane, which could either be accessed via Hankey Road to the west or a gate to Wapiti Drive to the east. A construction entrance bedded with pit run rock and gravel was constructed from Barrick Lane near the southeast corner of the FSWDA disturbed area. This construction entrance connected to City of St. Helens approved⁵ haul routes for dump trucks and other heavy equipment transporting materials to and from the FSWDA.

USWDC. Access was via a gate at the northwest end of Kestrel View Drive, northwest of Elk Meadows Drive and Spotted Hill Drive. The southwest end of the USWDC is proximal to the graveled section of Kestrel View Drive, so it was not necessary to construct a graveled construction entrance.

3.5.2 Clearing and Grubbing

FSWDA. From September 7-16, 2022, trees were felled, brush cleared, and grasses/weeds grubbed from the surface of the entire disturbed area. Logs, brush, root masses, and grass were hauled off-site for disposal.

USWDC. On December 6, 2022, grass and topsoil was stripped from the surface of the USWDC. This topsoil material was incorporated in with and used as clean cap soil.

3.5.3 Regrading

FSWDA. From September 12-30, 2022, dozers were used to regrade the steep-walled slopes of the FSWDA. Except for the ravine and other fill areas, the FSWDA was cut three-feet to accommodate a three-foot-thick, clean soil cap. The final subgrade was reconsolidated and compacted in 1-foot-lifts with several passes of a Sheep's foot roller in areas of the FSWDA where the grade was to be raised as specified in the work plan, i.e., the ravine area. Construction of the relocated storm water channel (Section 3.2.4) and storm water pipe and associated manhole (Section 3.2.5) were performed as the surface was being regraded in this area. Additionally, a 180-foot-long underdrain was installed to manage a water seep in a wet area along the bottom of the ravine (Section 3.3.1). Tires, large items of scrap metal, and large tree branches and timbers, which were encountered, were separated out and properly disposed of at Hillsboro Landfill under Waste Authorization Manager (WAM) Profile No. 138550OR with Waste Management or recycled off-site.

An estimated 6,000 cy of soil and undocumented waste were reconsolidated in the FSWDA. A total of 242.27 tons of solid waste were disposed of at Hillsboro Landfill.

The working surface was frequently sprayed with water to achieve optimal soil moisture content for

⁴ ENW, September 7-9, 2022 through December 12-16, 2022 RE: *Weekly Field Update Report, Elk Ridge Estates Landfill*, presented to ODEQ Cleanup Program, NW Region, Attn: Kevin Dana.

⁵ City of St. Helens approved the Traffic Control Plan on September 19, 2022.

compaction and for dust control. The outline of the FSWDA following reconsolidation is shown on Figure 3.

USWDC. On December 6-7, 2022, a dozer was used to regrade the USWDC. The initial USWDC grading plan was to augment the existing 1- to 2-foot soil cap with an additional 2-feet of clean soil. However, due to height limitations within the BPA ROW, the existing soil cap was stripped off the entire cell and stockpiled on the west side of the USWDC. The underlying solid waste cell was then reconsolidated to ensure areas where no change in land surface elevation could occur could accommodate a 3-foot-thick soil cap, i.e., by lowering the solid waste surface elevation. The USWDC was then capped using both stockpiled prior capping soil augmented with imported clean soil and a laser level was used to check grades to ensure placement of a total of 3-feet of clean soil across the USWDC. Soil and solid waste were reconsolidated in 12-inch-lifts and compacted using a Sheep's foot roller. The outline of the USWDC after reconsolidation is shown on Figure 4.

3.5.4 Storm Water Pipe Continuation and Manhole

From September 22 through 29, 2022, an approximately 155-foot-long by 30-inch ID storm water pipe was installed and connected to an approximately 20-foot-deep by 60-inch ID manhole, which is also connected to the existing 24-inch ID storm water outfall pipe in the central part of the FSWDA. A steel-reinforced cast-in-place concrete base was poured after setting the base section of the manhole. Cement grout was used to seal the gap between the cut-out and the 24-inch ID storm water inlet pipe (former outfall). Using a tracked excavator, an approximately 155-foot-long by 5-foot wide by 4-foot-deep trench was excavated from the manhole to the outfall. As previously reported, removed soil and undocumented fill was loaded onto trucks and transported to Hillsboro Landfill for disposal. The trench was bedded with ¾"-0 crushed rock, and the 30-inch ID ADS pipe was placed on the crushed rock bed. A tracing wire was run along the pipe, and the trench excavation was backfilled with ¾"-0 crushed rock 1 to 2 feet above the pipe and compacted with a vibratory rammer compactor. Asphalt Concrete Soils Testing, Inc. (ACS) of Tigard, Oregon performed compaction/in place soil density tests via ASTM D1557 to confirm that 95% relative maximum density had been attained on the trench backfill. After compacting the backfill, the ADS pipe was backfilled in 12-inch lifts, each compacted with a Sheep's foot roller. Additional pre-cast concrete manhole barrels were added as the amount of fill increased in the manhole area. Ultimately, two 6-foot pre-cast concrete barrels (3 total), a precast concrete cover with cast iron frame and lid, and steps were installed. Butyl-rubber seals were installed between sections, and the cast iron frame was sealed with grout. A cast-steel-reinforced in-place concrete outfall structure was installed on November 23, 2022 and a galvanized steel grate on December 13, 2022. City of St. Helens inspected and approved installation of the new storm sewer manhole, cast-in-place concrete base, ADS storm sewer pipe, steel-reinforced concrete outfall structure, and galvanized steel grate.

The storm water pipe consists of a 155-foot-long by 30-inch ID dual-wall ADS N-12® WT IB storm water pipe connected to an approximately 20-foot-deep by 60-inch ID precast concrete manhole, which was connected to the existing 24-inch ID storm water outfall pipe.

On September 26, 2022, a 5-foot pre-cast concrete barrel was added to the existing storm sewer manhole to accommodate the planned four-foot increase in grade in the central bench area. A butyl-rubber seal was installed between manhole sections and cover. Cement grout was used to seal the cast iron lid frame to the precast manhole cover.

Pursuant to City of St. Helens' requirements, ENW oversaw a video inspection of the new storm sewer pipe on October 27, 2022. On November 21, 2022, the contractor oversaw a drag-ball test of the new storm sewer pipe. The storm sewer pipe and manhole passed these tests.

3.5.5 Storm Water Channel Relocated

From September 27 through 30, 2022, a dozer was used to grade an approximately 450-foot-long by 20-foot-wide storm water channel, which extended from the east end to the outfall at the west end of the FSWDA. The channel subgrade was graded to a depth of 3 feet below final grade to accommodate a minimum 3-foot-thick, clean soil cap. The overall slope of the channel ranged from approximately 1-2% at the east end to 2-3% at the west end. The channel subgrade was covered with a high-visibility orange non-woven demarcation geotextile and capped with 3-feet of compacted clean soil in conjunction with north-adjacent sections of the FSWDA.

From October 12 through 14, 2022, 16 rock check dam, spaced approximately 30 feet apart perpendicular to the line of flow were installed from the east to the west end of the channel. On November 9, 2022, the channel was lined with an 8-foot-wide jute mat overlain with approximately 1-foot of 4- to 9-inch diameter pit run rock down the center of the channel between each check dam.

Each check dam is composed of 4- to 9-inch diameter pit run rock approximately 16 feet long, 18 to 24 inches wide, and 12 to 16 inches high.

3.5.6 Storm Water Dissipation Pad

From September 21 through 28, 2022, a storm water dissipation pad was installed between the 30-inch storm water outfall pipe and the Hankey Road culvert inlet. The pad is approximately 35-feet-long, 10- to 25-feet-wide, and covers an area of approximately 550 sf. To prepare for installation, accumulated sediment and solid waste within the pad footprint, and the Hankey Road culvert, were removed, loaded into a dump truck, and transported to Hillsboro Landfill for disposal. The energy dissipation pad, consisted of 12- to 24-inch angular boulders on a bed of 4- to 9-inch pit run rock underlain by a high-visibility orange non-woven demarcation fabric.

3.5.7 High Visibility Orange Demarcation Geotextile

FSWDA. From October 3 through 14, 2022, Geotex® 6010R demarcation geotextile was installed, which is a non-woven high-visibility orange polypropylene material approved by City of St. Helens. Installation began at the east end of the FSWDA and progressed westward as clean cap soil was spread over the geotextile. The 15-foot-wide rolls were rolled out northeast to southwest, parallel to the long dimension of the FSWDA. The geotextile was overlapped a foot or more, taking care to thoroughly cover the entire graded footprint of the FSWDA. Steel staples were used to temporarily secure the geotextile until the first lift of soil had been spread.

USWDC. On December 8, 2022, TenCate Mirafi orange delineation nonwoven geotextile was installed, which City of St. Helens approved for use as a demarcation layer in lieu of Geotex 6010R, which was out of stock. Installation began at the north end of the USWDC and progressed southward as clean cap soil was spread over the geotextile. The 15-foot-wide rolls were rolled out east to west, perpendicular to the long dimension of the USWDC. The geotextile was overlapped a foot or more, taking care to thoroughly cover the entire graded footprint of the USWDC. Steel staples were used to temporarily secure the geotextile until the first lift of soil had been spread.

3.5.8 Landfill Cap

FSWDA. From October 3 through 18, 2022, imported clean soil from a borrow site located on Elk Ridge Estates Development Phase VI was placed the fill on the orange demarcation geotextile starting at the east end of the FSWDA. Up to four dump trucks operated sequentially to transport clean cap soil from the borrow site along a haul route designated in a City of St. Helens approved traffic control plan. After dumping the soil at the FSWDA, dozers were used to spread the soil, which was subsequently compacted by a Sheep's foot roller in 12-inch lifts. A water truck periodically sprayed the soil to optimize soil moisture content for compaction and for dust suppression.

ENW characterized the borrow soil as a red-brown lean clay (CL), which was dry to damp, stiff to very stiff, medium plasticity, cohesive, none to slow dilatancy, medium toughness, oxidized, and thickly bedded to massive.

ACS conducted 18 compaction/in place soil density tests via American Society for Testing and Materials (ASTM) D1557, which confirmed that a 95% relative maximum density had been attained at all points tested on the surface of the 3-foot compacted soil cap. Compaction test results ranged from 95% to 101% maximum density. Compaction tests were conducted at an approximate rate of one test per 5,000 sf. Compaction tests were calibrated to a proctor test of a soil cap sample collected from the borrow site by ACS on August 2, 2022. A laser level was used to confirm that a minimum 3-foot-thick cap was placed over an approximate 87,200 sf area, providing total coverage of the FSWDA.

Over a 12-day period, an estimated 8,500 cy of clean soil was imported, spread, and compacted as a minimum 3-foot-thick cap over the entire FSWDA.

USWDC. On December 8 and 9, 2022, dozers were used to spread clean existing cap soil supplemented with clean stockpiled imported soil, which was compacted by a Sheep's foot roller in 12-inch-lifts over the orange demarcation geotextile covering the USWDC. ACS conducted six compaction/in place soil density tests via ASTM D1557 on the surface of the 3-foot compacted soil cap. Compaction test results ranged from 80% to 89% maximum density, which due to soils exceeding optimal moisture content, resulted in less than the 95% relative maximum density specified in the plans. Compaction tests were conducted at an approximate rate of one test per 3,000 sf. Compaction tests were calibrated to a proctor test of a soil cap sample collected from the borrow site by ACS on December 12, 2022. Though a relative 95% maximum density had not been attained due to cap soils being too wet, the results are acceptable since the USWDC can never be developed, occurring as it does under transmission lines within BPA's easement. A laser level followed by a professional land survey (Section 3.3.3) were used to confirm that the minimum 3-foot-thick cap placed over an approximate 17,800 sf area provided total coverage of the USWDC and did not exceed BPA's grade restrictions.

Over a 2-day period, an estimated 2,000 cy of clean soil (approximately 1,000 cy of existing cap plus 1,000 cy from the supplemental stockpile) were spread and compacted as a minimum 3-foot-thick cap over the entire USWDC.

3.6 Construction – Additional Work Scopes

3.6.1 Underdrain Drain

On September 9, 2022, an onsite meeting was held to observe wet soil conditions encountered during the grading within the FSWDA.⁶ The wet area consisted of highly saturated soils and an apparent seep. The wet soils were located next to the existing 24-inch ID storm water outfall (Figure 3). The saturated soils

⁶ TDC, September 12, 2022. Geotechnical Engineering Technical Memorandum, Proposed Trench Drain, Elk Ridge Phase V – Storm Drain Relocation and Landfill Cap, Hankey Road and Barrick Lane, St. Helens, Oregon.

continued about 80 feet downstream of this storm water outfall to an existing earthen dam and about 30 to 50 feet upslope to the northeast of the outfall. The source of the water was not determined during the visit. It was agreed that the saturated conditions, if buried as found, may lead to differential settlement and would not facilitate proper grading in the area. Therefore, it was recommended that an underdrain drain be installed along the alignment of the storm water channel to create a preferential flow path to drain soil in this area. The underdrain was 8-feet wide, and up to 3-feet deep and was lined with a nonwoven geotextile. A 6-inch-diameter ADS perforated drainpipe was installed with perforations facing down on top of the fabric and subsequently backfilled with 3- to 5-inches of drainage rock (less than 5 percent fines content). Once the drain rock was placed, the nonwoven geotextile was wrapped around the drain rock with a minimum of 12 inches of overlap. The underdrain discharges to the storm water channel.

Completed underdrain is approximately 180-foot-long by 8-foot-wide by 3-foot-deep, starts approximately 40 feet northeast of the east end of the culvert under Hankey Road and continues east-northeast to a position approximately 13 feet northeast of the new sedimentation manhole location.

During the underdrain installation, sediments, organics, and solid waste from the trench were removed, loaded onto dump trucks, and transported to Hillsboro Landfill for disposal under WAM profile no. 138550OR.

3.6.2 Raise Sanitary Sewer Manholes

On September 30, 2022 and October 4, 2022, existing east bench sanitary sewer manhole and west bench sanitary sewer manhole were raised, respectively. Each pre-cast concrete manhole was 48-inches in diameter. A 36-inch-high pre-cast concrete barrel was added to the west bench manhole and a 48-inch-high pre-cast concrete barrel to the east bench manhole to accommodate the 3- to 4-foot grade change in these areas. A butyl-rubber seal was installed between manhole sections and cover. Cement grout was used to seal the cast iron lid frame to the precast manhole cover.

3.6.3 Armor Outfall Slopes

Due to steep terrain (3:1 or greater) on the north, west, and south sides of the storm water outfall next to the Hankey Road retaining wall, ENW recommended stabilizing/armoring these slopes with a 12- to 18-inch layer of riprap to prevent future erosion. On October 6 and 18, 2022, a tracked excavator was used to place riprap on the sloped area between the top of retaining wall and Hankey Road, the sloped area from the north side of Barrick Lane down to the energy dissipation pad, and a roughly equivalent sized area of the north slope down to the energy dissipation pad. A high-visibility orange demarcation geotextile was placed on the north slope prior to placing riprap. The approximate extent of riprap armoring around the FSWDA outfall is shown on Figure 3.

3.7 Post-Construction

3.7.1 Erosion and Sediment Controls

FSWDA. On October 18-19, 2022, post-construction erosion controls were installed as outlined in the work plan. Additional erosion control best management practices (BMPs) consisted of several rows of silt fence, straw wattles, and placement of loose straw were placed at the recommendation of ENW based on inspection, on October 26, 2022, November 9, 2022, November 17, 2022, January 3-4, 2023 and January 17, 2023.

USWDC. On December 16, 2022, post-construction erosion controls in general accordance with the work plan. Additional erosion control BMPs were installed at the recommendation of New, consisting of sediment barriers⁷, straw wattles, and loose straw.

3.7.2 Hydroseeding/Mulching

FSWDA. On October 26, 2022, Northwest Hydro-Mulchers, Inc. (NHM) of Boring, Oregon, hydroseeded/mulched the entire disturbed surface of the FSWDA. Application ratios were as follows:

- Mulch + tackifier = 2,000 lbs./acre for slopes 2:1 or flatter and 3,000 lbs./acre for slopes greater than 2:1
- Seed = 100 lbs./acre
- Fertilizer (16% nitrogen-16% Phosphorus-16% potassium) = 200 lbs./acre

The seed mix approved by the City of St. Helens consisted of 40% Gulf Annual Ryegrass (*Lolium Multiflorum Var Gulf*) and 60% Dwarf Turf Type Tall Fescue 180 (*Schedonorus Arundinacea 180*).

Grass has sprouted across most of surfaces of the FSWDA. Any bare soil areas that remain in the spring will be reseeded.

USWDC. On December 3, 2022, NHM hydroseeded/mulched the entire disturbed area of the USWDC using the same seed mix, seed application rate, and fertilizer application ratios as at the FSWDA. Given the hydroseeding/mulching was being done during the rainy season, the mulch + tackifier was applied at a heavier ratio of 10,000 lbs./acre. After five weeks, grass is beginning to sprout at the USWDC.

3.7.3 Final Engineered Survey

A professional land survey conducted by Compass on December 13, 2022, confirmed that the cap height of the USWDC did not exceed BPA's grade restrictions. Compass also surveyed the reconsolidated boundaries of the USWDC. As-builts of the USWDC and FSWDA are shown on the Record Plan sheets in Attachment B.

3.8 Waste Disposal

Soil and sediment mixed with solid waste totaling 242.27 tons were disposed of at Hillsboro Landfill under WAM profile no. 138550-OR (see Appendix C).

4.0 Closing

With the final survey completed and City of St. Helens inspection passed, installation landfill cap at both the FSWDA and USWDC is complete and comply with the specifications in the RD/RA.² Continued monitoring of cap surface conditions at the FSWDA and USWDC are ongoing, as detailed in the *Soil Cap*

⁷ A durable and reusable synthetic wattle typically used for perimeter control, stockpile management, or sediment control at egress points. Composed of an inner core made from flexible polyurethane foam sealed in a polyethylene film with an outer cover made from high tensile strength monofilament filter fabric.

*Management Plan.*⁸ Residual impacted soil and landfilled materials will be managed in accordance with the *Contaminated Media Management Plan.*⁹

Based on the above determination, ENW respectfully requests review by ODEQ and final determination for site closure.

5.0 Limitations

The scope of this report is limited to observations made during on-site work; interviews with knowledgeable sources; and review of readily available published and unpublished reports and literature. As a result, these conclusions are based on information supplied by others as well as interpretations by qualified parties.

The focus of the work does not extend to the presence of the following conditions:

1. Naturally occurring toxic or hazardous substances in the subsurface soils, geology and water,
2. Toxicity of substances common in current habitable environments, such as stored chemicals, products, building materials and consumables,
3. Contaminants or contaminant concentrations that are not a concern now but may be under future regulatory standards,
4. Unpredictable events that may occur after ENW's site work, such as illegal dumping or accidental spillage.

There is no practice that is thorough enough to absolutely identify the presence of all hazardous substances that may be present at a given site. ENW's investigation has been focused only on the potential for contamination that was specifically identified in the Scope of Work. Therefore, if contamination other than that specifically mentioned is present and not identified as part of a limited Scope of Work, ENW's environmental investigation shall not be construed as a guaranteed absence of such materials. ENW has endeavored to collect representative analytical samples for the locations and depths indicated in this report. However, no sampling program can thoroughly identify all variations in contaminant distribution.

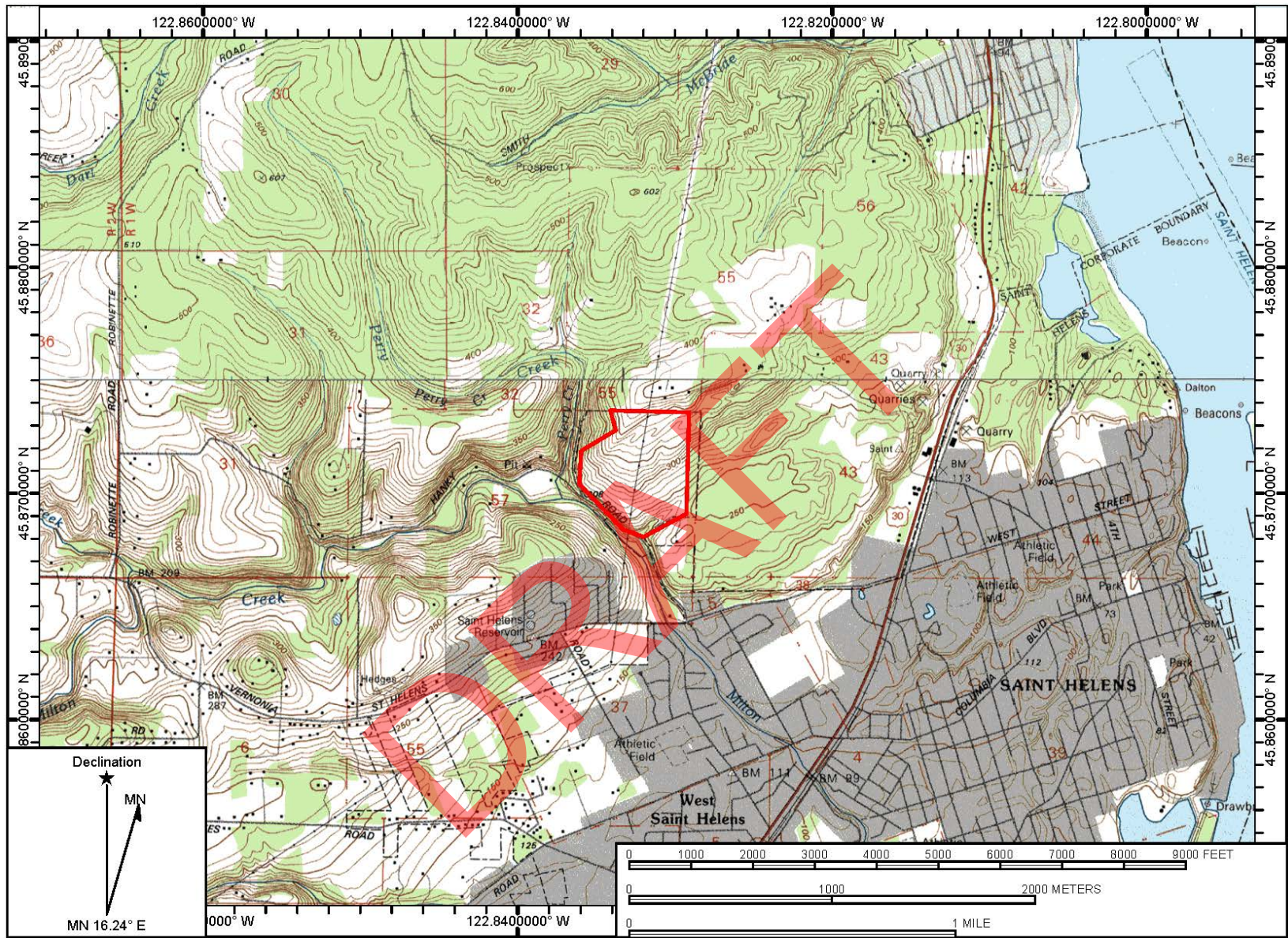
We have performed our services for this project in accordance with our agreement and understanding with the client. This document and the information contained herein have been prepared solely for the use of the client.

ENW performed this study under a limited scope of services per our agreement. ENW assumes no responsibility for conditions that we did not specifically evaluate or conditions that were not generally recognized as environmentally unacceptable at the time this report was prepared.


⁸ ENW, January 19, 2023, In preparation. Soil Cap Management Plan, Elk Ridge Estates, Northeast of Hankey Road and Barrick Lane, St. Helens, Oregon: Prepared for St. Helens Assets LLC.

⁹ ENW, January 19, 2023, In preparation. Contaminated Media Management Plan, Elk Ridge Estates, Northeast of Hankey Road and Barrick Lane, St. Helens, Oregon: Prepared for St. Helens Assets LLC.

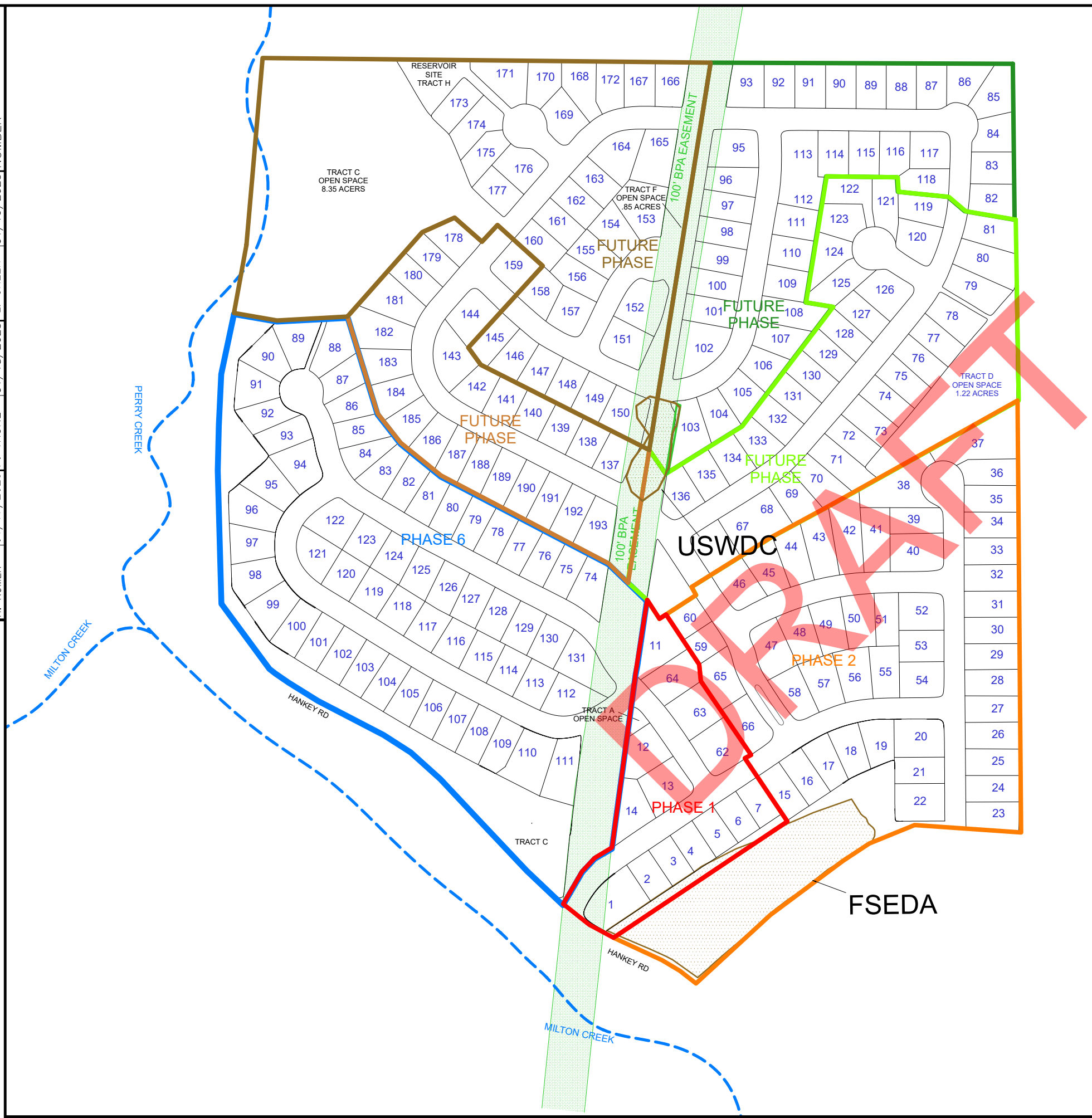
DRAFT



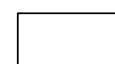


Source: USGS Topographic Map, 7.5-Minute St Helens Quadrangle, 1990

	<p>Date Drawn: 4/29/2013 CAD File Name: 826-12001-01sv_map Drawn By: LDG Approved By: NMW</p>	<p>Elk Ridge Development N 45.8712 Deg / W 122.8321 Deg St. Helens, Oregon</p>	<p>Site Vicinity Map</p>	<p>Project No. 826-12001-05 Figure No. 1</p>
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DRAWING 826-12001(v10)
 DRAWN BY: H. ROMER [01/17/2023] P. TRONE [01/18/2023] L. GREEN [01/19/2023]
 CHECKED BY:
 APPROVED BY:



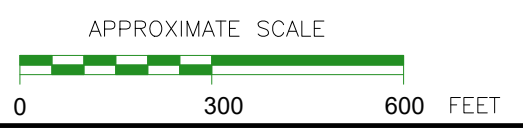
LEGEND:

-  APPROXIMATE LOT BOUNDARIES AND LOT NUMBERS
-  APPROXIMATE SUBJECT PROPERTY BOUNDARIES (COLOR INDICATING VARIOUS DEVELOPMENT AREAS)
-  FSWDA AND USWDC

FSWDA = FORMER SOLID WASTE DISPOSAL AREA
 USWDC = UPPER SOLID WASTE DISPOSAL CELL

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2011 AND ENW FIELD NOTES.





environmental, natural resource consultants

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 P: (503)452-5561, E: ENW@EVREN-NW.COM

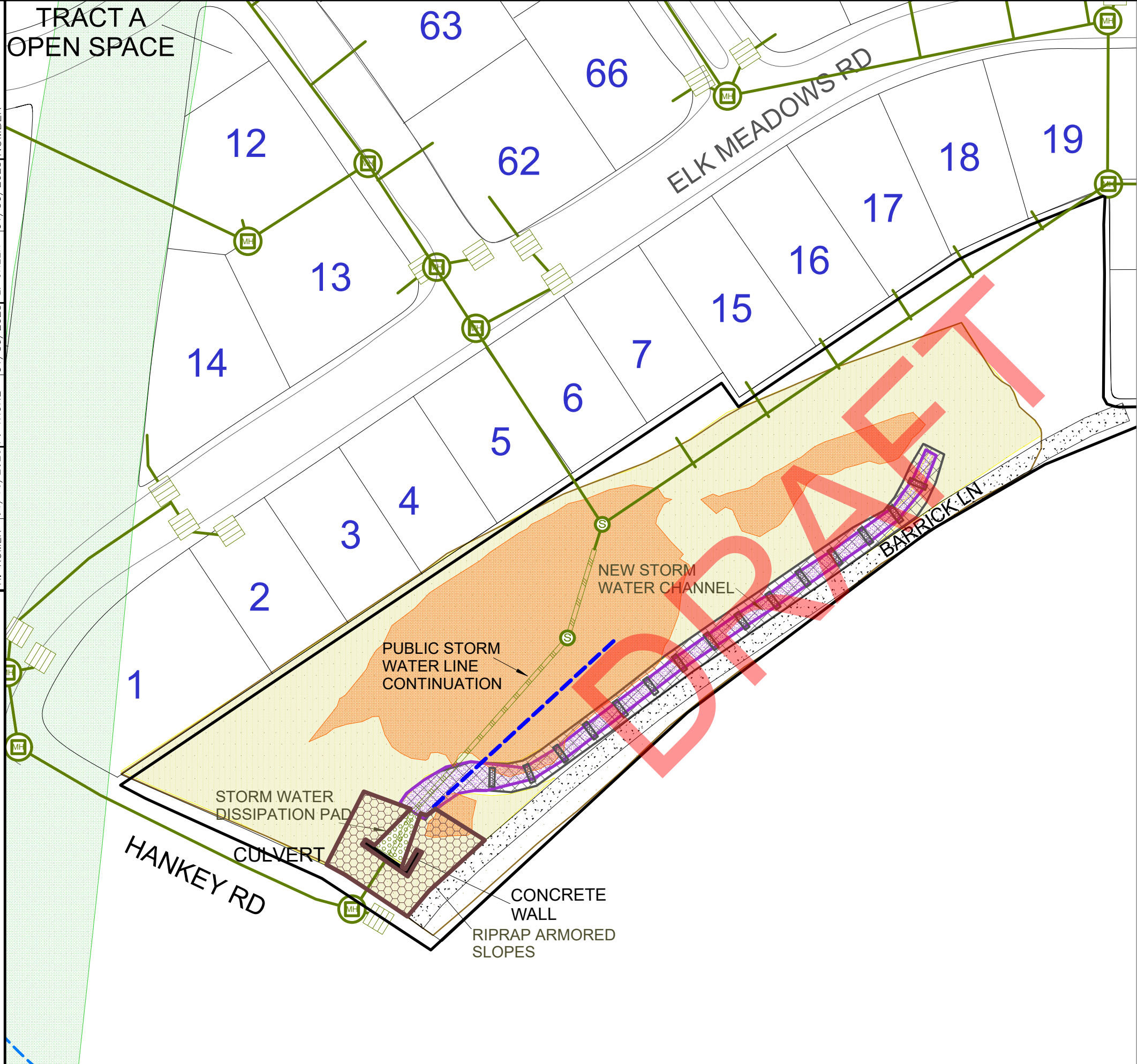
FIGURE 2

SITE PLAN

UNDOCUMENTED LANDFILLS

ELK RIDGE ESTATES
 ST HELENS, OREGON

DRAWN BY: H. ROMER [01/16/2023] P. TRONE [01/30/2023]
 CHECKED BY: L. GREEN [01/30/2023]
 APPROVED BY: [01/30/2023]
 DRAWING NUMBER: 826-12001(v11)



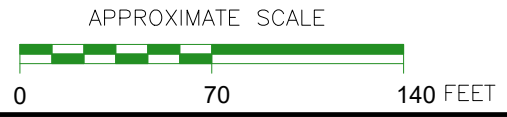
LEGEND:


- 146 APPROXIMATE LOT BOUNDARIES AND LOT NUMBERS
- FSWDA
- REWORKED SOIL/WASTE INCREASED GRADE
- IMPORTED CLEAN SOIL CAP
- NEW STORM WATER CHANNEL
- CHECK DAMS IN NEW STORM WATER CHANNEL
- ROCK ON JUTE MAT BETWEEN CHECK DAMS
- RAVINE TRENCH DRAIN
- STORM SYSTEM
- S SEDIMENTATION MANHOLE (POLLUTION CONTROL)
- ≡ CATCH BASIN
- MH STORM WATER MANHOLE

FSWDA = FORMER SOLID WASTE DISPOSAL AREA

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2011 AND ENW FIELD NOTES.
2. ALL LOT, ROAD, AND FEATURE LOCATIONS ARE APPROXIMATE.



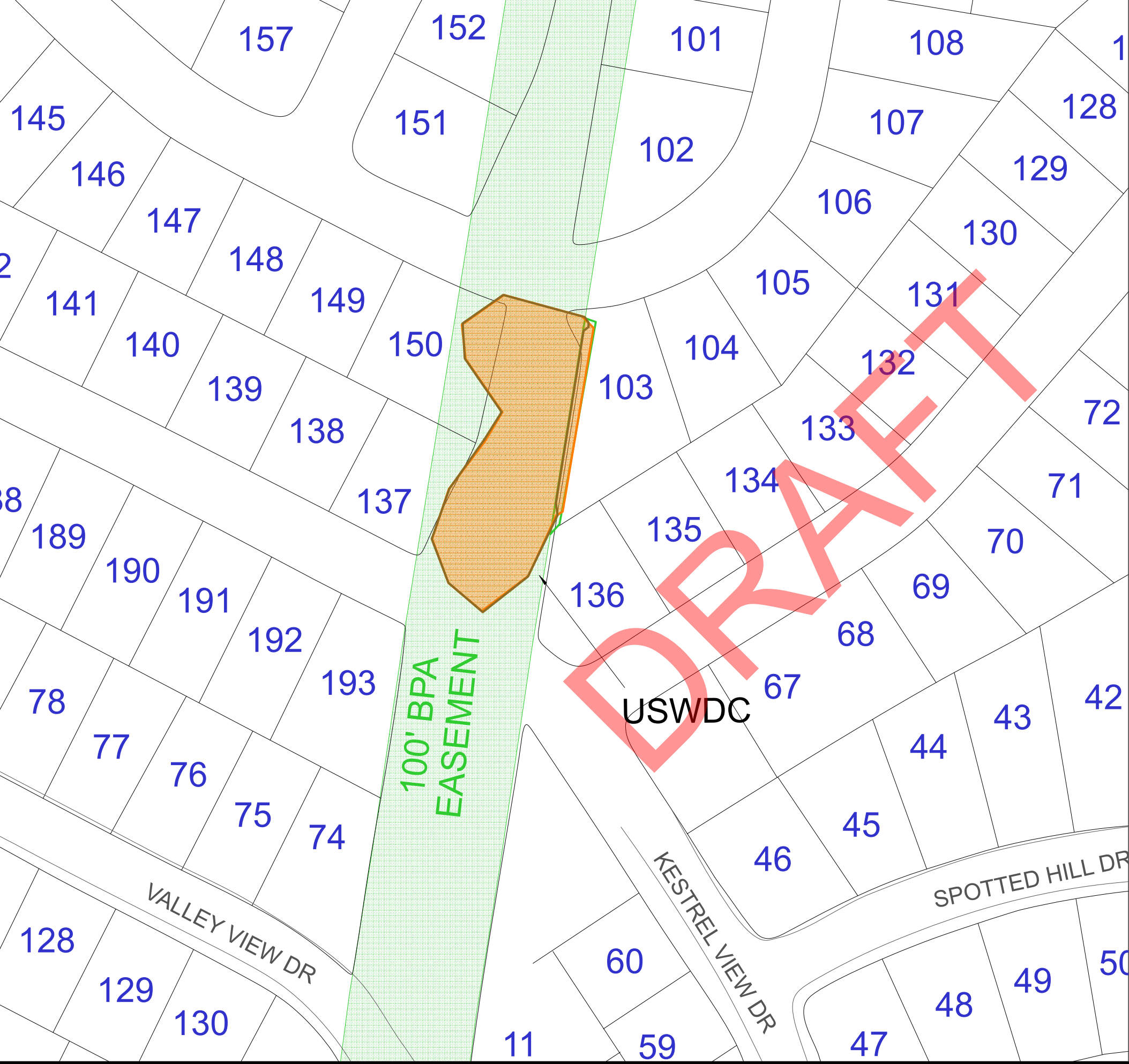


EVREN NORTHWEST INC.
environmental, natural resource consultants

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FIGURE 3
FORMER SOLID WASTE DISPOSAL AREA (FSWDA) AS-BUILT DIAGRAM
 ELK RIDGE ESTATES
 ST HELENS, OREGON

DRAWING 826-12001(v12)
 DRAWN BY H. ROMER [01/17/2023] P. TRONE [01/30/2023] L. GREEN [01/30/2023]
 CHECKED BY
 APPROVED BY
 NUMBER



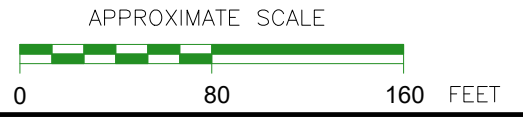
LEGEND:

- 146 APPROXIMATE LOT BOUNDARIES AND LOT NUMBERS
- LOCALITY OF THE FACILITY/EXTENT OF SOLID WASTE
- IMPORTED CLEAN SOIL CAP

USWDC = UPPER SOLID WASTE DISPOSAL CELL

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2011 AND ENW FIELD NOTES.
2. ALL LOT, ROAD, AND FEATURE LOCATIONS ARE APPROXIMATE.





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FIGURE 4
UPPER SOLID WASTE DISPOSAL CELL
(USWDC) AS-BUILT DIAGRAM

ELK RIDGE ESTATES
 ST HELENS, OREGON

Attachment A
Site Photographs

DRAFT



Excavator clearing trees and removing root balls.



Installation of 30-in ID, double-wall storm water pipe in trench



Burrito-wrapping drainpipe and drain rock with the non-woven geotextile.



View east of completed storm-water dissipation pad, storm sewer outfall, subgrade channel, and manholes.



Elk Ridge FSWDA Capping
St. Helens, Oregon

Site Photographs
9/7/22 to 10/26/22

Project No.
826-12001-18
Attachment

A



Cap placement activities – view northeast.



3-foot clean soil cap placed over the entire FSWDA – View northeast of channel next to Barrick Ln.



Riprap complete on slopes above outfall.



Hydroseed/mulch slopes above the outfall.



Elk Ridge FSWDA Capping
St. Helens, Oregon

Site Photographs
9/7/22 to 10/26/22

Project No.
826-12001-18

Attachment

A



Removing the existing cap soil from USWDC – view southwest and stockpiling for later reuse.



Reconsolidating solid waste prior to capping – southern portion of USWDC, view east.



Existing cap soil was pushed to the west side of the USWDC, note exposed solid waste beneath the former soil cap.



Reconsolidating solid waste in the northern portion of the USWDC – view west.



Elk Ridge USWDC Capping
St. Helens, Oregon

Site Photographs
12/06/22 to 12/16/22

Project No.
826-12001-18

Attachment
A



Placing a 3-foot-thick clean soil cap in 1-foot-lifts over demarcation fabric and compacting with a sheep's foot roller.



View of the southern portion of the USWDC following placement of a 3-foot-thick soil cap.



View of the northern portion of the USWDC following soil capping. Arrow pointing to borrow area for clean cap soil.



View of USWDC following application of hydro-mulch and installation of straw wattles perpendicular to slope.



Elk Ridge USWDC Capping
St. Helens, Oregon

Site Photographs
12/06/22 to 12/16/22

Project No.
826-12001-18

Attachment
A

Attachment B

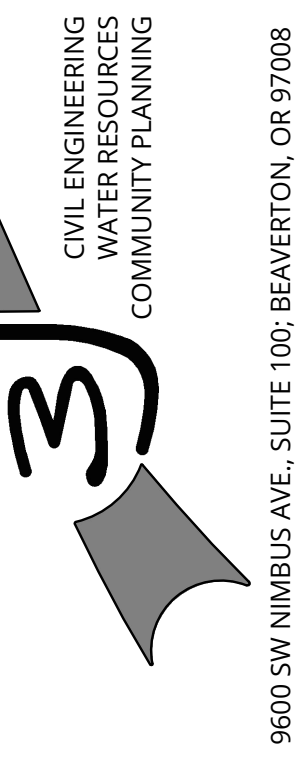
Soil Cap As-Built Drawings

DRAFT



RECORD DRAWING
01/25/2023
This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
• Surveyed as-builts
The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of
City of St. Helens

COVER SHEET
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR



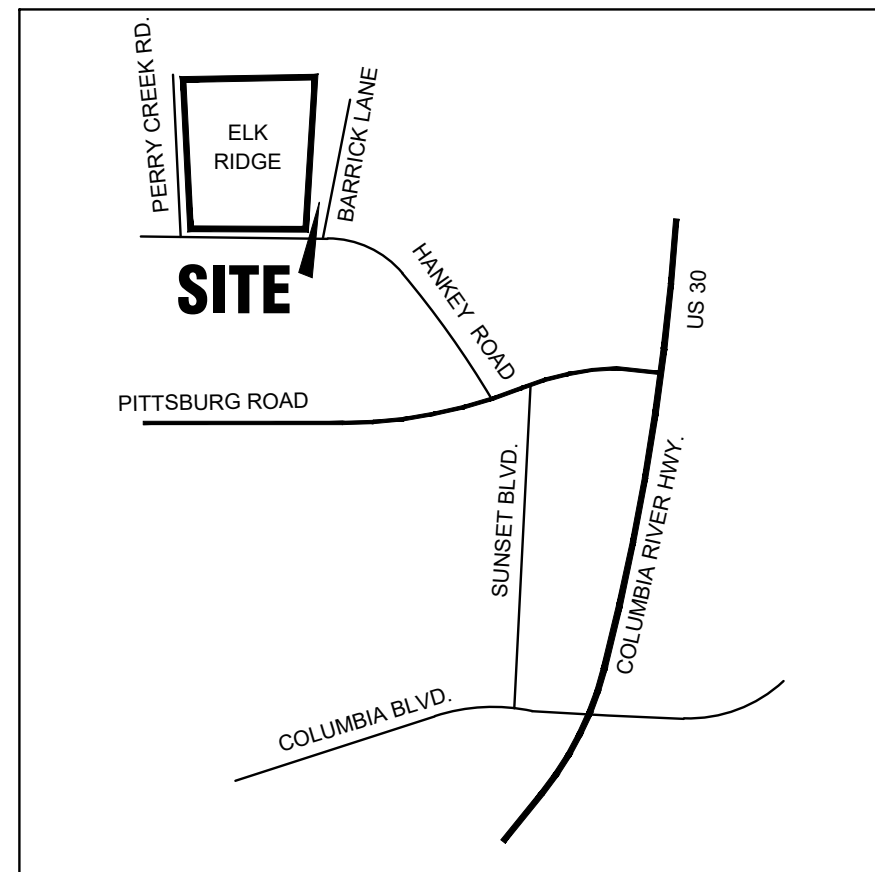
PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C000

RECORD DRAWINGS FOR ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP

PREPARED FOR
ST. HELENS ASSETS, LLC

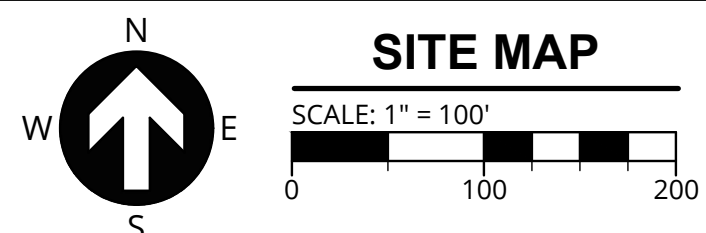
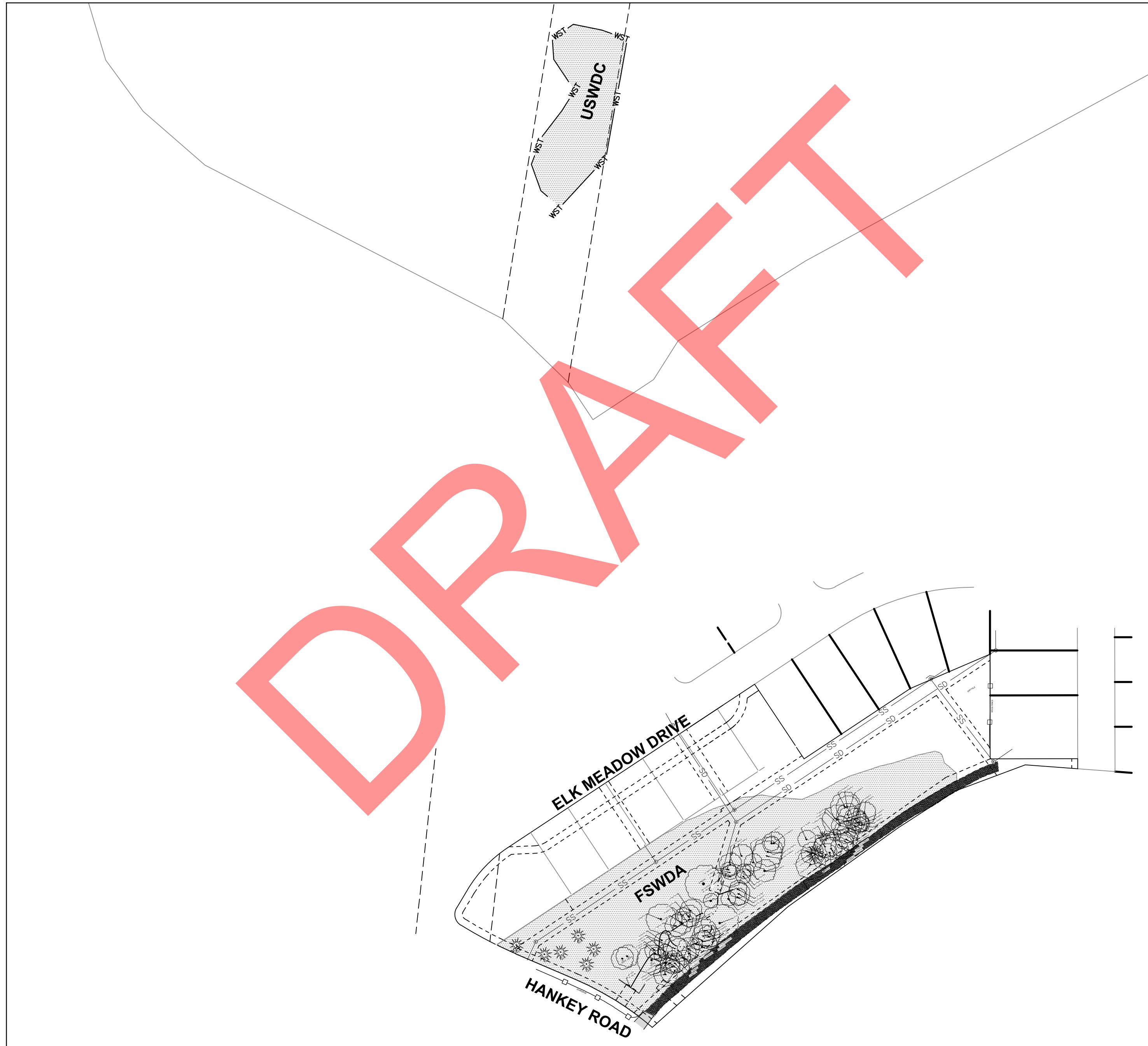
TAX LOT 100
LOCATED IN THE SW 1/4 & SE 1/4 OF SECTION 32
T 5 N, R 1 W, W.M. COLUMBIA COUNTY, OREGON



VICINITY MAP

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF ST. HELENS, OREGON STANDARD SPECIFICATIONS AND STANDARD DRAWING FOR CONSTRUCTION, DEQ AND OREGON STATE HEALTH DEPARTMENT STANDARD PLANS AND SPECIFICATIONS, AS APPLICABLE.
2. PRIOR TO ANY CONSTRUCTION, LOCATIONS OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR. WHEN ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
3. PRIOR TO CONSTRUCTION ALL UTILITY LOCATES SHALL BE COMPLETED IN FULL. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN THESE MAKINGS AT ALL TIMES DURING ANY CONSTRUCTION PHASE OF THE PROJECT.
4. ORGANIC AND UNDESIRABLE MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION AREA AS DIRECTED BY THE ENGINEER.
5. CONTRACTOR TO LEAVE ALL AREAS OF PROJECT FREE OF DEBRIS AND UNUSED CONSTRUCTION MATERIAL.
6. ALL FILL AREAS SHALL BE STRIPPED OF ORGANIC MATERIAL. FILL WILL BE PLACED IN 9-INCH LIFTS AND COMPACTED TO 95% RELATIVE MAXIMUM DENSITY ACCORDING TO AASHTO T-99 STANDARDS. BASE ROCK IN THE STREET WILL BE COMPACTED TO 94% AASHTO T-180. LANDSCAPED AREAS WILL BE COMPACTED TO 90%. THE CONTRACTOR WILL PROVIDE DENSITY TESTING A MINIMUM OF ONE FOR EVERY 10,000 SQUARE FEET OF AREA AND 2 FEET OF FILL PLACED. ADDITIONAL COMPACTION TESTS MAY BE REQUIRED BY THE CITY AND THE ENGINEER OF RECORD IF POOR COMPACTION EFFORTS ARE OBSERVED DURING CONSTRUCTION. COMPACTION REPORTS FROM A REPUTABLE TESTING LAB WILL BE SUPPLIED TO THE ENGINEER.
7. ADA STANDARD SIDEWALK RAMP WITH CURB DROPS WILL BE INSTALLED WITH PROJECT INCLUDING ONE 5' PANEL ON EACH SIDE OR FROM PC TO PT ON CORNERS. LOCATIONS SHALL BE AS SHOWN ON PLANS UNLESS OTHERWISE DIRECTED BY ENGINEER AND APPROVED BY CITY.
8. ALL DISTURBED AREAS NOT LANDSCAPED ARE TO BE HYDROSEEDING OR BEDDED IN STRAW TO PREVENT EROSION.
9. ANY CHANGES FROM APPROVED PLANS SHALL BE REQUESTED BY THE DESIGN ENGINEER AND APPROVED BY THE APPROPRIATE AGENCIES. COMPLEXITY OF MODIFICATIONS WILL DETERMINE IF REVISED PLANS ARE REQUIRED OR CITY APPROVALS PRIOR TO CONSTRUCTING CHANGES.
10. CAREFULLY REVIEW FUTURE LOCATION OF SIDEWALK WHEN INSTALLING STREET LIGHTS AND MAILBOX STANDS TO AVOID CONFLICTS IN AREAS WHERE SIDEWALKS WILL BE INSTALLED.
11. STORM & SANITARY SEWER LATERALS SHALL BE OF PVC MATERIAL (4" MIN. DIAMETER). ALL LATERALS MUST HAVE #10 GAUGE COPPER WIRE AND TRACER TAPE 1 FOOT BELOW SURFACE OF PAVING OR LEVELED AND COMPACTED FILL. PRIOR TO LAST LAYER OF FILL MATERIAL, THE TAPE SHOULD BE MAGNETIC. THE ENDS OF SANITARY LATERALS SHALL BE MARKED WITH A PRESSURE TREATED 2" X 4" PAINTED RED, WITH DEPTH OF LATERAL CLEARLY MARKED AND "SAN" CLEARLY VISIBLE. STORM LATERAL ENDS SHALL BE MARKED WITH A PRESSURE TREATED 2" X 4" PAINTED GREEN, WITH DEPTH OF LATERAL CLEARLY MARKED AND "STM" CLEARLY VISIBLE.
12. ALL STORM AND SANITARY SEWER PIPE TO HAVE A MIN. OF 36" COVER UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
13. PRIOR TO ACCEPTANCE, ALL PUBLIC STORM AND SANITARY SEWER SHALL BE AIR TESTED IN ACCORDANCE WITH THE CITY AND APWA REQUIREMENTS FOR SUCH TESTS. PVC PIPE SHALL ALSO BE TESTED FOR DEFLECTION, USING A MANDREL DESIGNED AT NO LESS THAN 95% OF INTERIOR DIAMETER. CONTRACTOR TO PREPARE PIPE IN ACCORDANCE WITH OREGON APWA SPECIFICATIONS PRIOR TO THE INSPECTING ENGINEER AND OR THE CITY'S DESIGNATE WITNESSING THE TEST. ALL SANITARY SEWER LINES SHALL BE VIDEO TAPED, BY THE CONTRACTOR.
14. BEDDING AND PIPE ZONE BACKFILL REQUIREMENTS WILL BE IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND DETAILS.
15. TRENCH BACKFILL IN PUBLIC ROW WILL BE 3/4-INCH TO 0-INCH CRUSHED ROCK COMPACTED TO 95 PERCENT RELATIVE MAXIMUM DENSITY, AASHTO T-99. COMPACTION AND BACKFILL IN COUNTY ROW MUST MEET COUNTY STANDARDS AND BE APPROVED BY THE COUNTY ENGINEERING STAFF.
16. WATERLINES SHALL BE PRESSURE TESTED FOLLOWING COMPLETION. TEST PRESSURE SHALL BE 150 psi (AT LOWEST POINT IN TEST SECTION) TO BE HELD FOR A PERIOD OF 1 HOUR AND SHALL NOT VARY BY MORE THAN 5 psi. SAID TEST SHALL BE WITNESSED BY THE INSPECTING ENGINEER AND OR THE CITY'S DESIGNATE.
17. PRIOR TO BEING PLACED IN SERVICE, THE WATERLINE AND SERVICES SHALL BE FLUSHED, STERILIZED, AND RE-FLUSHED, ALL IN ACCORDANCE WITH STANDARD METHODS OF THE HEALTH DIVISION, DEPARTMENT OF HUMAN RESOURCES, STATE OF OREGON. CITY CREWS WILL TAKE BACTERIOLOGICAL TESTS WHEN SO REQUESTED BY THE CONTRACTOR. THE CONTRACTOR SHALL PAY FOR SAID TESTING.
18. PERMANENT STREET SIGNAGE TO BE INSTALLED BY CITY CREWS IN ACCORDANCE WITH NORMAL TRAFFIC REGULATIONS. INSTALLATIONS SHALL BE PAID FOR BY THE CONTRACTOR ON A TIME AND MATERIALS BASIS.
19. STREET TREES TO BE PLANTED IN ACCORDANCE WITH CHAPTER 1.108 OF THE CITY OF ST. HELENS COMMUNITY DEVELOPMENT CODE.
20. A PRE CONSTRUCTION MEETING WITH THE CITY, CONTRACTOR, AND INSPECTING ENGINEER IS REQUIRED PRIOR TO THE START OF CONSTRUCTION.
21. ENGINEER SHALL PROVIDE THE CITY WITH AN AUTO CAD R14 OR ABOVE COPY OF THE AS-BUILT DRAWING AT THE COMPLETION OF THE PROJECT USING THE ENGINEERS STANDARD AUTO CAD LAYERING. IN ADDITION AN AUTO CAD R14 OR ABOVE COPY OF SAME USING THE CITY'S STANDARD AUTO CAD LAYERING SHALL BE PROVIDED BY THE ENGINEER. THE CITY SHALL ALSO BE FURNISHED WITH AS-BUILT REPRODUCIBLE PLANS ON OPAQUE MYLAR.
22. SURVEYOR SHALL PROVIDE THE CITY A COORDINATE FILE SHOWING COORDINATES FOR ALL LOT CORNERS, P.C.'S, P.T.'S INTERSECTIONS, AND BOUNDARY POINTS AS RECORDED. DISTANCES SHALL BE SUPPLIED TO SIX PLCS AND ANGLES TO TWO PLCS. TWO GPS POINTS SHALL BE USED TO ROTATE BASIS OF BEARING TO STANDARD MONUMENT BOXES SHALL BE INSTALLED PER CITY STANDARD DETAIL 266.
23. THE LETTER "W" SHALL BE STAMPED IN THE TOP OF THE CURB SECTION DIRECTLY ABOVE THE WATER SERVICE CROSSING. THE LETTER "S" SHALL BE STAMPED IN THE TOP OF THE CURB DIRECTLY ABOVE THE SANITARY CROSSING, AND "SM" AT STORM DRAIN CROSSINGS.
24. EROSION CONTROL MUST BE FULLY CONSTRUCTED AS APPROVED BY THE PROJECT ENGINEER PRIOR TO BEGINNING ANY CONSTRUCTION.
25. CITY ENGINEERING STAFF SHALL BE SUPPLIED WITH MATERIAL CERTIFICATIONS FOR ALL MATERIALS USED ON PUBLIC INFRASTRUCTURE.
26. EXISTING MONUMENTATION ON PROJECT MUST BE REPLACED WITH CITY APPROVED MONUMENTS AND MONUMENT BOXES. (NOTE: HANKEY ROAD IS MONUMENTED.)
27. IF DRILLING OR BLASTING ARE REQUIRED, A BLASTING PLAN MUST BE APPROVED BY THE CITY ENGINEER PRIOR TO ANY WORK COMMENCING.



PROJECT TEAM

OWNER / APPLICANT
ST. HELENS ASSETS, LLC.
PO BOX 288
WASHOUGAL, WA 98671
CONTACT: MARK ZOLLER
PHONE: (360) 835-1031
EMAIL: mark@mhzoller.com

CIVIL ENGINEER
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5075 SW GRIFFITH DRIVE #150
BEAVERTON, OR 97005
CONTACT: JOHN HOWORTH
PHONE: (503) 946-9365 x201
EMAIL: john.howorth@3j-consulting.com

LAND SURVEYOR
COMPASS LAND SURVEYORS
4107 INTERNATIONAL WAY, SUITE 750
MILWAUKIE, OR 97222
CONTACT: MIKE RADEMACHER
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ENVIRONMENTAL CONSULTANT
EVREN NORTHWEST
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PORTLAND, OR 97293
CONTACT: LYNN GREEN
PHONE: (503) 452-5561
EMAIL: Lyngng@evren-nw.com

CONTRACTOR
JANZ ENTERPRISES
28055 SE DEE STREET
BORING, OR 97009
PHONE: 503-663-7414

DATES OF CONSTRUCTION:
FSWDA 9/7/2022 - 12/13/2022
USWDC 12/06/2022 - 12/13/2022

CITY OF ST. HELENS PROJECT NO.: P-371-F

LOCATES (48 HOUR NOTICE PRIOR TO EXCAVATION)

ATTENTION:
OREGON LAW REQUIRES YOU TO FOLLOW THE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES FROM THE CENTER BY CALLING (503) 246-1987. ONE CALL SYSTEM 1-800-332-2344

THE PUBLIC WORKS MAINTENANCE SUPERVISOR (NEAL SHEPPERD) 503-397-3532

MUST BE NOTIFIED 48 HOURS IN ADVANCE TO COORDINATE ANY TAPS AND OR WATER VALVE OPERATION. THE CONTRACTOR IS NOT ALLOWED TO OPERATE ANY WATER VALVES CONTROLLING FLOW TO NEW PIPING FROM CITY'S POTABLE WATER SYSTEM.

CITY APPROVAL IS REQUIRED FOR THIS PROJECT.
A COUNTY PERMIT IS REQUIRED TO WORK IN THE HANKEY ROAD R.O.W.

SEE "RD/RA WORK PLAN" AND "CONTAMINATED MEDIA MANAGEMENT PLAN"
 PREPARED BY EVREN NORTHWEST, INC., DATED AUGUST 10, 2016 AND NOVEMBER 17, 2021 RESPECTIVELY.

ANY PERSON INVOLVED IN ANY WORK WITH THE POTENTIAL TO COME IN CONTACT WITH CONTAMINATED MEDIA AT THE SITE MUST REVIEW, UNDERSTAND, AND FOLLOW THIS PLAN.

1. A SIGNED ACKNOWLEDGEMENT FORM MUST BE SUBMITTED TO EVREN NW BY ANYONE CONDUCTING WORK INVOLVING CONTAMINATED MEDIA AT THE SITE PRIOR TO THE COMMENCEMENT OF WORK.
2. ANY WORK WITHIN A MAPPED CONTAMINATED AREA MUST BE CONDUCTED IN A MANNER THAT IS CONSISTENT WITH ALL STATE REGULATIONS, ODEQ REQUIREMENTS SPECIFIC TO THE SUBJECT SITE, AND THIS PLAN.

SECTION 2.0 SITE WORK INITIATION

1. CONTRACTORS AND/OR SUBCONTRACTORS HIRED TO CONDUCT SUBSURFACE WORK AT THE SITE WILL BE COMPETENT AND EXPERIENCED IN THE MANAGEMENT OF MEDIA IMPACTED WITH HAZARDOUS SUBSTANCES. PRE-PLANNING OF ANTICIPATED WORK WITH THE ENVIRONMENTAL CONSULTANT IS REQUIRED.
2. ALL FIELD PERSONNEL WHO HAVE THE POTENTIAL FOR COMING IN CONTACT WITH IMPACTED MEDIA WILL:
 - 2.1. HAVE THEIR HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARD (HAZWOPER) FORTY (40) HOUR TRAINING AND CERTIFICATION, AS WELL AS ANNUAL UPDATES.
 - 2.2. HAVE A COPY AND BE FAMILIAR WITH THE HEALTH AND SAFETY PLAN.
 - 2.3. HAVE REVIEWED AND SIGNED THE ACKNOWLEDGEMENT PAGE OF THIS PLAN. THE SIGNED ACKNOWLEDGEMENT PAGES WILL BE AVAILABLE FOR THE PROPERTY OWNER'S OR SITE MANAGEMENT'S INSPECTION AND PERMANENT RECORD-KEEPING, IF REQUESTED.
3. A HEALTH AND SAFETY PLAN SPECIFIC TO THE WORK TO BE PERFORMED WILL BE PREPARED ACCORDING TO INDUSTRY STANDARDS. AT A MINIMUM, OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) STANDARDS SPECIFIC TO THE WORK TO BE PERFORMED WILL BE MET. THE HEALTH AND SAFETY PLAN SHOULD BE PREPARED BY A QUALIFIED SPECIALIST KNOWLEDGEABLE ABOUT HEALTH AND SAFETY ISSUES, THE CONTAMINANTS IDENTIFIED AT THE SITE, THE PREVIOUSLY DOCUMENTED SITE CONDITIONS, AND THE PROPOSED CONTRACTORS' SCOPE OF WORK. EACH HEALTH AND SAFETY PLAN PREPARED SHOULD TAKE INTO CONSIDERATION AND ADDRESS THE POTENTIAL FOR EXPLOSIVE GASES.

SECTION 3.0 SOIL AND SEDIMENT MANAGEMENT

1. ODEQ REQUIRES CONTAMINATED MEDIA TO BE ADEQUATELY CHARACTERIZED TO DETERMINE HOW IT SHOULD BE MANAGED. WHEN SOIL OR SEDIMENT IS HIGHLY CONTAMINATED, THE GENERATION, TREATMENT, TRANSPORTATION AND DISPOSAL MAY FALL UNDER BOTH STATE AND FEDERAL HAZARDOUS WASTE REGULATIONS. CONTAMINATED MEDIA THAT IS NOT HAZARDOUS WASTE IS REGULATED UNDER OAR CHAPTER 340-093 FOR SOLID WASTE.
2. FOR THE PURPOSES OF THIS PROJECT, CONTAMINATED SOIL AND SEDIMENT ARE DEFINED AS HAVING CONCENTRATIONS OF HAZARDOUS SUBSTANCES GREATER THAN THE CLEAN FILL SCREENING LEVELS (ODEQ JULY 2014). SEE OAR 340-093-0030. IT IS IMPORTANT FOR FIELD PERSONNEL TO KNOW HOW TO IDENTIFY, CHARACTERIZE (IF APPROPRIATE), AND MANAGE CONTAMINATED SOIL AND SEDIMENT. TO MINIMIZE EXPENSES FROM ANY SUBSURFACE PROJECT, CONTRACTOR SHALL REVIEW THE SCOPE WITH THE ENVIRONMENTAL CONSULTANT.
3. ALL SOIL ASSOCIATED WITH THE HISTORIC LANDFILL SHOWN, OR ANY SOIL CONTAINING EVIDENCE OF SOLID WASTE WILL BE MANAGED AS IMPACTED SOIL UNLESS PROVEN OTHERWISE. IDENTIFICATION OF IMPACTED SOIL MAY BE BASED ON ANY SINGLE OR COMBINATION OF THE FOLLOWING FACTORS:
 - 3.1. VISUAL OBSERVATION OF SOLID WASTE (INCLUDING BUT NOT LIMITED TO GLASS, PLASTIC, METAL AND WOOD DEBRIS).
 - 3.2. OLFACTORY SENSING OF ODOR.
 - 3.3. COLLECTION AND ANALYSIS OF SOIL OR SEDIMENT SAMPLES FOR CONSTITUENTS PRE-APPROVED BY THE ENVIRONMENTAL CONSULTANT.
 - 3.4. INDICATION OF IMPACTS BY INSTRUMENTATION DESIGNED FOR SCREENING FOR VOLATILE CONSTITUENTS (E.G., PHOTOIONIZATION METER (PID)).
 - 3.5. KNOWLEDGE OF THE VERTICAL AND LATERAL EXTENT OF AREAS OF RESIDUAL IMPACTS BASED ON THE CMMP AND REFERENCED HISTORICAL ENVIRONMENTAL REPORTS.
 - 3.6. WHERE BOTH SOIL AND GROUND WATER ARE PRESENT, SOIL IMPACTS MAY BE INDICATED BY OBSERVATION OF IRIDESCENT SHEEN OR SEPARATED FLUID PHASES (I.E., IMMISCIBLE LIQUIDS).
4. THE HISTORIC LANDFILL ON TRACT B OPEN SPACE IS A NATURAL DRAINAGE FEATURE AND INCLUDES A POND AND EARTHEN DAM. ALL SEDIMENTS ON TRACT B OPEN SPACE WILL BE MANAGED AS IMPACTED SEDIMENT UNLESS PROVEN OTHERWISE.
5. IF SOIL OR SEDIMENT EXHIBITING EVIDENCE OF CONTAMINATION IS ENCOUNTERED DURING EXCAVATION, THIS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENVIRONMENTAL CONSULTANT. HOWEVER, IT MUST BE EMPHASIZED THAT SOME IMPACTED SOILS AND SEDIMENTS DO NOT EXHIBIT ANY PHYSICAL INDICATION OF THEIR IMPACTS (E.G., NO ODOR OR DISCOLORATION OR PID RESPONSE ASSOCIATED WITH METALS-IMPACTED SOILS). THEREFORE, THE MOST RELIABLE METHOD OF DETERMINING IF CHEMICAL IMPACTS ARE PRESENT IS LABORATORY ANALYSIS.
6. ANYONE PERFORMING SUBSURFACE WORK AT THE SITE SHOULD BE PREPARED FOR THE POSSIBILITY TO ENCOUNTER IMPACTED MEDIA (SOIL, SEDIMENT, SURFACE WATER, SHALLOW PERCHED GROUND WATER, AND SOIL GAS) IN OTHER AREAS AS WELL.
7. IF SOILS OR SEDIMENTS WITH SIGNIFICANTLY DIFFERENT CHARACTERISTICS THAN THOSE PREVIOUSLY IDENTIFIED ARE EXCAVATED AT THE SITE, THEY MAY NEED TO BE APPROPRIATELY CHARACTERIZED BY LABORATORY ANALYSES PRIOR TO DISPOSAL OR REUSE ON-SITE. THEY SHOULD BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER OR ENVIRONMENTAL CONSULTANT.
8. IF SAMPLES ARE TO BE COLLECTED, THEY SHOULD BE COLLECTED BY PERSONNEL KNOWLEDGEABLE IN SAMPLING METHODS AND PROTOCOLS SPECIFIC TO EACH MEDIA, ENSURING THAT APPROPRIATE SAMPLE SELECTION, COLLECTION (WHETHER DISCRETE OR COMPOSITE), LABELING, AND STORAGE METHODS ARE FOLLOWED.
9. DURING SITE EXCAVATION, ALL SOIL AND SEDIMENT SHOULD BE MONITORED AND FIELD-SCREENED FOR POTENTIAL IMPACTS. IF SUSPECT SUBSURFACE FEATURES ARE ENCOUNTERED (E.G., UNDERGROUND STORAGE TANKS, PIPING, DRY WELLS, SUMPS, ETC.) OR FIELD-SCREENING SUGGEST IMPACTS, ALL EXCAVATED OR DISTURBED SOIL IN THESE AREAS WILL BE MANAGED AS

IMPACTED SOIL, UNLESS THE PROJECT MANAGER CHOOSES TO CONDUCT ADDITIONAL SAMPLING AND TESTING (ACCORDING TO ODEQ-APPROVED METHODS) AND DETERMINES THE SOIL IS NOT IMPACTED. IF ANY SOILS OR SEDIMENTS ARE IDENTIFIED THROUGH OBSERVATION OR OLFACTORY INDICATION (SIGHT OR SMELL) AS BEING IMPACTED OUTSIDE PREVIOUSLY IDENTIFIED AREAS, THIS WILL BE BROUGHT TO THE ATTENTION OF THE ENVIRONMENTAL CONSULTANT WHO WILL CONDUCT TESTING IF NECESSARY.

10. IF EXCAVATION IS GOING TO OCCUR IN THE FORMAL SOLID WASTE DISPOSAL AREA OR IN THE AREA OF THE UPLAND SOLID WASTE DISPOSAL CELL, SOIL (AND/OR SEDIMENT) MUST BE MANAGED USING ONE OR MORE OF THE FOLLOWING APPROACHES. ADDITIONALLY, THE THREE (3) FEET OF CLEAN SOIL CAP MUST BE MAINTAINED IN TRACT E. IT IS HIGHLY ADVISED THAT THE ENVIRONMENTAL CONSULTANT BE CONTACTED PRIOR TO STARTING WORK TO DEVELOP THE LEAST EXPENSIVE APPROACH TO WORKING WITH RESIDUAL IMPACTED SOIL AND SEDIMENT.
 - 10.1. IF IMPACTED SOIL OR SEDIMENT IS EXCAVATED, IT MUST BE MANAGED AS A HAZARDOUS MATERIAL.
 - 10.2. UNLESS OTHERWISE DIRECTED BY THE PROJECT MANAGER, THE PREFERRED METHOD OF EXCAVATION AND DISPOSAL OF IMPACTED SOIL AND SEDIMENT WILL BE TO LOAD THE MATERIAL DIRECTLY INTO TRANSPORT VEHICLES FOR OFF-SITE DISPOSAL. NOTE, IF SEDIMENTS CONTAIN MOISTURE TO THE EXTENT THAT THEY DRAIN FLUIDS, A LINED TRANSPORT TRUCK OR VACUUM TRUCK SHOULD BE USED FOR TRANSPORT TO PREVENT ANY LEAKAGE OF POTENTIALLY IMPACTED MATERIAL. SOILS IN TRUCKS SHOULD BE COVERED, AND ANY LOOSE SOIL SHOULD BE BRUSHED OFF THE TRUCKS PRIOR TO LEAVING THE SITE.
 - 10.3. IF NECESSARY, SOILS AND SEDIMENT MAY BE TEMPORARILY MANAGED BY PLACING THEM IN A SEGREGATED STOCKPILE, ON AND ENVELOPED BY PLASTIC SHEETING. THE MARGINS OF THE LOWER LINER SHOULD BE ROLLED AND BERMED WITH THE TOP LAYER TO PREVENT CONTACT WITH STORM WATER. THESE STOCKPILES MAY BE TEMPORARILY MANAGED ON-SITE FOR NO MORE THAN 30 DAYS. ANY LONGER ON-SITE STORAGE/MANAGEMENT WILL REQUIRE A SPECIAL PERMIT FROM ODEQ.
 - 10.4. TRANSPORT TO A LANDFILL AUTHORIZED TO ACCEPT HAZARDOUS MATERIALS WILL REQUIRE A WASTE DISPOSAL PERMIT. IT IS ANTICIPATED THAT DISPOSAL OF IMPACTED SOILS, IF NECESSARY, WILL BE ACCEPTABLE AT A SUBTITLE D LANDFILL FACILITY, SUCH AS HILLSBORO LANDFILL.
 11. REFERENCE THE HEALTH AND SAFETY PLAN DEVELOPED FOR THE SPECIFIC SCOPE OF WORK TO BE CONDUCTED FOR ADDITIONAL PROTECTIVE MEASURES.
 12. ON-SITE WORKERS MAY BE EXPOSED TO CONTAMINANTS THROUGH INCIDENTAL:
 - 12.1. INGESTION OF SOIL
 - 12.2. DERMAL CONTACT (THROUGH THE SKIN)
 - 12.3. INHALATION OF IMPACTED AIRBORNE DUST AND VAPOR
 13. TO REDUCE EXPOSURE:
 - 13.1. ALL PERSONNEL WILL MINIMIZE THEIR DIRECT CONTACT WITH SOIL, AND, WEAR PROJECT-SPECIFIC PERSONAL PROTECTIVE EQUIPMENT IDENTIFIED BY THE HEALTH AND SAFETY PLAN.
 - 13.2. CONTAMINATED CLOTHING SHOULD BE WASHED WITH A STRONG DETERGENT AND HOT WATER BEFORE REUSE.
 - 13.3. PERSONNEL WILL THOROUGHLY WASH THEIR HANDS AND OTHER EXPOSED BODY PARTS, AS NECESSARY, UPON LEAVING THE WORK AREA AND BEFORE EATING, DRINKING, OR OTHER ACTIVITIES.
 - 13.4. RELEASE OF DUST AND VAPORS TO THE AIR SHOULD BE MINIMIZED, AND ALL PERSONNEL WILL REMAIN UPWIND OF THE WORK AREAS TO THE MAXIMUM EXTENT PRACTICAL.
 14. GENERAL MEASURES TO BE TAKEN BY THE CONTRACTOR TO PROTECT THE ENVIRONMENT FROM CONTAMINANTS IN SOIL. THE ENVIRONMENT MAY BE EXPOSED TO CONTAMINANTS THROUGH INCIDENTAL:
 - 14.1. WIND-BORNE DISPERSION
 - 14.2. TRANSPORT BY SURFACE WATER
 - 14.3. TRANSPORT BY SITE EQUIPMENT OR WORKERS
 - 14.4. CONTACT BY PUBLIC OR ENVIRONMENTAL RECEPTORS (E.G., BIRDS AND ANIMALS) THAT ENTER THE WORK AREA
 15. TO REDUCE EXPOSURE:
 - 15.1. CONTROL ACCESS TO EARTHWORK AREA THROUGH FENCING, SIGNAGE, OR OTHER MEANS.
 - 15.2. IMPLEMENT DUST-CONTROL METHODS, IF NEEDED.
 - 15.3. EROSION CONTROLS, E.G. SILT FENCES, WATTLES, AND STORM DRAIN FILTERS, TO PREVENT ANY SURFACE WATER AND SEDIMENT FROM LEAVING THE WORK AREA AND ENTERING THE STORM WATER SYSTEM.
 - 15.4. IMPLEMENT CONTROLS TO PREVENT MIGRATION OF IMPACTED SOILS FROM TIRES OF CONSTRUCTION EQUIPMENT AND TRUCKS TO ADJACENT AREAS AND STREETS.
 16. TO DOCUMENT COMPLIANCE WITH THIS PLAN, THE CONTRACTOR WILL MAINTAIN AND SUBMIT THE FOLLOWING INFORMATION TO THE ENVIRONMENTAL CONSULTANT FOR ALL SUBSURFACE WORK:
 - 16.1. COMPANY PERFORMING WORK
 - 16.2. ORIGINAL SIGNATURES OF ALL FIELD PERSONNEL INDICATING THAT THEY HAVE READ AND UNDERSTOOD THE CONTENT OF THE CMMP.
 - 16.3. DOCUMENTATION OF THE LOCATIONS (AERIAL AND VERTICAL EXTENTS) WHERE WORK WAS CONDUCTED AND ANY IMPACTED MEDIA ENCOUNTERED. A PHOTO-DOCUMENTATION LOG OF THE FIELD WORK AND SURVEY OR HIGH ACCURACY GLOBAL POSITIONING SATELLITE (GPS) DATA IS HIGHLY RECOMMENDED.
 - 16.4. DOCUMENTATION (INCLUDING PHOTOGRAPHS, AS APPROPRIATE) OF THE LOCATION OF, METHOD OF COLLECTION, AND ANALYTICAL RESULTS OF ANY SAMPLES COLLECTED AND ANALYZED. CHAIN-OF-CUSTODY DOCUMENTATION SHOULD ALSO BE RETAINED WITH THE ANALYTICAL DATA.
 - 16.5. IF ANY IMPACTED MEDIA IS STORED ON-SITE, DATES AND METHODS OF STORAGE.
 - 16.6. DISPOSITION OF ANY IMPACTED MEDIA, INCLUDING PERMIT AND DISPOSAL RECEIPTS, AS APPROPRIATE.
 17. BASED ON THESE RECORDS, A CHARACTERIZATION OR REMOVAL ACTION REPORT MAY BE PREPARED AND SUBMITTED TO THE PROPERTY OWNER. ALL WASTE RECEIPTS MUST BE RETAINED ON SITE AND AVAILABLE FOR INSPECTION; COPIES MUST BE PROVIDED TO THE ENVIRONMENTAL CONSULTANT.

SECTION 4.0 WATER MANAGEMENT
 WORK AT THE SITE MAY ENCOUNTER SHALLOW PERCHED GROUND WATER OR MAY NEED TO MANAGE PROXIMATE OR CAPTURED SURFACE WATER. ALL EXCAVATION WORK SHOULD HAVE A PLAN ON HOW WATER WILL BE MANAGED. ANY WATER PRESENT DURING SUBSURFACE WORK WILL NEED TO BE MANAGED AS DESCRIBED IN THIS SECTION OF THE CMMP.

1. ANY DEWATERING WHERE FLUIDS HAD THE POTENTIAL FOR COMING IN CONTACT WITH IMPACTED SOIL WILL REQUIRE MANAGEMENT USING ONE OF THE FOLLOWING METHODS:

- 1.1. ABOVE-GROUND MANAGEMENT IN A TEMPORARY HOLDING VESSEL PRIOR TO DISPOSAL. TEMPORARY HOLDING VESSELS PRIOR TO DISPOSAL MAY CONSIST OF A 55-GALLON DRUM, A SMALL ABOVE-GROUND STORAGE TANK (AST), OR LARGE ASTS (SUCH AS BAKER OR FRAC-TANKS), OR OTHER SUITABLE STORAGE VESSELS, DEPENDING ON THE AMOUNT OF WATER TO BE REMOVED. DURING THE DEWATERING PROCESS, CARE SHOULD BE TAKEN TO MINIMIZE THE UPTAKE OF SOIL AND SEDIMENT, SO AS NOT TO REQUIRE ADDITIONAL WASTE TREATMENT OR ACCEPTANCE CHARGES.
- 1.2. DIRECT TRANSFER TO A TRUCK DESIGNED AND PERMITTED TO TRANSPORT SUCH WASTES.
- 1.3. DISPOSAL INTO A SEWER SYSTEM, IF ALLOWED, MUST BE PRE-APPROVED BY THE SYSTEM OWNER AND PRETREATMENT MAY BE REQUIRED.
2. DEWATERED FLUIDS MAY REQUIRE SAMPLING AND TESTING, DEPENDENT UPON THE DISPOSAL METHOD(S) TO BE USED. CONTACT THE ENVIRONMENTAL CONSULTANT TO ENSURE CORRECT SAMPLING PROTOCOL AND METHODS ARE USED.
3. RECORD-KEEPING FOR REMOVED WATER MUST BE SUBMITTED TO THE ENVIRONMENTAL CONSULTANT FOR EACH BATCH OF WATER. THE FOLLOWING INFORMATION MUST BE INCLUDED:
 - 3.1. COMPANY PERFORMING WORK
 - 3.2. BATCH IDENTIFICATION
 - 3.3. BATCH LABORATORY RESULTS
 - 3.4. DOCUMENTATION OF APPROVAL FOR DISCHARGE OR WASTE MANIFEST/RECEIPT OF TRUCKING COMPANY
 - 3.5. DATE DISCHARGED/TRANSPORTED
 - 3.6. TOTAL GALLONS DISCHARGED/TRANSPORTED
4. ONCE WORK IS COMPLETE, THE RECORDS WILL BE SUMMARIZED FOR ALL OCCURRENCES AND SUBMITTED TO THE APPROPRIATE AGENCIES.

SECTION 5.0 POTENTIAL FOR EXPLOSIVE GAS

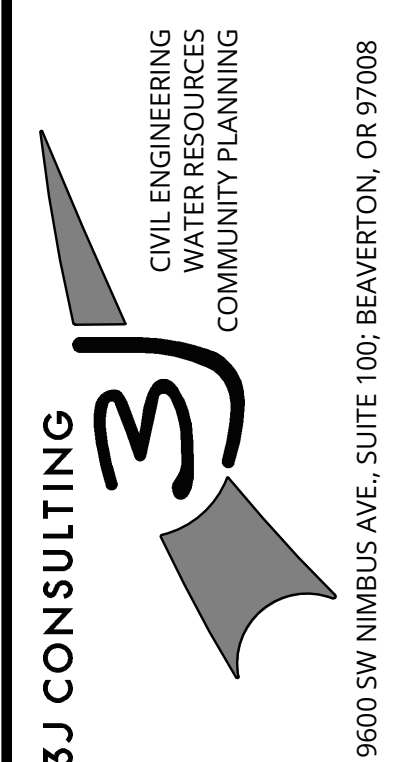
1. THE HISTORICAL LANDFILL ON TRACT B OPEN SPACE AND THE UPLAND SOLID WASTE DISPOSAL CELL BOTH HAVE THE POTENTIAL TO GENERATE AND ACCUMULATE LANDFILL GAS. ANY WORK IN THESE AREAS SHOULD CONSIDER AND ADDRESS THE POTENTIAL FOR ENCOUNTERING LANDFILL GASES. LANDFILL GAS IS GENERALLY COMPOSED OF METHANE, CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN SULFIDE AND OTHER TRACE GASES.
 - 1.1. METHANE:
 - IS A SIMPLE ASPHYXIANT.
 - HAS A HIGH FIRE HAZARD.
 - HAS A HIGH EXPLOSION HAZARD.
 - IS LIGHTER THAN AIR.
 2. RELEVANT MEASURES TO ADDRESS THESE CHARACTERISTICS SHOULD BE INCORPORATED INTO THE HEALTH AND SAFETY PLAN FOR EACH SCOPE OF WORK. EXTRA CONSIDERATION SHOULD BE GIVEN TO ANY CONFINED SPACE WORK.
 3. ENVIRONMENTAL ASSESSMENTS HAVE SHOWN THAT THE HISTORICAL WASTE AT THE SUBJECT SITE IS LOW IN ORGANIC MATERIAL, THEREBY LESSENING THE POTENTIAL PRODUCTION OF GASES AS A PRODUCT OF DECOMPOSITION. HOWEVER, SOIL GAS MONITORING HAS IDENTIFIED THE PRESENCE OF METHANE, INCLUDING ONE LOCATION WHERE THE CONCENTRATION GREATLY EXCEEDED THE LOWER EXPLOSIVE LIMIT.



RECORD DRAWING

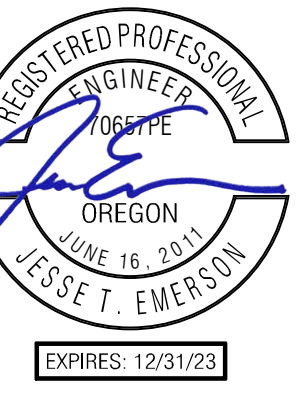
01/25/2023
 This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
 • Surveyed as-built
 The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of City of St. Helens

GENERAL PROJECT NOTES
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
 ST. HELENS ASSETS, LLC
 ST. HELENS, OR



PROJECT INFORMATION
 3J PROJECT # | 14188
 TAX LOT(S) | 0501W32DC 100
 LAND USE # | N/A
 DESIGNED BY | JTE
 CHECKED BY | JDH

SHEET NUMBER
C010



RECORD DRAWING
01/25/2023
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EXISTING CONDITIONS & TREE REMOVAL PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR

3J CONSULTING
CIVIL ENGINEERING
WATER RESOURCES
COMMUNITY PLANNING
9600 SW NIMBUS AVE., SUITE 100, BEAVERTON, OR 97008

PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C100



FLOOD HAZARD INFORMATION
ZONE X (UN-SHADED) THE SITE IS LOCATED WITHIN ZONE X (UN-SHADED) PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY-PANEL NUMBER 41009C0452D FEMA'S DEFINITION OF ZONE X (UN-SHADED) IS AN AREA OF MINIMAL FLOOD HAZARD, USUALLY DEPICTED ON FIRMS AS ABOVE THE 500-YEAR FLOOD LEVEL. ZONE X IS THE AREA DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD AND PROTECTED BY LEVEE FROM 100-YEAR FLOOD. IN COMMUNITIES THAT PARTICIPATE IN THE NFIP, FLOOD INSURANCE IS AVAILABLE TO ALL PROPERTY OWNERS AND RENTERS IN THESE ZONES.

EXISTING CONDITIONS NOTE
THIS PLAN HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. SITE BACKGROUND INFORMATION AND FEATURES HAVE BEEN GENERATED FROM A COMBINATION OF TOPOGRAPHIC SURVEY, PUBLIC GIS DATA SOURCES, AERIAL PHOTOS, TAX ASSESSOR MAPS AND PHYSICAL SITE OBSERVATIONS. NO WARRANTY OR GUARANTEE IS EXPRESSED OR IMPLIED.

ESC IMPLEMENTATION NOTE
BMPS TO BE INSTALLED PRIOR TO BEGINNING GROUND DISTURBING AND/OR TREE REMOVAL ACTIVITIES

LEGEND

- RIGHT-OF-WAY LINE
- RIGHT OF WAY CENTER LINE
- LOT BOUNDARY LINE
- - - EXISTING EASEMENT LINE
- SS EXISTING SANITARY SEWER
- (S) EXISTING SANITARY MANHOLE
- SD EXISTING STORM DRAIN
- (D) EXISTING STORM MANHOLE
- - -100- EXISTING MAJOR CONTOUR
- - -92- EXISTING MINOR CONTOUR
- ☼ EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- - - DITCH AND POND LINE
- ⊗ TREE TO BE REMOVED
- WASTE AREA LIMITS
- ESCP BMP: STRAW WATTLE
- x - ESCP BMP: SILT FENCE
- o - ORANGE CONSTRUCTION LIMITS FENCING
- - - PROPOSED TEMPORARY SANDBAG BARRIER

MAINTAIN REGULAR AND EMERGENCY ACCESS TO TAXLOTS 1900 AND 2000 THROUGHOUT CONSTRUCTION.

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

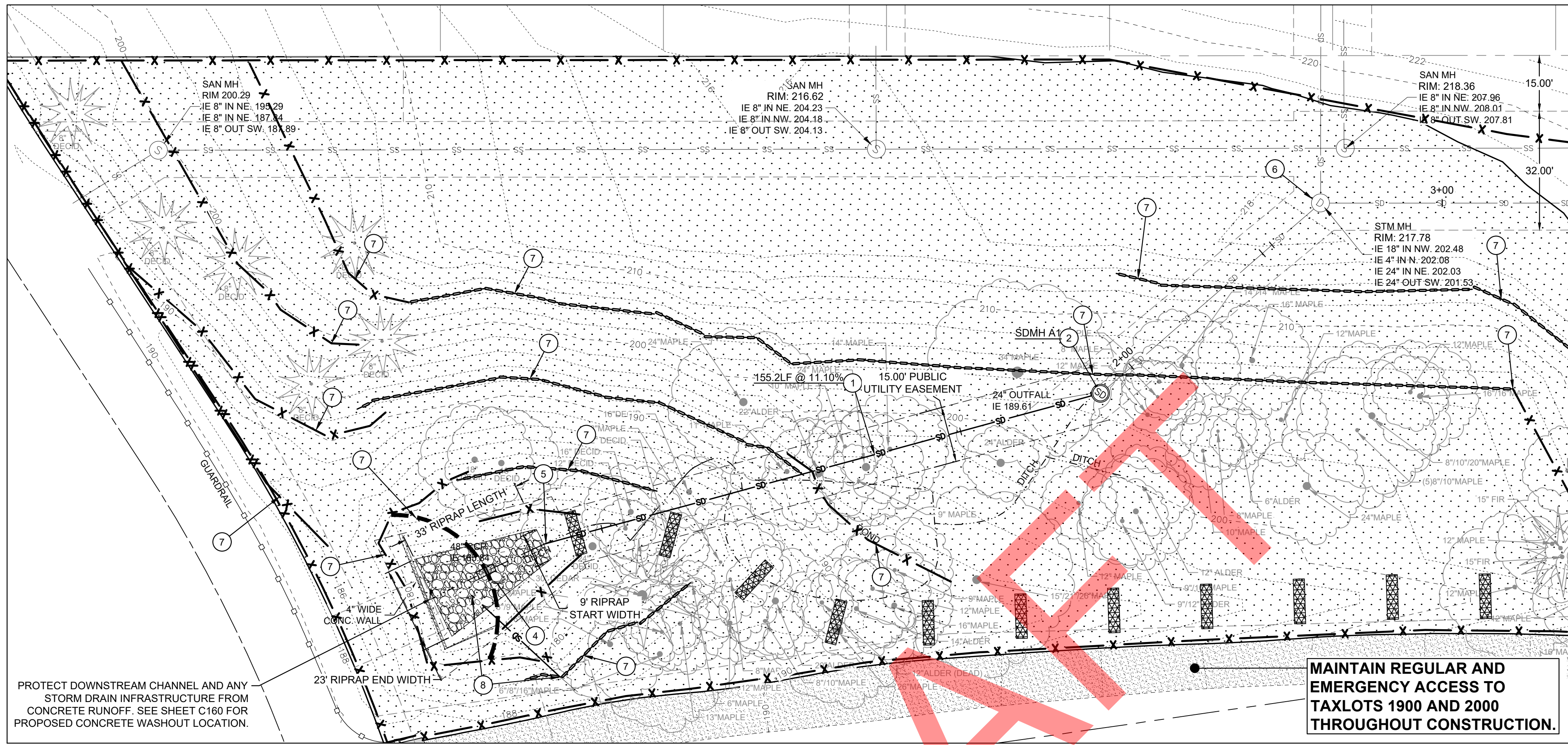
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P:\14188\ELK RIDGE PHASE V\CAD\B\DEC-AB\14188-EXISTING CONDITIONS.DWG



RECORD DRAWING
01/25/2023
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STORM DRAIN MODIFICATION PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR



CONSTRUCTION KEYNOTES

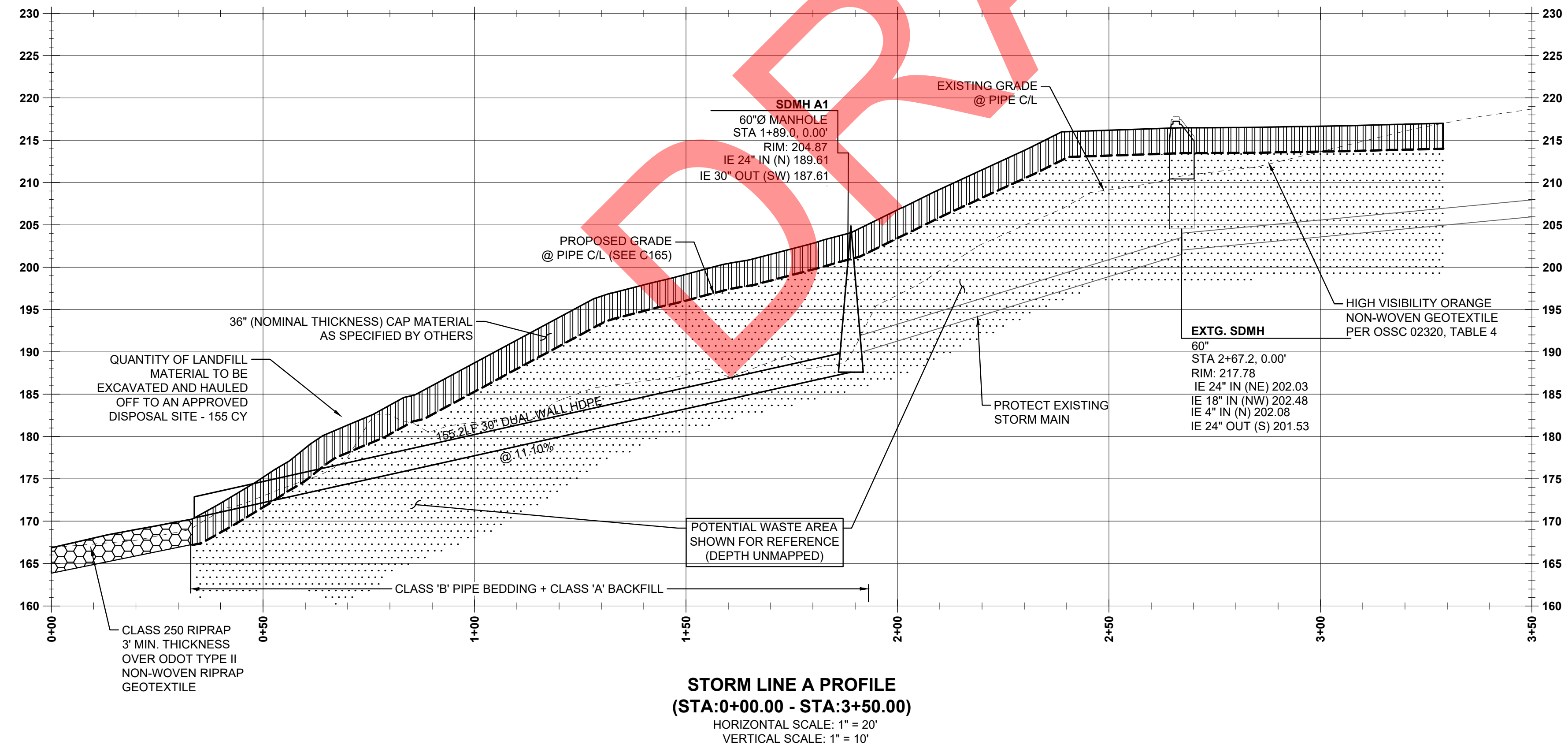
- 1 INSTALL 30" DUAL WALL HDPE STORM PIPE TO ALIGNMENT, LENGTH AND SLOPE SHOWN.
- 2 CONSTRUCT 60" MANHOLE WITH CAST IN PLACE BASE OVER EXISTING PIPE AT LOCATION SHOWN PER CITY OF ST HELENS STD. DWG. 350
- 4 INSTALL CLASS 250 RIPRAP TO DIMENSIONS SHOWN. SEE PLAN & PROFILE THIS SHEET.
- 5 CONSTRUCT OUTFALL PIPE COLLAR PER DETAIL, THIS SHEET.
- 6 ADJUST RIM OF EXISTING MANHOLE TO FINISH GRADE SURFACE.
- 7 SILT FENCING AND OTHER EROSION AND SEDIMENT CONTROL BMPs WILL BE INSTALLED PRIOR TO STARTING ANY INTRUSIVE / EXCAVATION ACTIVITIES IN THE FORMER SOLID WASTE DISPOSAL AREA.
- 8 CONNECT TO EXISTING STORM OUTFALL. INSTALL 12" CORRUGATED HDPE PIPE TO LIMITS SHOWN.

LEGEND

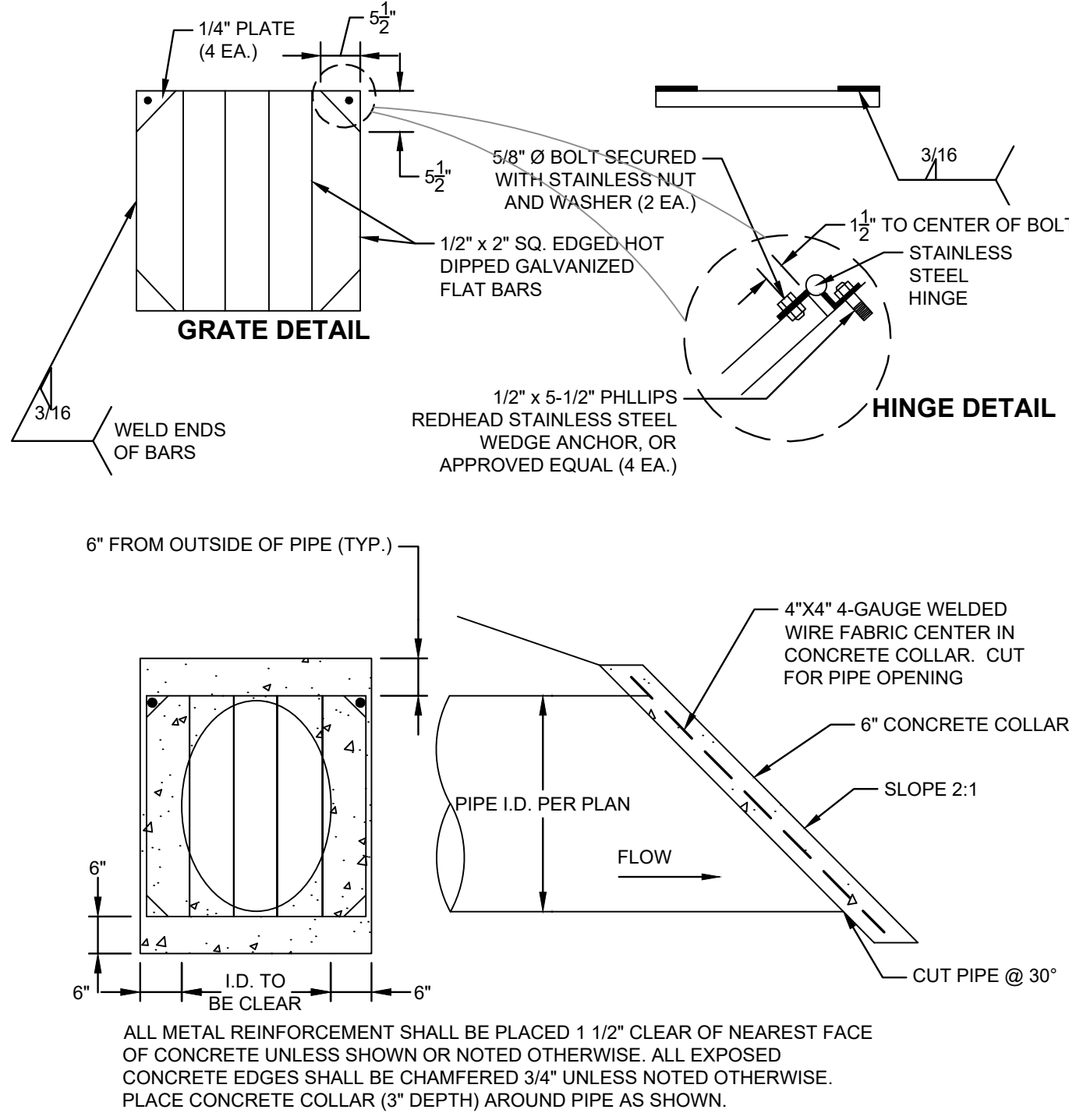
- RIGHT OF WAY CENTER LINE
- LOT BOUNDARY LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- APPROXIMATE LANDFILL LIMITS
- SS EXISTING SANITARY SEWER
- S EXISTING STORM DRAIN
- SD EXISTING SANITARY MANHOLE
- D EXISTING STORM MANHOLE
- SD PROPOSED STORM MAIN
- SD PROPOSED STORM DRAIN MANHOLE
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- DITCH AND POND LINE
- PROPOSED TEMPORARY SANDBAG BARRIER
- ESCP BMP: STRAW WATTLE
- ESCP BMP: SILT FENCE
- ORANGE CONSTRUCTION LIMITS FENCING
- CHECK DAM

PROTECT DOWNSTREAM CHANNEL AND ANY STORM DRAIN INFRASTRUCTURE FROM CONCRETE RUNOFF. SEE SHEET C160 FOR PROPOSED CONCRETE WASHOUT LOCATION.

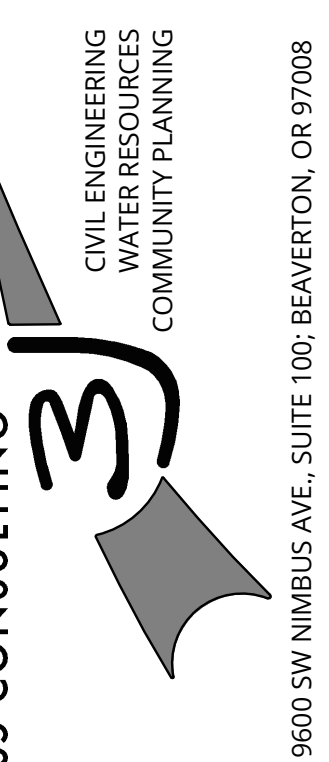
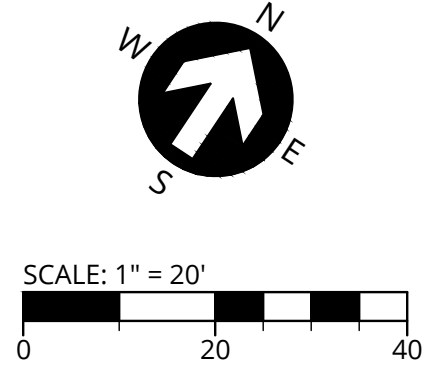
MAINTAIN REGULAR AND EMERGENCY ACCESS TO TAXLOTS 1900 AND 2000 THROUGHOUT CONSTRUCTION.



STORM LINE A PROFILE
(STA: 0+00.00 - STA: 3+50.00)
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'



CONCRETE OUTFALL COLLAR
SCALE: NTS



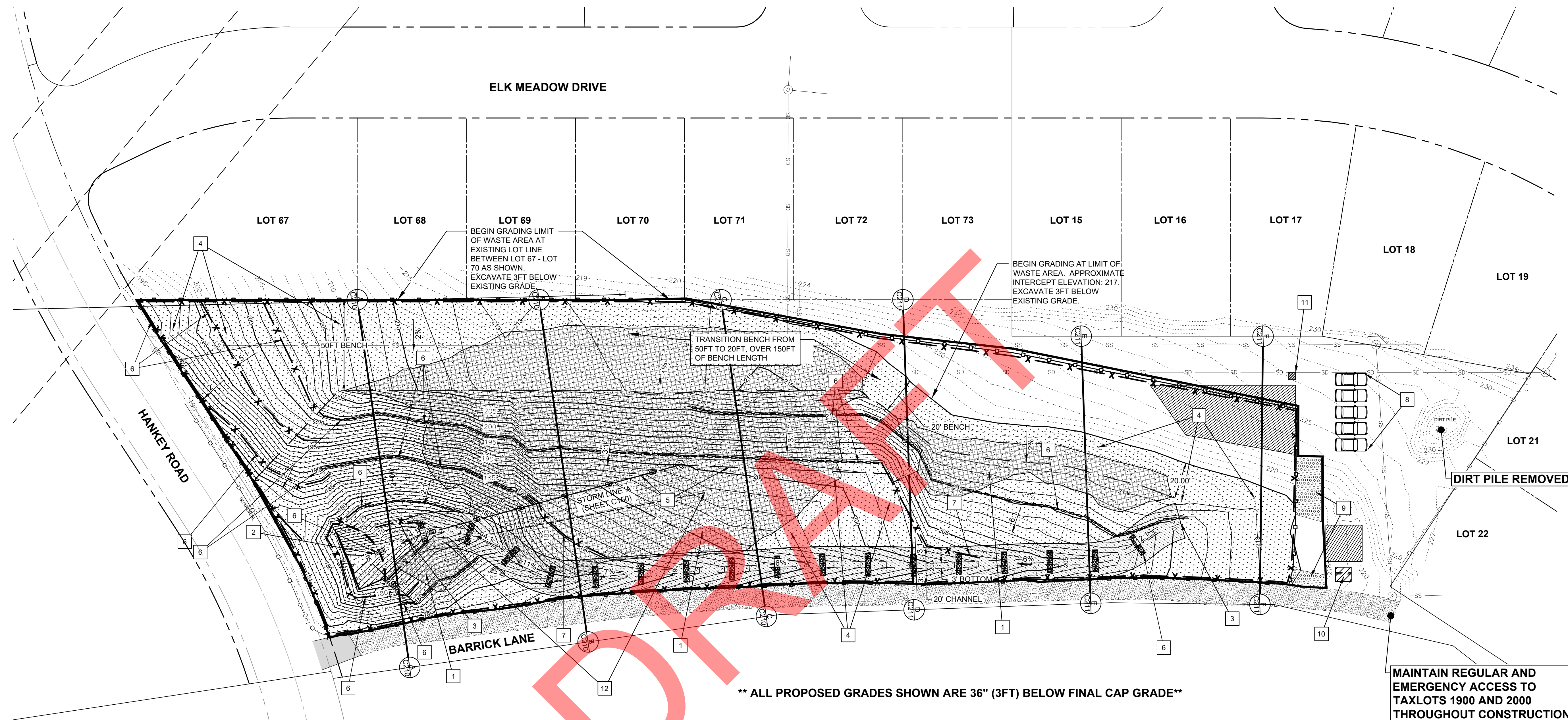
PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C150



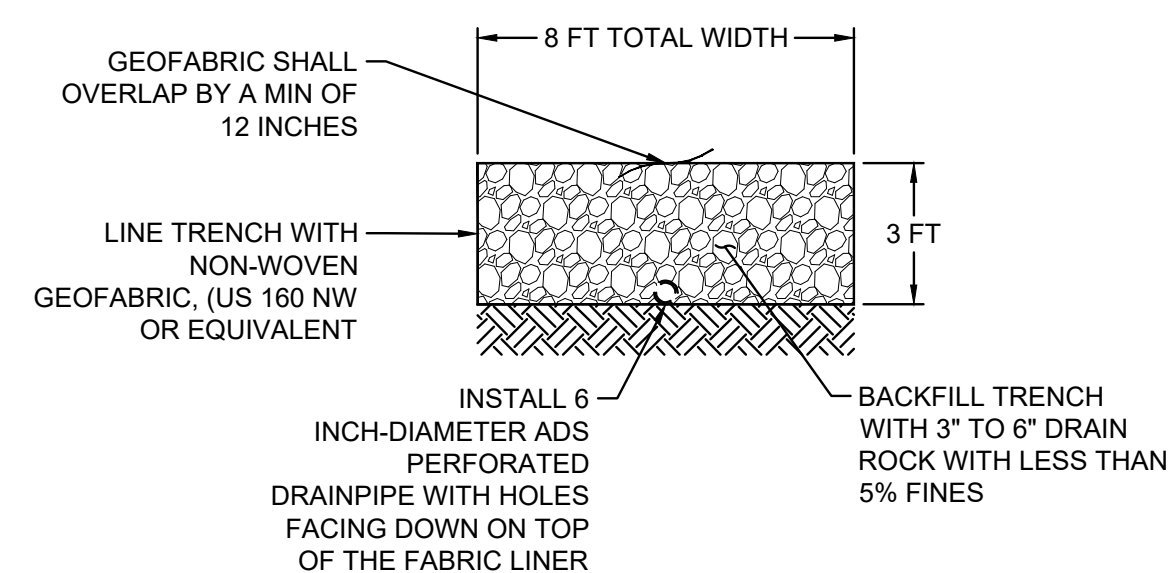
RECORD DRAWING
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FORMER SOLID WASTE DISPOSAL AREA (FSWDA) SUBGRADE PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
 ST. HELENS ASSETS, LLC
 ST. HELENS, OR



**** ALL PROPOSED GRADES SHOWN ARE 36" (3FT) BELOW FINAL CAP GRADE****

MAINTAIN REGULAR AND EMERGENCY ACCESS TO TAXLOTS 1900 AND 2000 THROUGHOUT CONSTRUCTION.



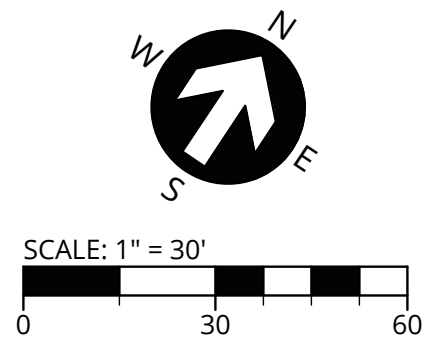
TRENCH DRAIN SECTION

REWORK QUANTITIES
 QUANTITIES ARE NEAT LINE AND INTENDED FOR PLANNING PURPOSES ONLY
 WASTE AREA GRADE ESTABLISHMENT (AS SHOWN THIS SHEET)
 REWORK: 4,500 CY

- CONSTRUCTION KEY NOTES**
- 1 PLACE EXCAVATED WASTE AREA MATERIAL WITHIN AREAS SHOWN.
 - 2 CONSTRUCT SANDBAG BARRIER WITH BYPASS PIPE. SEE SHT. C165
 - 3 ESTABLISH DRAINAGE CHANNEL. SEE SHEET C165.
 - 4 PLACE HIGH VISIBILITY ORANGE NON-WOVEN GEOTEXTILE OVER LIMITS OF WASTE AREA. GEOTEXTILE TO MEET THE REQUIREMENTS OF OSSC 02320, TABLE 4. SEE 'GEOTEXTILE LINER EDGING SECTION' ON SHEET C165.
 - 5 GRADE 2:1 MAX TO PROPOSED STORM ALIGNMENT (SEE C150). MAINTAIN SLOPE WIDTH BEYOND NEW SDMH A1, AS SHOWN.
 - 6 SILT FENCING AND OTHER BMPs WILL BE INSTALLED PRIOR TO STARTING ANY INTRUSIVE / EXCAVATION ACTIVITIES IN THE FORMER SOLID WASTE DISPOSAL AREA.
 - 7 INSTALL SEDIMENT FENCE. SEE DETAIL SHEET C400.
 - 8 PROPOSED TEMPORARY PARKING FOR CONSTRUCTION PERSONNEL
 - 9 CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. SEE DETAIL SHEET C400.
 - 10 CONSTRUCT CONCRETE WASHOUT AT LOCATION SHOWN.
 - 11 PORTABLE TOILET
 - 12 INSTALL TRENCH DRAIN. SEE DETAIL THIS SHEET.

LEGEND

--- -100- ---	EXISTING MAJOR CONTOUR
.....92.....	EXISTING MINOR CONTOUR
————110————	PROPOSED MAJOR CONTOUR
————108————	PROPOSED MINOR CONTOUR
————	GRADE BREAK, AS SHOWN
————	PROPOSED LIMITS OF GRADING
————	PROPOSED TEMPORARY SANDBAG BARRIER
————	ESCP BMP: STRAW WATTLE
————	ESCP BMP: SILT FENCE
————	ORANGE CONSTRUCTION LIMITS FENCING
————	CHECK DAM
————	GRADE & CAP SECTION DESIGNATION
————	WASTE AREA LIMITS
————	FILL ZONE AS DESIGNATED
————	EXCAVATED MATERIAL TO BE PLACED HERE
————	DRAINAGE CHANNEL
————	STAGING & STORAGE AREA
————	STABILIZED CONSTRUCTION ENTRANCE



P:\14188\ELK RIDGE PHASE 5\CAD\B\DEC\AB\14188-GRADING-DEO.DWG

3J CONSULTING
 CIVIL ENGINEERING
 WATER RESOURCES
 COMMUNITY PLANNING
 9600 SW NIMBUS AVE., SUITE 100, BEAVERTON, OR 97008

PROJECT INFORMATION
 3J PROJECT # | 14188
 TAX LOT(S) | 0501W32DC 100
 LAND USE # | N/A
 DESIGNED BY | JTE
 CHECKED BY | JDH

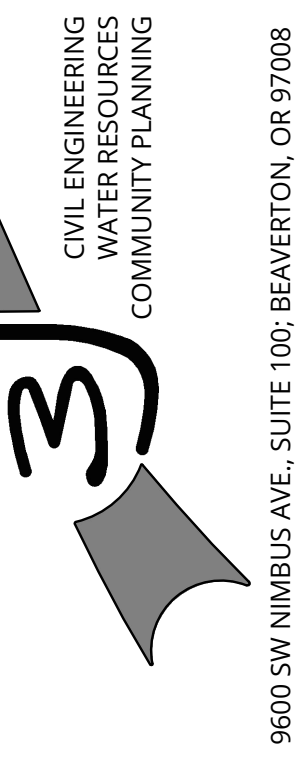
SHEET NUMBER
C160



RECORD DRAWING
01/25/2023

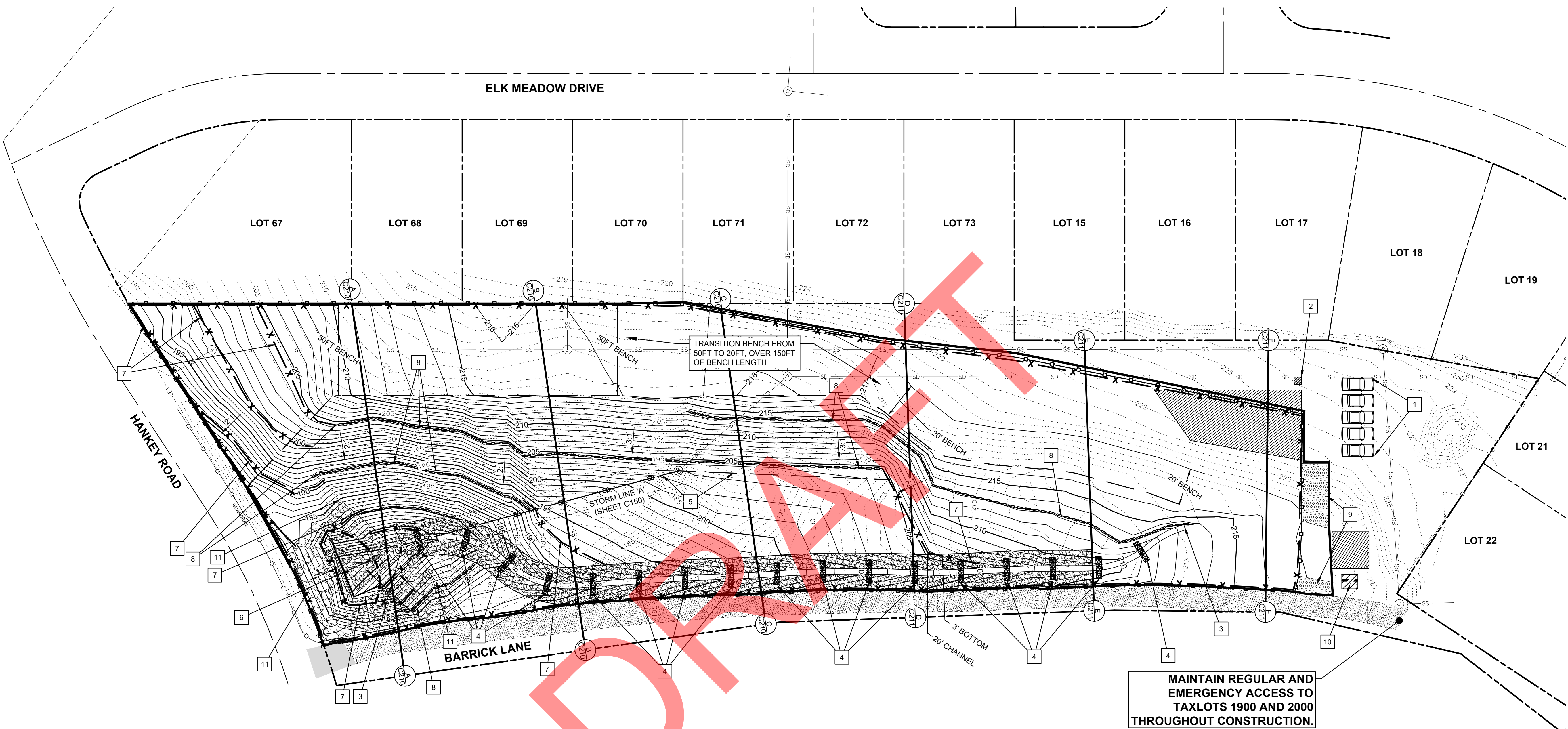
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FORMER SOLID WASTE DISPOSAL AREA (FSWDA) CAP PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR



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CHECKED BY | JDH

SHEET NUMBER
C165



GENERAL NOTE:

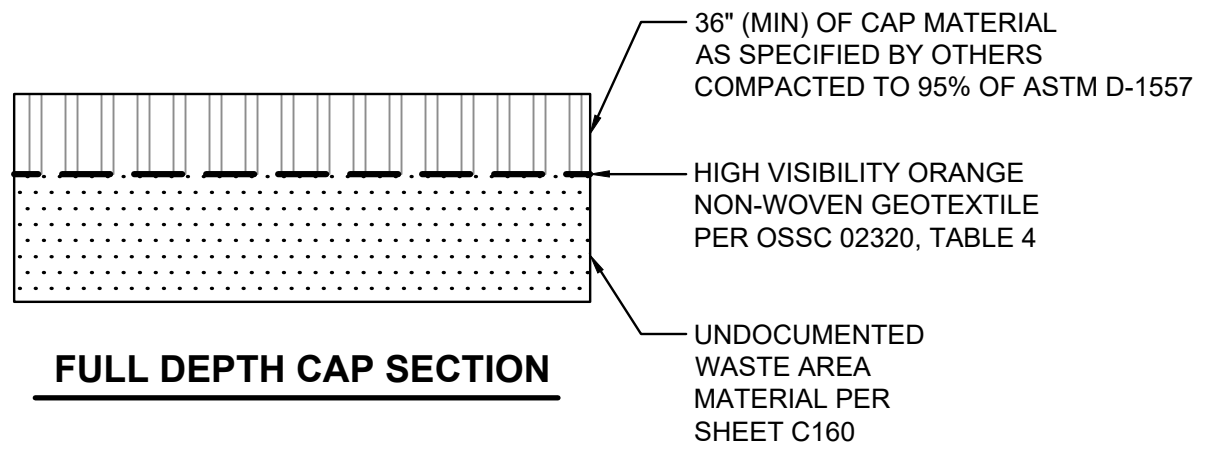
BARRICK LANE IS TO REMAIN ACCESSIBLE AND NOT TO BE OBSTRUCTED THROUGHOUT THE DURATION OF CONSTRUCTION.

CONSTRUCTION KEY NOTES

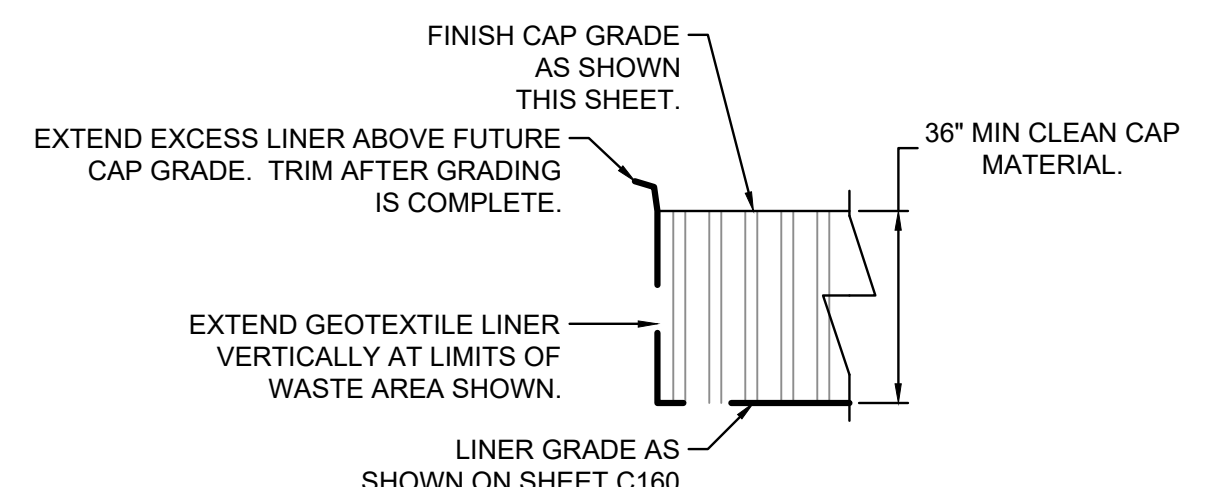
- 1 PROPOSED TEMPORARY PARKING FOR CONSTRUCTION PERSONELL
- 2 PORTABLE TOILET
- 3 ESTABLISH DRAINAGE CHANNEL PER SECTION, THIS SHEET. INSTALL MATTING PER MATTING CHANNEL INSTALLATION DETAIL SHT. C400 AND CHANNEL SECTION THIS SHEET.
- 4 PLACE 18" TALL ROCK CHECK DAM 25FT O.C. SEE DETAIL SHEET C400. DECREASE SPACING BETWEEN ROCK CHECK DAMS FROM 25FT AS NECESSARY FOR SLOPES GREATER THAN 6.0%.
- 5 GRADE 2:1 MAX TO PROPOSED STORM ALIGNMENT (SEE C150). MAINTAIN SLOPE WIDTH BEYOND NEW SDMH A1, AS SHOWN.
- 6 PLACE TEMPORARY SANDBAG BARRIER WITH 24" BYPASS PIPE FOR EROSION CONTROL MEASURES. BYPASS PIPE INVERT TO BE SET 6" ABOVE BOTTOM OF CHANNEL TO ALLOW FOR SETTLING OF SEDIMENT.
- 7 INSTALL SEDIMENT FENCE. SEE DETAIL SHEET C400.
- 8 INSTALL EROSION CONTROL WATTLES. SEE DETAIL SHEET C400.
- 9 CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. SEE DETAIL SHEET C400.
- 10 CONSTRUCT CONCRETE WASHOUT AT LOCATION SHOWN.
- 11 INSTALL RIP RAP TO LIMITS SHOWN.

LANDFILL CAP QUANTITIES

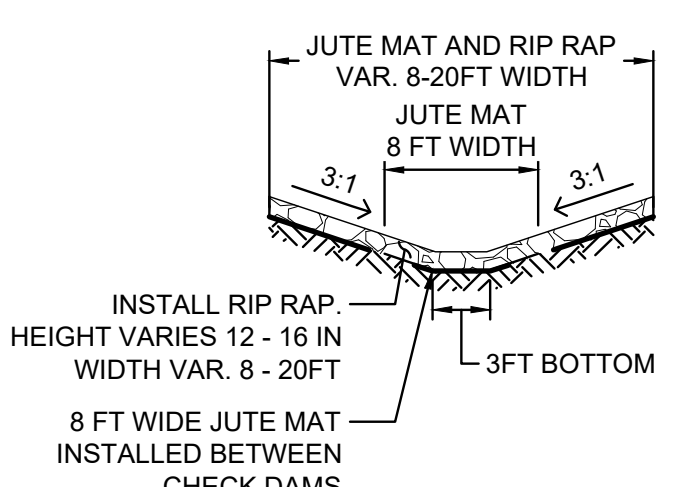
QUANTITIES ARE NEAT LINE AND INTENDED FOR PLANNING PURPOSES ONLY
LANDFILL CAP PLACEMENT (36" IN PLACE CAP)
IMPORT MATERIAL: 9,400CY



FULL DEPTH CAP SECTION



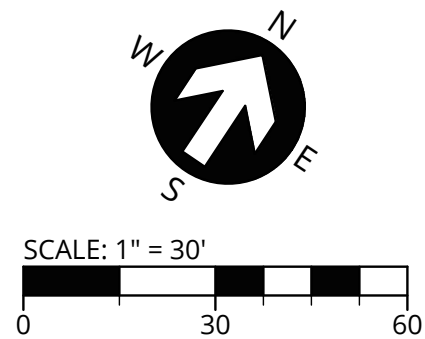
GEOTEXTILE LINER EDGING SECTION



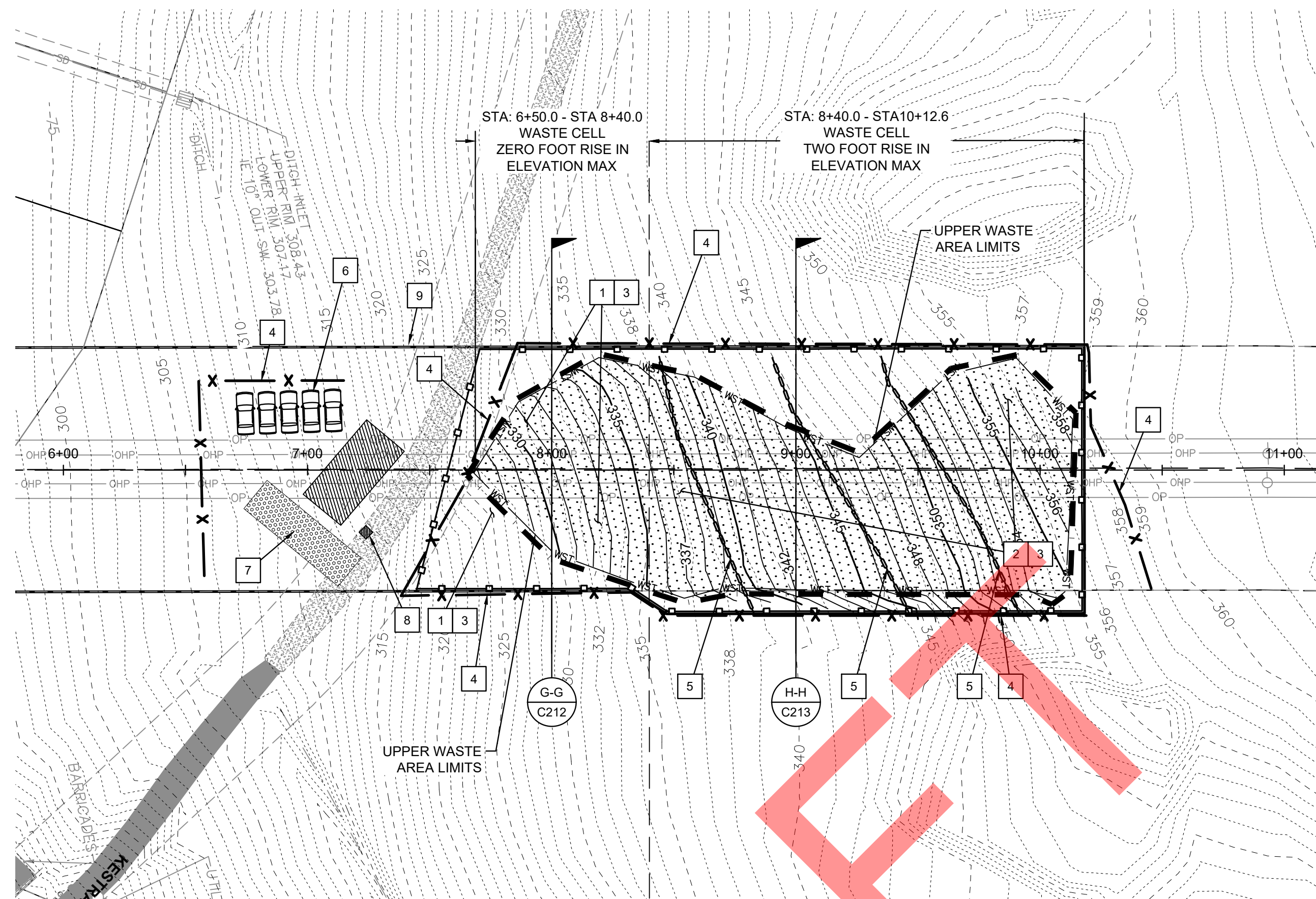
CHANNEL SECTION

LEGEND

- - - - -100- - - - - EXISTING MAJOR CONTOUR
-92..... EXISTING MINOR CONTOUR
- 110———— PROPOSED MAJOR CONTOUR
- 108———— PROPOSED MINOR CONTOUR
- X———— ESCP BMP: STRAW WATTLE
- X———— ESCP BMP: SILT FENCE
- ORANGE CONSTRUCTION LIMITS FENCING
- — — — PROPOSED TEMPORARY SANDBAG BARRIER
- — — — PROPOSED GRADING LIMITS
- ① C210 ② C210 GRADE & CAP SECTION DESIGNATION
- ▨ STAGING & STORAGE AREA
- ▨ STABILIZED CONSTRUCTION ENTRANCE
- ▨ RIP RAP



P:\14188\ELK RIDGE PHASE 5\CAD\B\DEC\AB\14188-LANDFILL CAP-AREA 1.DWG



LEGEND

- - - - -100- - - - - EXISTING MAJOR CONTOUR
- - - - -92 - - - - - EXISTING MINOR CONTOUR
- 110 — PROPOSED MAJOR CONTOUR
- 108 — PROPOSED MINOR CONTOUR
- — — — — PROPOSED LIMITS OF GRADING
- — — — — ESCP BMP: STRAW WATTLE
- X — ESCP BMP: SILT FENCE
- O — O — O — ORANGE CONSTRUCTION LIMITS FENCING
- ① C210 ② C210 GRADE & CAP SECTION DESIGNATION
- WASTE AREA LIMITS
- CAP MATERIAL
- STAGING & STORAGE AREA
- STABILIZED CONSTRUCTION ENTRANCE

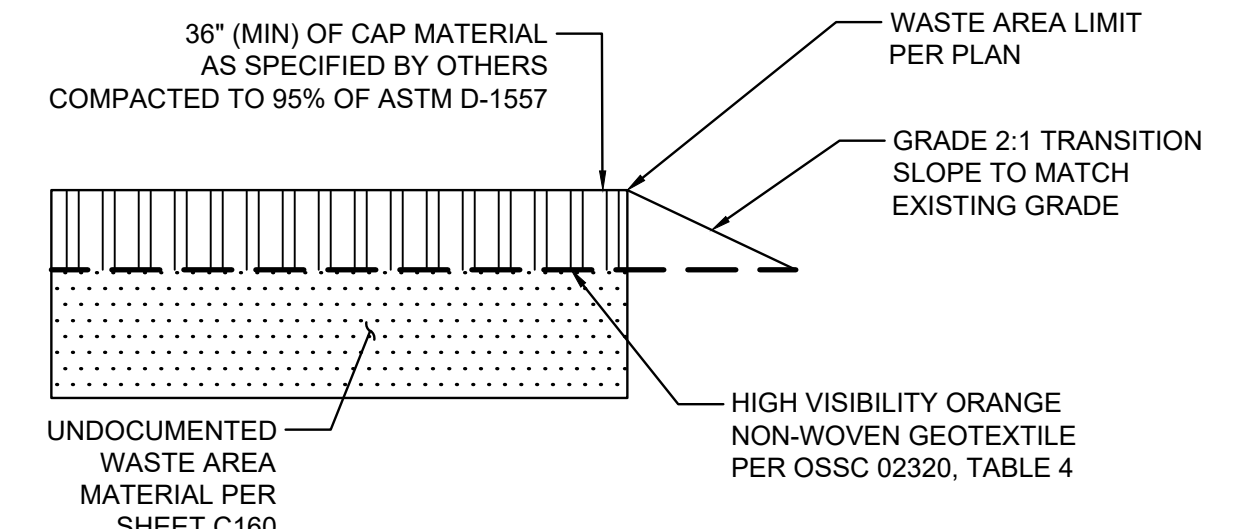
CONSTRUCTION KEY NOTES

- 1 STA: 6+50.0 - 8+40.0 FILL AREA WITH 36" CLEAN CAP MATERIAL. MATCH EXISTING GROUND ELEVATIONS. ZERO NET ELEVATION GAIN.
- 2 STA: 8+40.0 - 10+12.6 FILL AREA WITH 36" CLEAN CAP MATERIAL. MATCH EXISTING GROUND ELEVATIONS. 2 FOOT NET ELEVATION GAIN.
- 3 PLACE HIGH VISIBILITY ORANGE NON-WOVEN GEOTEXTILE OVER LIMITS OF WASTE AREA. GEOTEXTILE TO MEET THE REQUIREMENTS OF OSSC 02320, TABLE 4. SEE 'GEOTEXTILE LINER EDGING SECTION' ON SHEET C165.
- 4 INSTALL SEDIMENT FENCE. SEE DETAIL SHEET C400.
- 5 INSTALL EROSION CONTROL WATTLES. SEE DETAIL SHEET C400.
- 6 PROPOSED TEMPORARY PARKING FOR CONSTRUCTION PERSONELL
- 7 CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. SEE DETAIL SHEET C400.
- 8 PORTABLE TOILET
- 9 PROPOSED STAGING AND STORAGE AREA

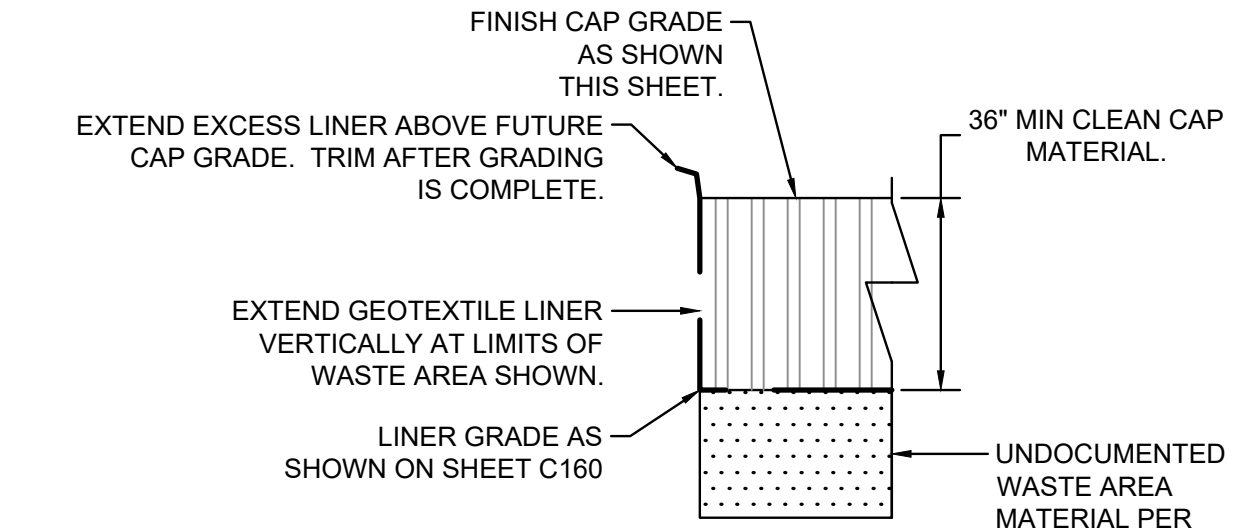
LANDFILL CAP QUANTITIES

QUANTITIES ARE NEAT LINE AND INTENDED FOR PLANNING PURPOSES ONLY

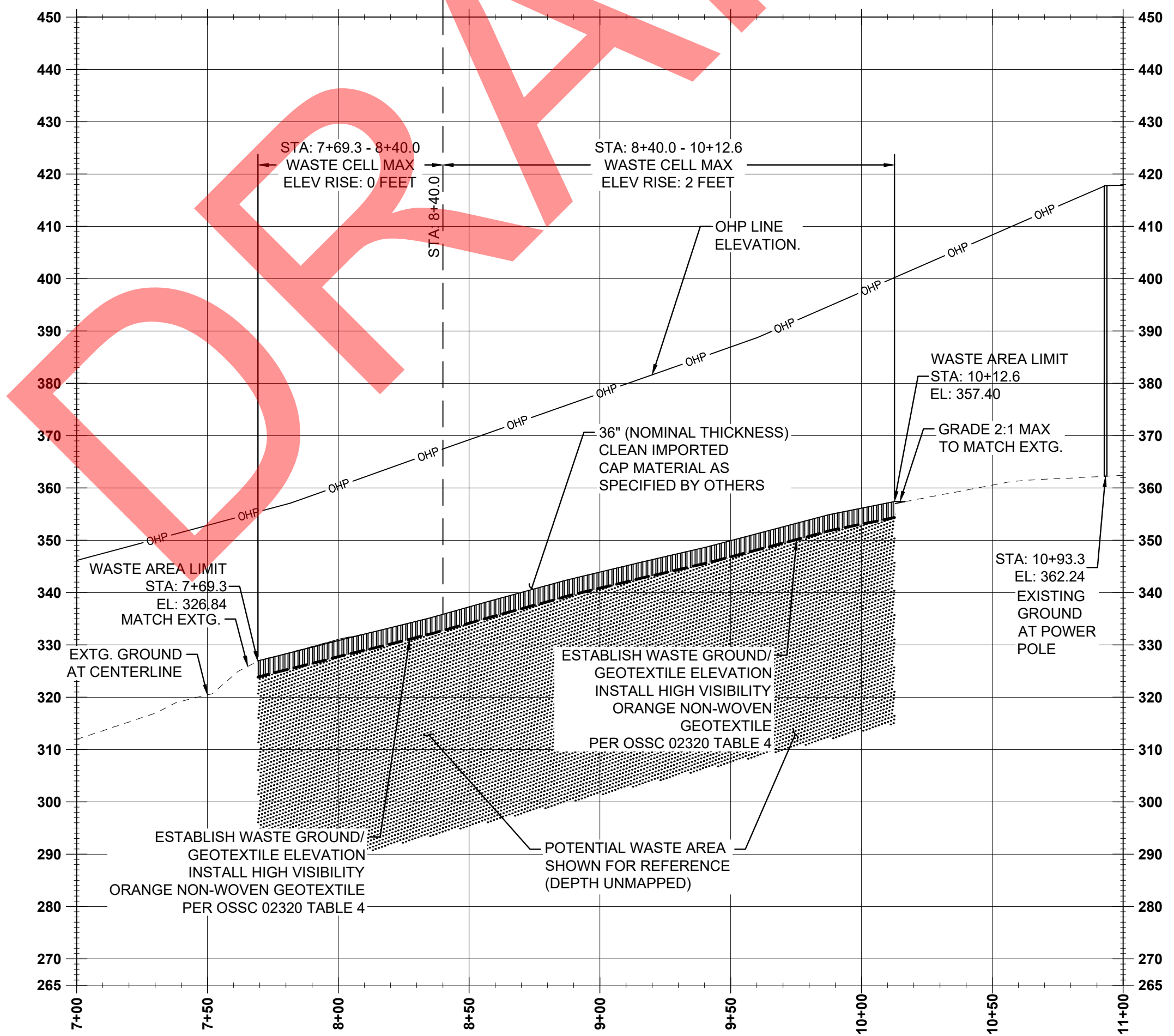
LANDFILL CAP PLACEMENT (36" IN PLACE CAP)
IMPORT MATERIAL: 1,950 CY



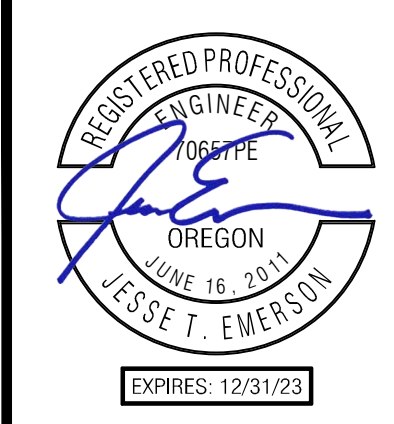
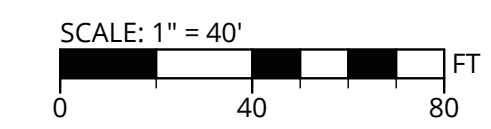
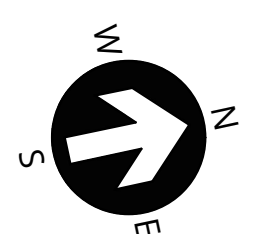
FULL DEPTH CAP SECTION



GEOTEXTILE LINER EDGING SECTION

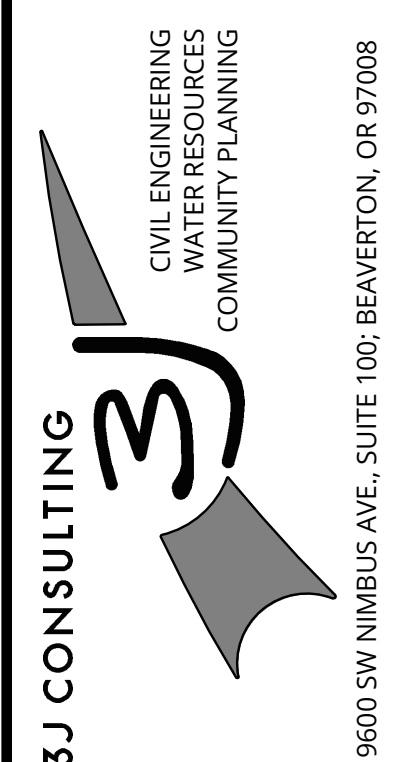


BPA PROFILE
(STA: 7+00 - STA: 11+00)
SCALE: 1" = 40' H; 1" = 20' V



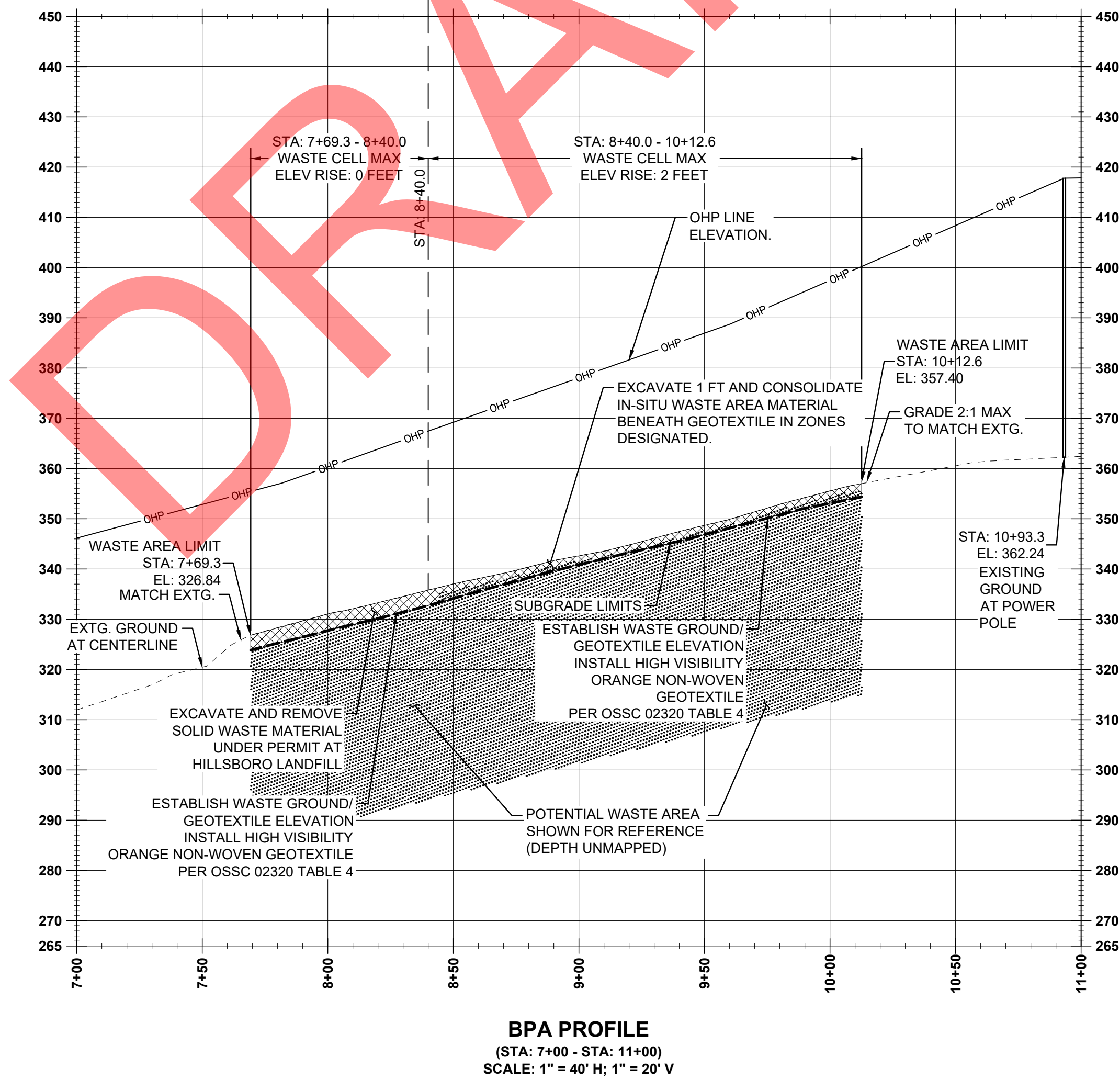
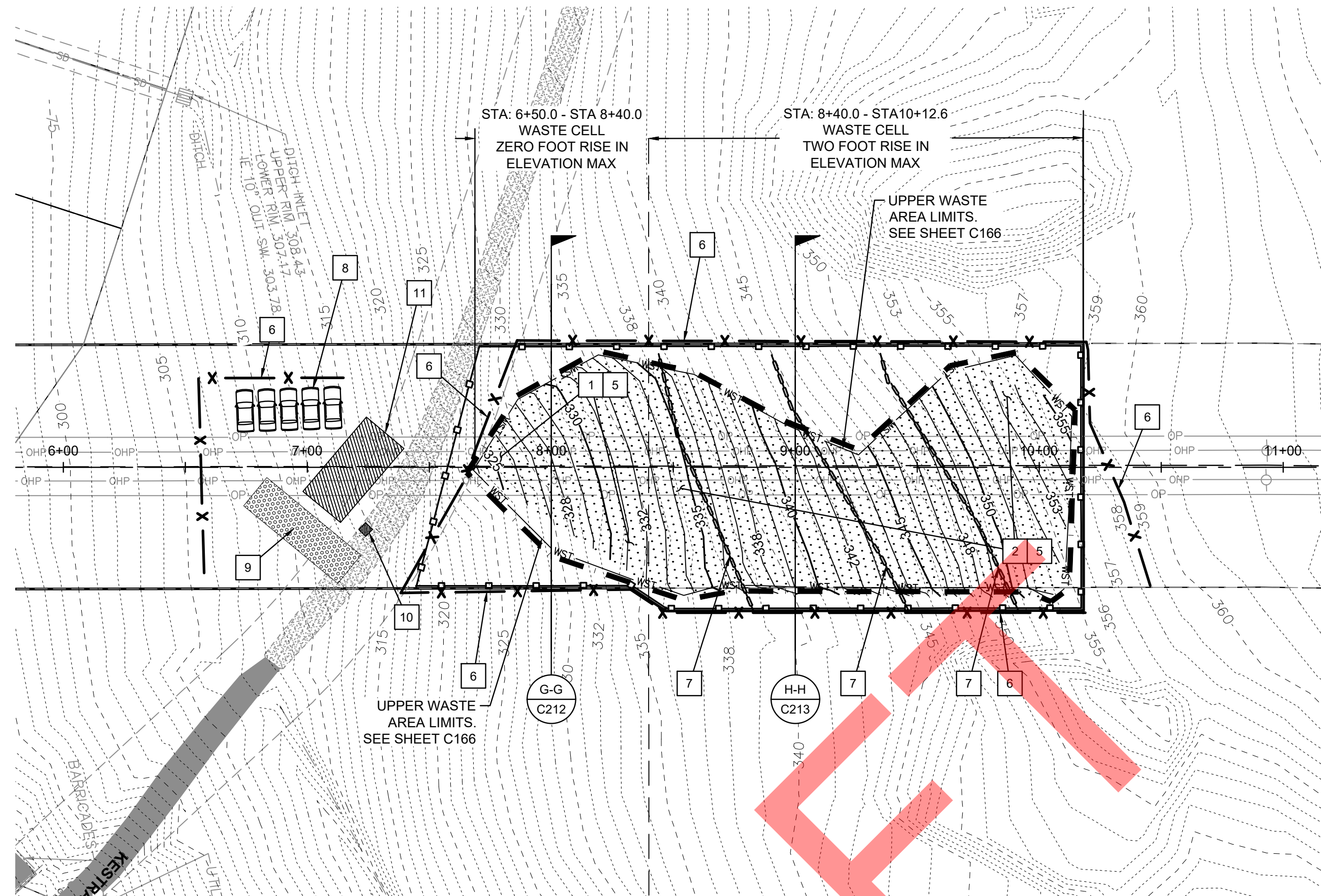
RECORD DRAWING
01/25/2023
This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
• Surveyed as-builts
The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of
City of St. Helens

UPLAND SOLID WASTE DISPOSAL CELL (USWDC) CAP PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
 ST. HELENS ASSETS, LLC
 ST. HELENS, OR



PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C166



LEGEND

- - - - -100- - - - - EXISTING MAJOR CONTOUR
- - - - -92 - - - - - EXISTING MINOR CONTOUR
- 110 — PROPOSED MAJOR CONTOUR
- 108 — PROPOSED MINOR CONTOUR
- — — — — PROPOSED LIMITS OF GRADING
- — — — — ESCP BMP: STRAW WATTLE
- X — ESCP BMP: SILT FENCE
- — — — — ORANGE CONSTRUCTION LIMITS FENCING
- ① — ② GRADE & CAP SECTION DESIGNATION
- ▨ WASTE AREA LIMITS
- ▨ EXCAVATED MATERIAL
- ▨ STAGING & STORAGE AREA
- ▨ STABILIZED CONSTRUCTION ENTRANCE

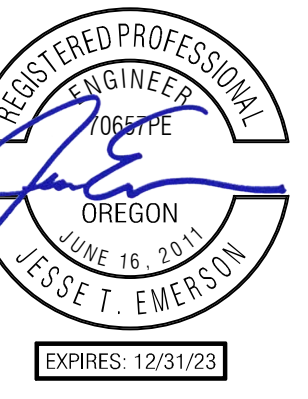
CONSTRUCTION KEY NOTES

- 1 EXCAVATE AND SOLID WASTE MATERIAL TO BE DISPOSED OF UNDER PERMIT OF HILLSBORO LANDFILL. THE SEDIMENT THAT IS NOT SOLID WASTE WILL BE PLACED IN WINDROWS TO DRY AND BE REUSED ON SITE.
- 5 PLACE HIGH VISIBILITY ORANGE NON-WOVEN GEOTEXTILE OVER LIMITS OF WASTE AREA. GEOTEXTILE TO MEET THE REQUIREMENTS OF OSSC 02320, TABLE 4. SEE 'GEOTEXTILE LINER EDGING SECTION' ON SHEET C165.
- 6 INSTALL SEDIMENT FENCE. SEE DETAIL SHEET C400.
- 7 INSTALL EROSION CONTROL WATTLES. SEE DETAIL SHEET C400.
- 8 PROPOSED TEMPORARY PARKING FOR CONSTRUCTION PERSONNEL.
- 9 CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. SEE DETAIL SHEET C400.
- 10 PORTABLE TOILET
- 11 PROPOSED STAGING AND STORAGE AREA

REWORK QUANTITIES

QUANTITIES ARE NEAT LINE AND INTENDED FOR PLANNING PURPOSES ONLY

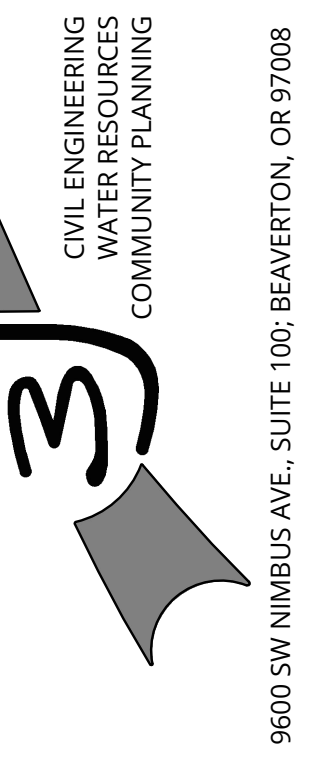
WASTE AREA GRADE ESTABLISHMENT (AS SHOWN THIS SHEET)
REWORK: 1,500 CY



RECORD DRAWING

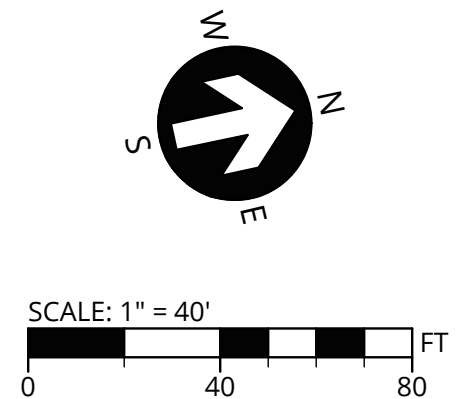
01/25/2023
 This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
 • Surveyed as-builts
 The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of City of St. Helens

UPLAND SOLID WASTE DISPOSAL CELL (USWDC) SUBGRADE PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
 ST. HELENS ASSETS, LLC
 ST. HELENS, OR

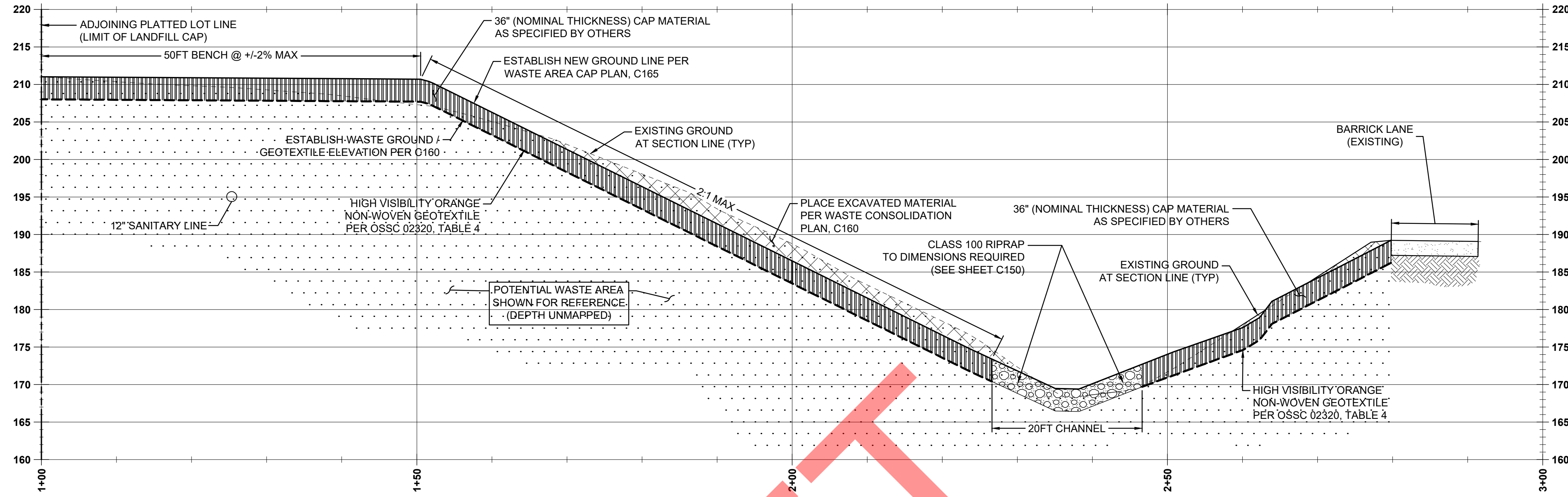


PROJECT INFORMATION
 3J PROJECT # | 14188
 TAX LOT(S) | 0501W32DC 100
 LAND USE # | N/A
 DESIGNED BY | JTE
 CHECKED BY | JDH

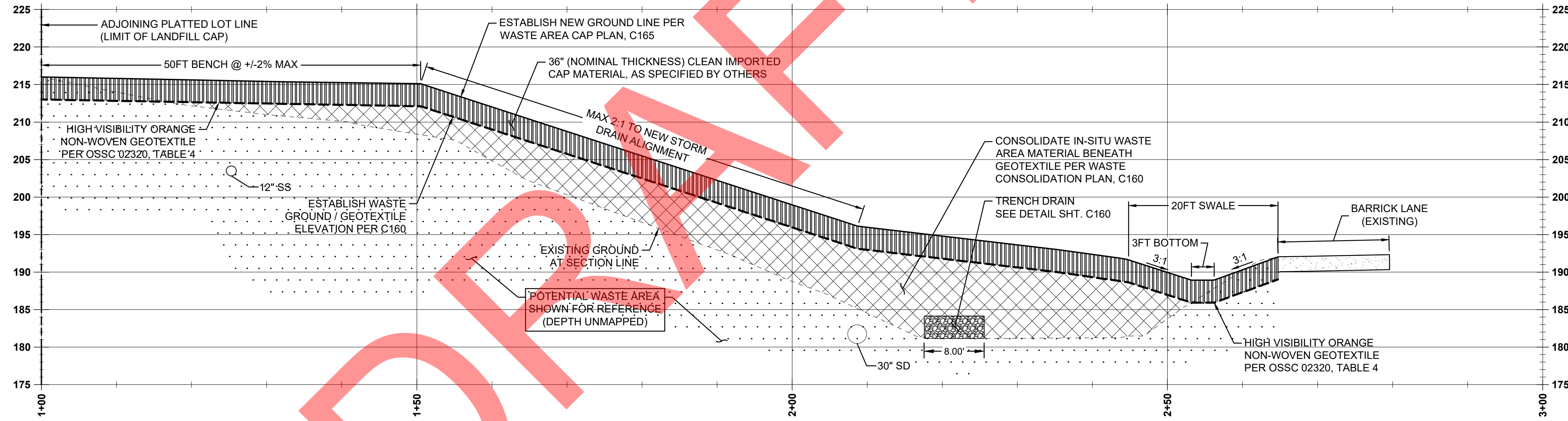
SHEET NUMBER
C167



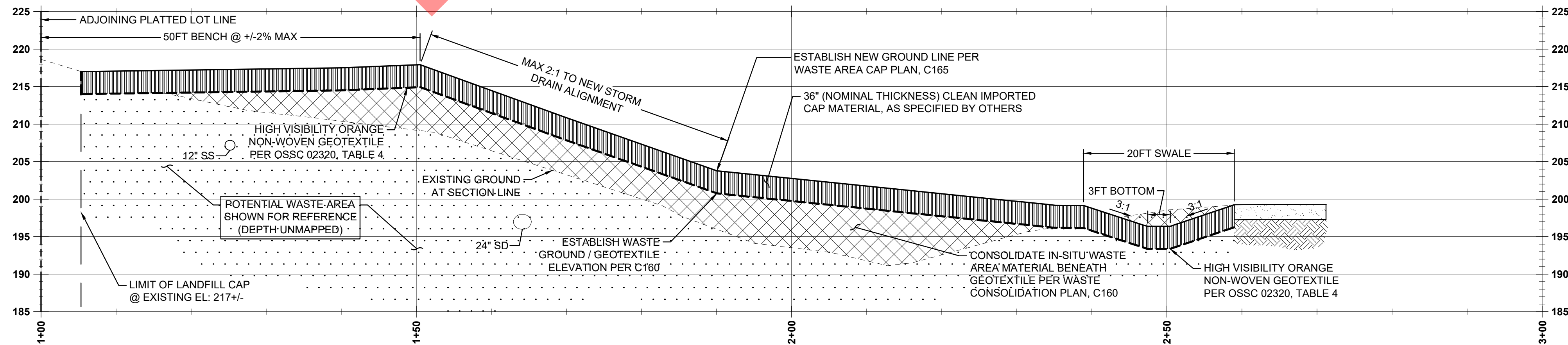
P:\14188\ELK RIDGE PHASE 5\CAD\B\DEC-AB\14188-GRADING-DEC.DWG



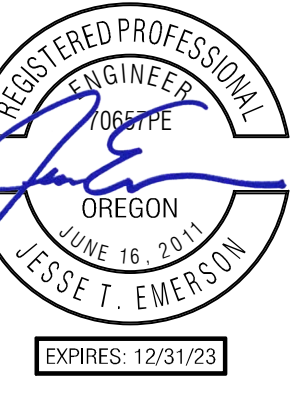
SECTION A-A
SCALE: 1" = 10' ; H=V



SECTION B-B
SCALE: 1" = 10' ; H=V

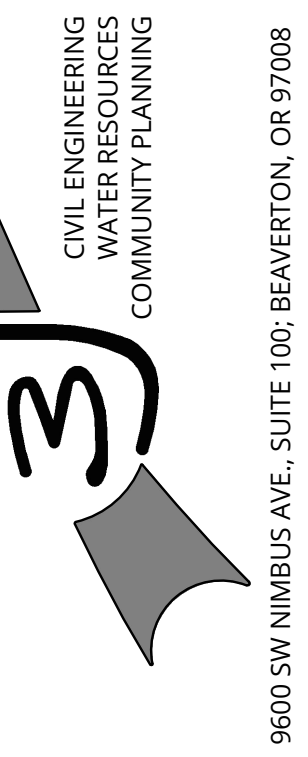


SECTION C-C
SCALE: 1" = 10' ; H=V



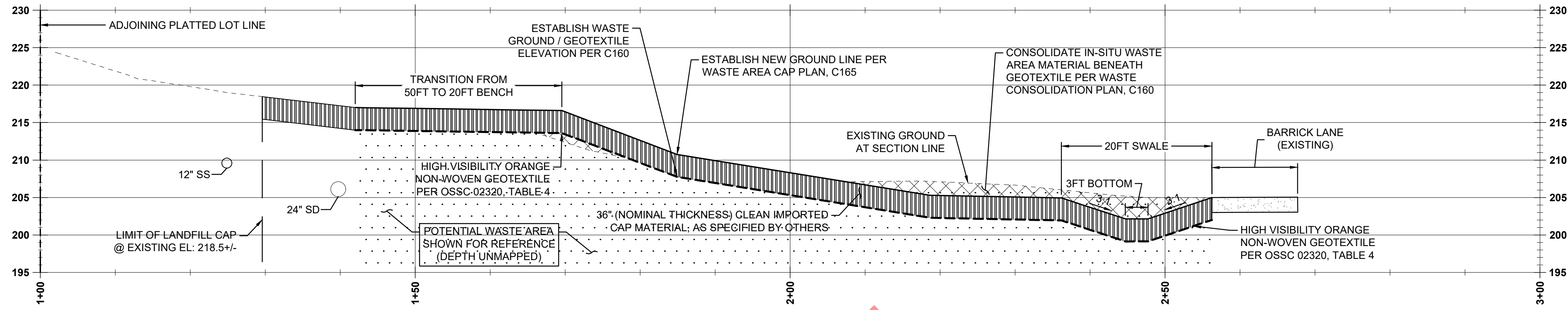
RECORD DRAWING
01/25/2023
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FORMER SOLID WASTE DISPOSAL CROSS SECTIONS A - C
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR

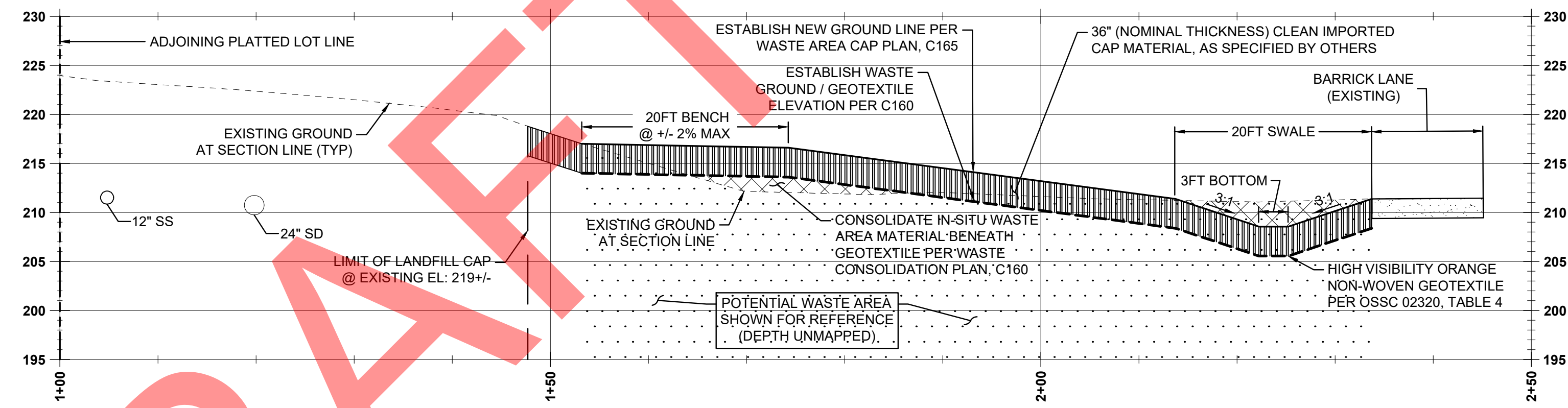


PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

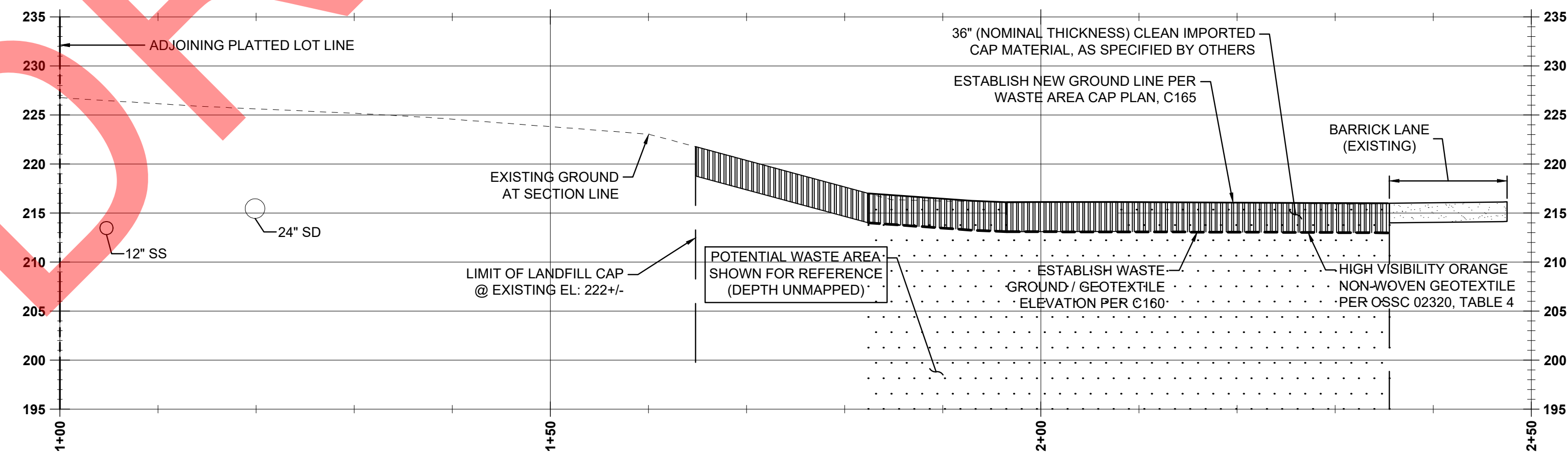
SHEET NUMBER
C210



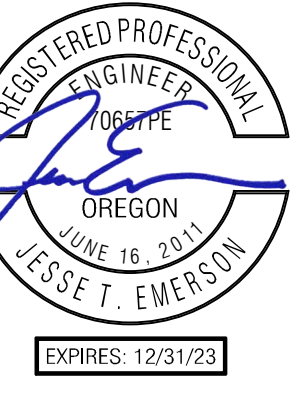
SECTION D-D
SCALE: 1" = 10' ; H=V



SECTION E-E
SCALE: 1" = 10' ; H=V

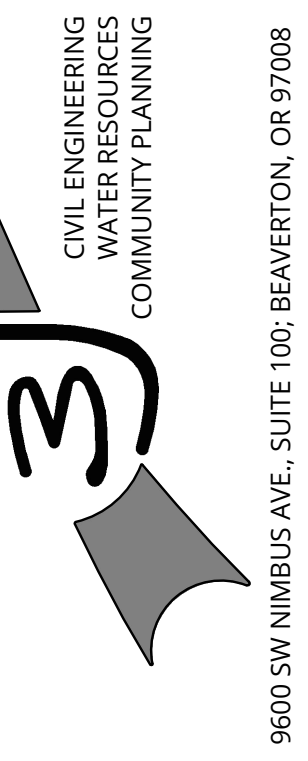


SECTION F-F
SCALE: 1" = 10' ; H=V



RECORD DRAWING
01/25/2023
This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
• Surveyed-as-builts
The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of City of St. Helens

FORMER SOLID WASTE DISPOSAL AREA CROSS SECTIONS D - F
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR



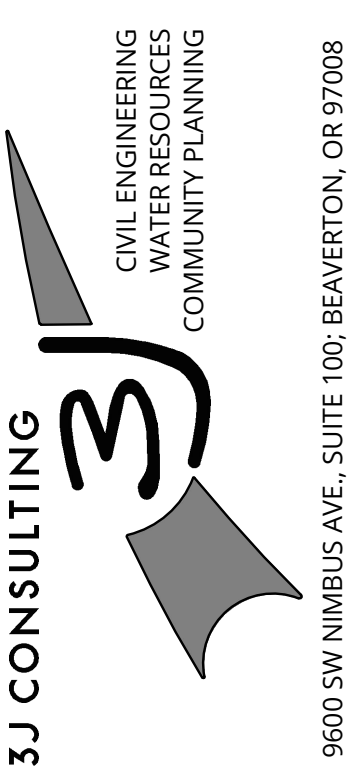
PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C211



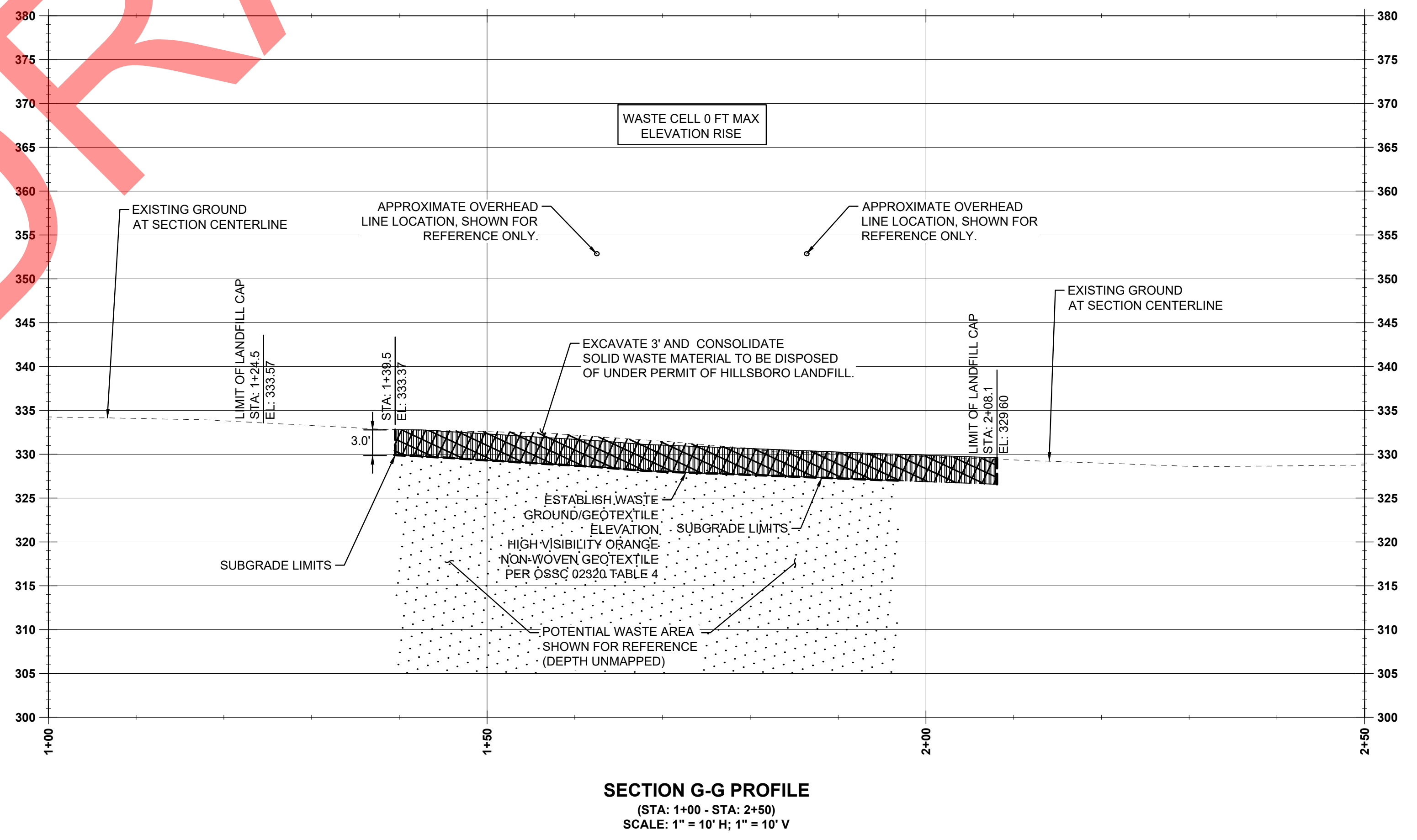
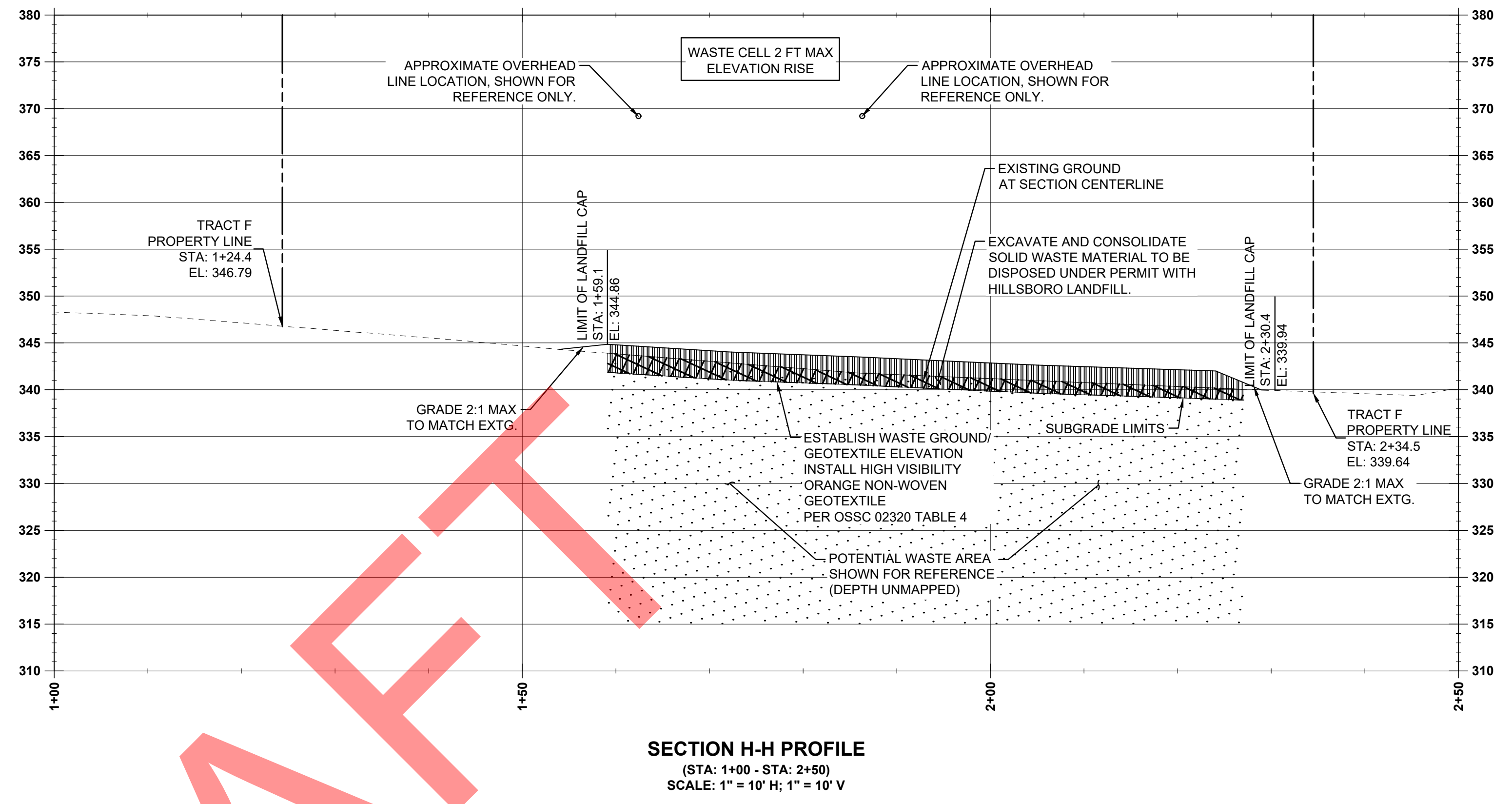
RECORD DRAWING
 01/25/2023
 This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
 • Surveyed as-builts
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UPLAND SOLID WASTE DISPOSAL CELL (USWDC) SECTION PLAN
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
 ST. HELENS ASSETS, LLC
 ST. HELENS, OR

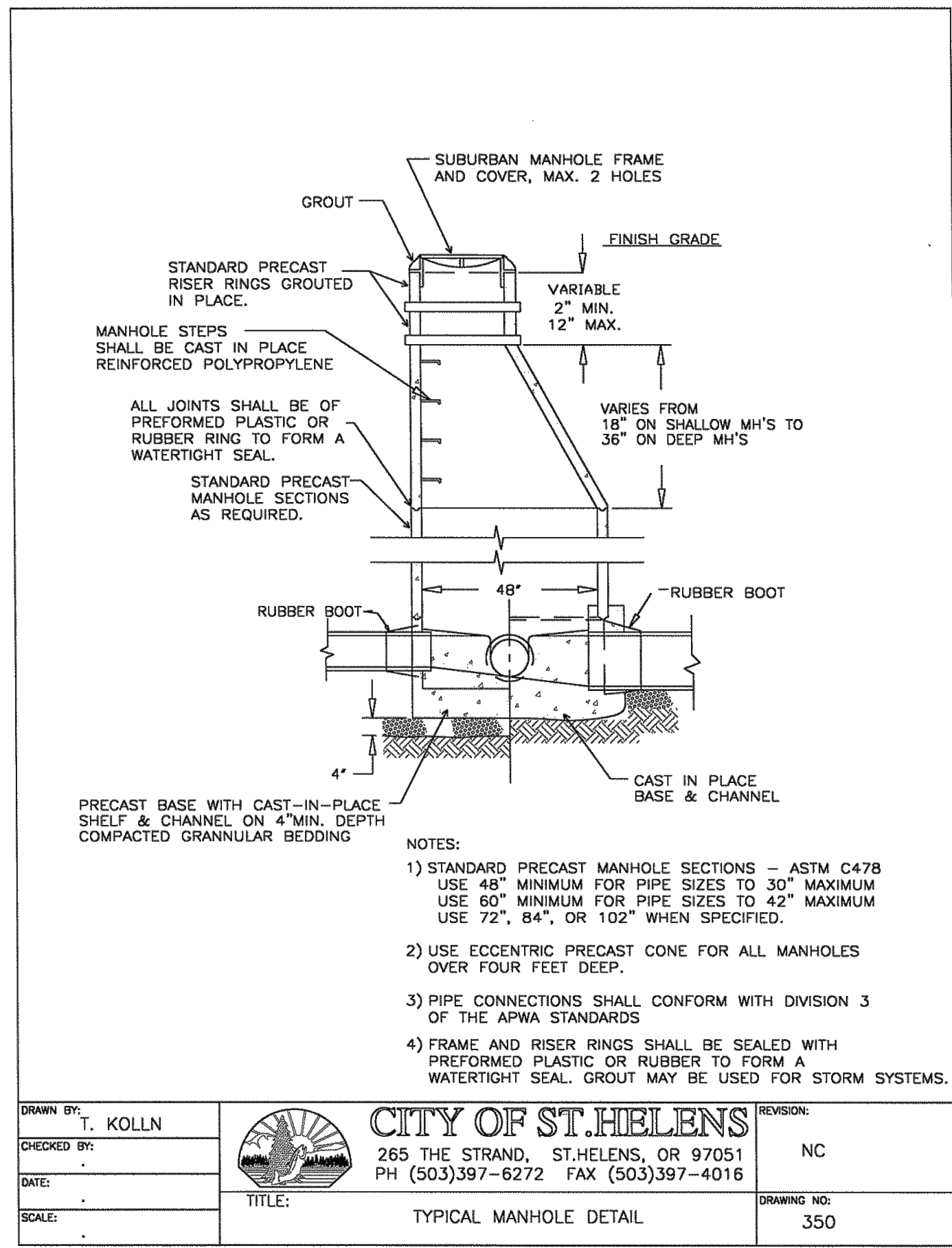


PROJECT INFORMATION
 3J PROJECT # | 14188
 TAX LOT(S) | 0501W32DC 100
 LAND USE # | N/A
 DESIGNED BY | JTE
 CHECKED BY | JDH

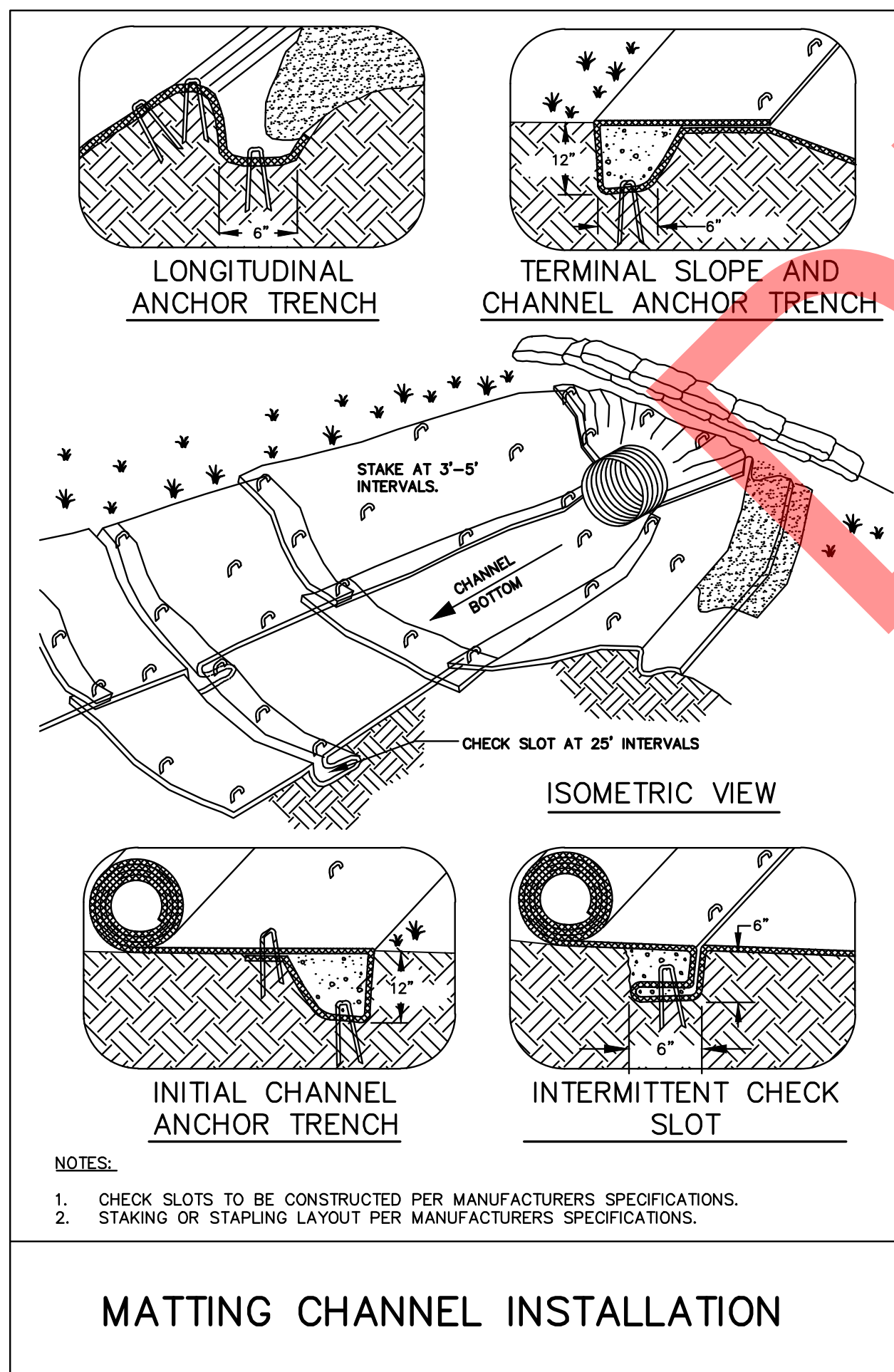
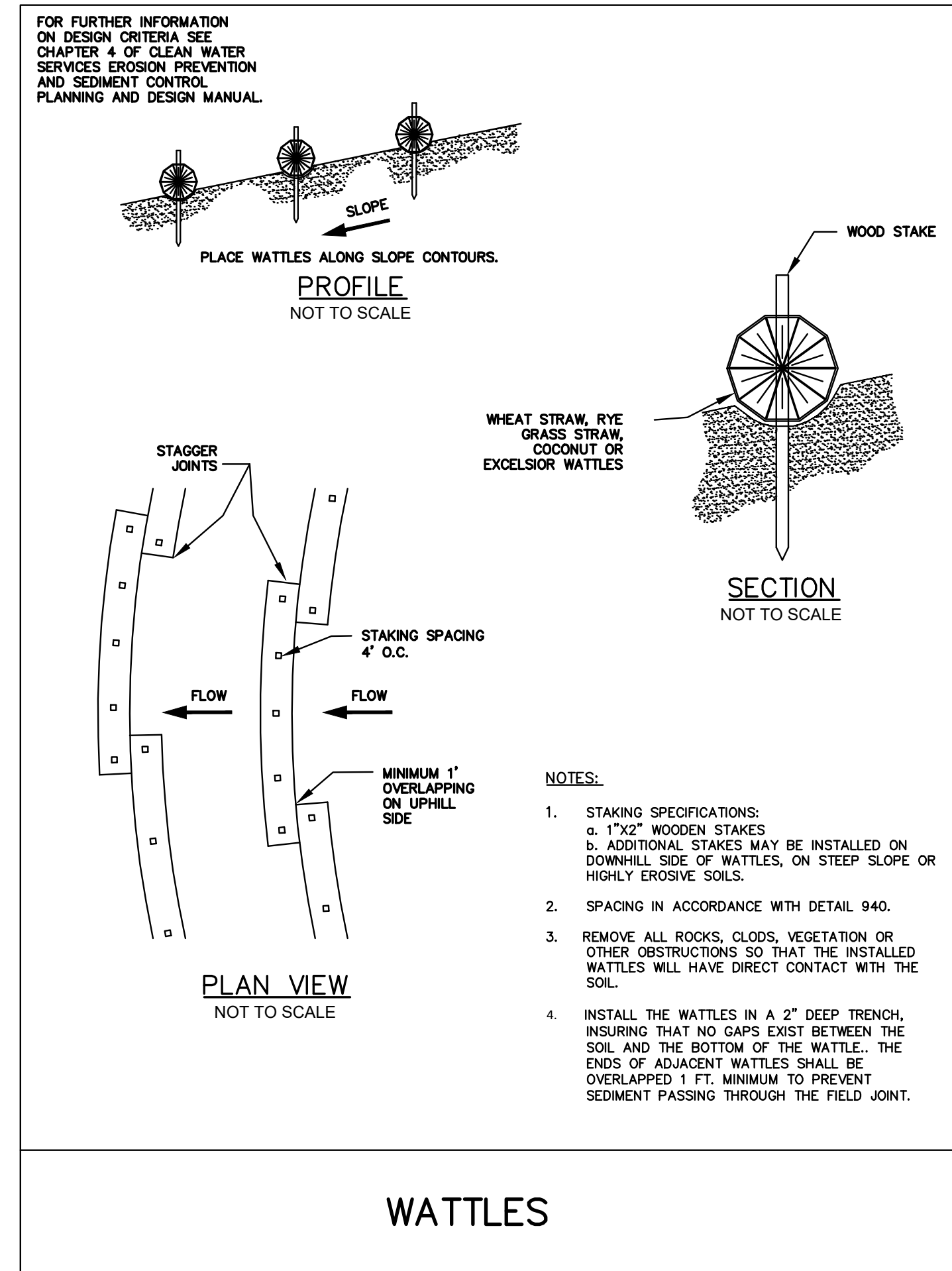
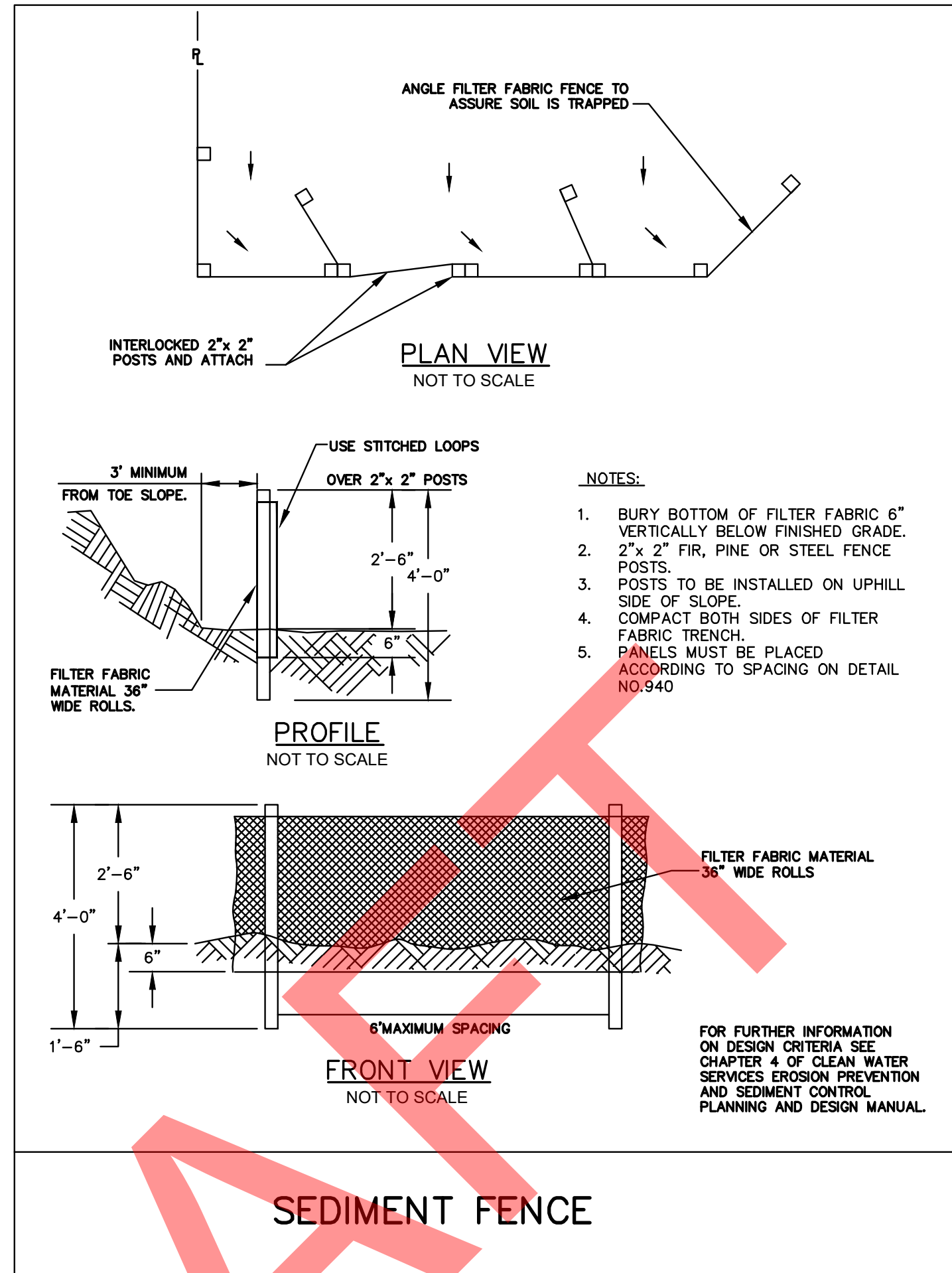
SHEET NUMBER
C212



DRAFT



Ordinance No. 2875 / April 4, 2003 / Appendix



SPACING FOR CHECK DAMS

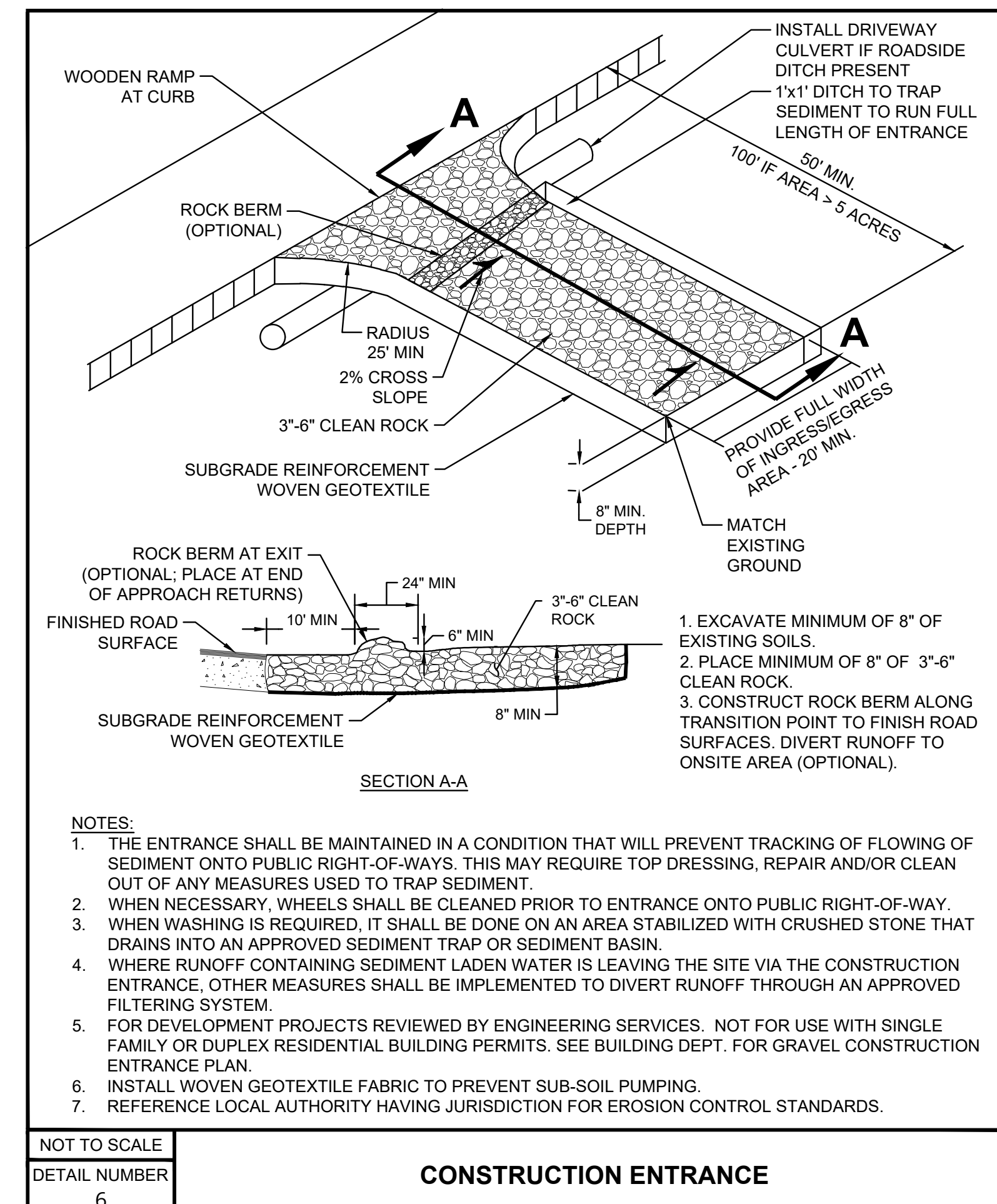
DITCH GRADE	6 INCH	12 INCH	18 INCH
6%	NOT ALLOWED	16 FT O.C.	26 FT O.C.
5%	NOT ALLOWED	20 FT	30 FT
4%	NOT ALLOWED	26 FT	40 FT
3%	15 FT	33 FT	50 FT
2%	25 FT	50 FT	80 FT

BARRIER SPACING FOR GENERAL APPLICATION

INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS

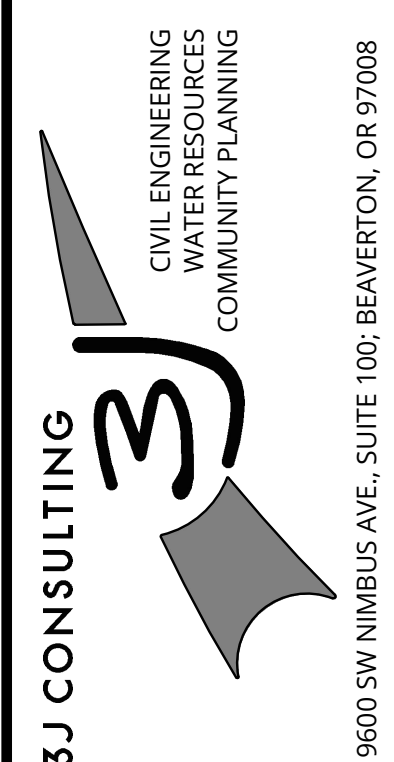
% SLOPE	SLOPE	MAXIMUM SPACING ON SLOPE
10% OR FLATTER	10:1 OR FLATTER	300 FT
>10% OR <15%	>10:1 OR <7.5:1	150 FT
>15% OR <20%	>7.5:1 OR <5:1	100 FT
>20% OR <30%	>5:1 OR <3.5:1	50 FT
>30% OR <50%	>3.5:1 OR <2:1	25 FT

SPACING TABLES



RECORD DRAWING
01/25/2023
This drawing has been prepared to reflect final field conditions. The basis of this information is derived in whole or in part from a combination of:
• Surveyed as-builts
The stamping engineer of record certifies this drawing is an accurate portrayal of the final construction, and the resulting improvements are in conformance with the standards of
City of St. Helens

CONSTRUCTION DETAILS
ELK RIDGE PHASE V - STORM DRAIN RELOCATION & LANDFILL CAP
ST. HELENS ASSETS, LLC
ST. HELENS, OR



PROJECT INFORMATION
3J PROJECT # | 14188
TAX LOT(S) | 0501W32DC 100
LAND USE # | N/A
DESIGNED BY | JTE
CHECKED BY | JDH

SHEET NUMBER
C400

P:\14188\ELK RIDGE PHASE V\CAD\BIB\DEC\AB\14188-DETAILS-DEQ.DWG

Attachment C

Solid Waste Disposal Receipts

DRAFT

**Attachment C
Solid Waste Disposal Tonnage Report**

Date	Profile #	Manifest/A Ticket #	Material	Facility	Carrier	Vehicle	Tons/Tonnes	Material Quantity	Material Unit
9/19/2022	138550OR P	1659068	Special Waste M	Hillsboro Landfill		34-SOLO	4.51	4.51	TON
9/19/2022	138550OR P	1659069	Special Waste M	Hillsboro Landfill		34-SOLO	8.5	8.5	TON
9/22/2022	138550OR NA	1659537	Special Waste M	Hillsboro Landfill		34-PUP	17.82	17.82	TON
9/22/2022	138550OR na	1659600	Special Waste M	Hillsboro Landfill		34-PUP	22.42	22.42	TON
9/23/2022	138550OR P	1659690	Special Waste M	Hillsboro Landfill		34-PUP	24.95	24.95	TON
9/23/2022	138550OR NA	1659729	Special Waste M	Hillsboro Landfill		33-SOLO	12.69	12.69	TON
9/23/2022	138550OR NA	1659751	Special Waste M	Hillsboro Landfill		34-PUP	23.54	23.54	TON
9/23/2022	138550OR na	1659821	Special Waste M	Hillsboro Landfill		34-PUP	23.55	23.55	TON
9/23/2022	138550OR P	1659870	Special Waste M	Hillsboro Landfill		34-PUP	27.19	27.19	TON
9/26/2022	138550OR NA	1659945	Special Waste M	Hillsboro Landfill		34-PUP	26.6	26.6	TON
9/26/2022	138550OR NA	1660006	Special Waste M	Hillsboro Landfill		34-PUP	25.33	25.33	TON
9/26/2022	138550OR NA	1660045	Special Waste M	Hillsboro Landfill		34-PUP	25.17	25.17	TON
								242.27	

DRAFT