Swift Orange Line Project – McCollum Park & Ride Terminus (Emander Landfill)

Summary of Work Performed by Community Transit

2026

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1.0 INTRODUCTION

The following report presents a summary of work performed on the Emander Landfill cover system and off-gassing system by Community Transit. The site is located at 128th St SE & 4th Dr SE in Everett, Washington. in south--central Snohomish County, Washington. The location of the site relative to existing municipal improvements is shown on the Vicinity Map (***Figure 1***). The Ecology references for this site are CSID 3993, Facility 2732.

1.1 LANDFILL HISTORY

A timeline of the site history, environmental investigations, and remedial actions at the site is as follows:

- **1922**: The site was acquired by Snohomish County (County).
- **1929-1947**: The site was operated by the County as a gravel pit.
- **1948-1967**: The City of Everett operated the site as the Emander Landfill. Landfill content included refuse, demolition debris, septage, and waste petroleum fuel products. The landfill was covered and regraded in 1967.
- **1969**: The landfill and surrounding property were dedicated as a County park (McCollum Park).
- **1990**: The County approved the McCollum Park Master Plan which called for constructing a park and ride lot, BMX track, and ball fields in the portion of the park overlying the landfill. As part of the Master Plan study, monitoring wells and gas probes were installed for assessment purposes from 1990 to 1993.
- **April 1993**: The final Environmental Impact Statement (EIS) was issued and identified potential environmental impacts from the landfill gas and refuse and established mitigation measures including soil/synthetic cover capping, a landfill gas management system, and groundwater monitoring.
- **November 1994**: During preloading operations, a hydrocarbon-impacted sludge-like material rose to the ground surface. Additional sludge emerged in two additional nearby areas In April and June 1995.
- **January 1995**: The Washington State Department of Ecology (Ecology) completed a Site Hazard Assessment in January 1995 and placed the landfill on the Washington State Hazardous Site List.
- **1995**: A Remedial Investigation was conducted, and additional groundwater monitoring wells and gas probes were installed.
- **January 30, 1996**: The County entered the site into Agreed Order No. DE96TC-N126. The Compliance Monitoring Plan was completed in February 1996 and the County commenced quarterly groundwater sampling.
- **1996:** A landfill gas management system was installed as part of the remedial action. This included a network of horizontal collection trenches routed to a blower and flare located on the site. The flare system now consists of a passive sparker system that ignites when sufficient landfill gas is present.

- **Ongoing**: The County performs quarterly groundwater monitoring at five shallow-zone wells and eight deep zone wells and five landfill gas monitoring probes located around the landfill perimeter. The results are submitted to Ecology in a semiannual report.

1.2 PARK AND RIDE HISTORY

As part of the Transit Development Plan, it was determined by Community Transit that the park and ride facility located at McCollum Park need to be upgraded to accept another bus route, the 11-mile long Swift Orange Line that has a terminus at Edmonds Community College and McCollum Park. This required re-alignment of roads, crosswalks, and parking to facilitate buses arriving and departing via the new route. Some construction areas required temporary removal of landfill cover liner to facilitate regrading, installation of utilities, and realignment of the main off-gassing manifold vault located in the bus turn around area.

2.0 CONSTRUCTION ACTIVITIES

Community Transit commenced construction on the $85.5 million Swift Orange Line project on April 19, 2022. Construction activities that involved working on the landfill cover liner at McCollum Park were conducted between August 15, 2022, and April 1, 2024. It was noted that in 2023 Ecology fined Community Transit and C.A. Carey, the General Contractor, for stormwater permit violations related to failing to notify Ecology that the liner had been penetrated in October 2022.

2.1 BID SPECIFICATIONS

Community Transit developed bid specifications to describe the procedures used to perform repairs on liner that was temporarily removed as part of construction, and to describe procedures to repair off-gassing components that were temporarily removed to facilitate construction. The County reviewed these specifications and agreed they would ensure the overall integrity of the liner and off-gassing systems. See Appendix A for liner and off-gassing repair specifications.

2.2 EVALUATION OF CONTRACTORS

Community Transit reviewed the qualifications of potential contractors to ensure they had experience in the repair and installation of liner and off-gassing components. The County concurred that general contractor C.A. Carey Corporation and subcontractor Northwest Lining & Geotextile Products, Inc. were qualified to perform this type of work at the landfill. See Appendices B and C for the qualifications of the liner and off-gassing repair contractors.

2.3 AREAS OF REPAIR WORK

Community Transit and KBA, Inc. (construction management consultant) kept detailed records of areas where liner and off-gassing systems were temporarily removed and subsequently repaired. On January 27, 2026, the County submitted a Public Records Request (PRR) with Community Transit. Records Request #26-19 was fulfilled on February 5, 2026. This PRR resulted in 706

responsive records including but not limited to Inspector Daily Reports (IDRs), photographs, change orders, and as-builts. See Appendix D for as-builts detailing the areas of repair.

3.0 SUMMARY AND CONCLUSIONS

3.1 COUNTY REVIEW OF RECORDS

The County reviewed all 706 responsive records provided by Community Transit. The County finds that KBA tracked all damaged liner and off-gassing components and directed the contractor to repair the damaged systems to bid specifications. Their records align with field observations made by County staff while on-site during construction.

3.2 CONCLUSIONS

It is the determination of the County that Community Transit repaired all damaged liner and off-gassing components per contract specifications at the Emander Landfill. It is the County's belief that the landfill was returned to a condition comparable to or better than it's condition prior to the start of this project.

3.3 SIGNATURE

_____ 2/10/2026

David Schonhard
Snohomish County Public Works
Solid Waste Director

Date

Figures

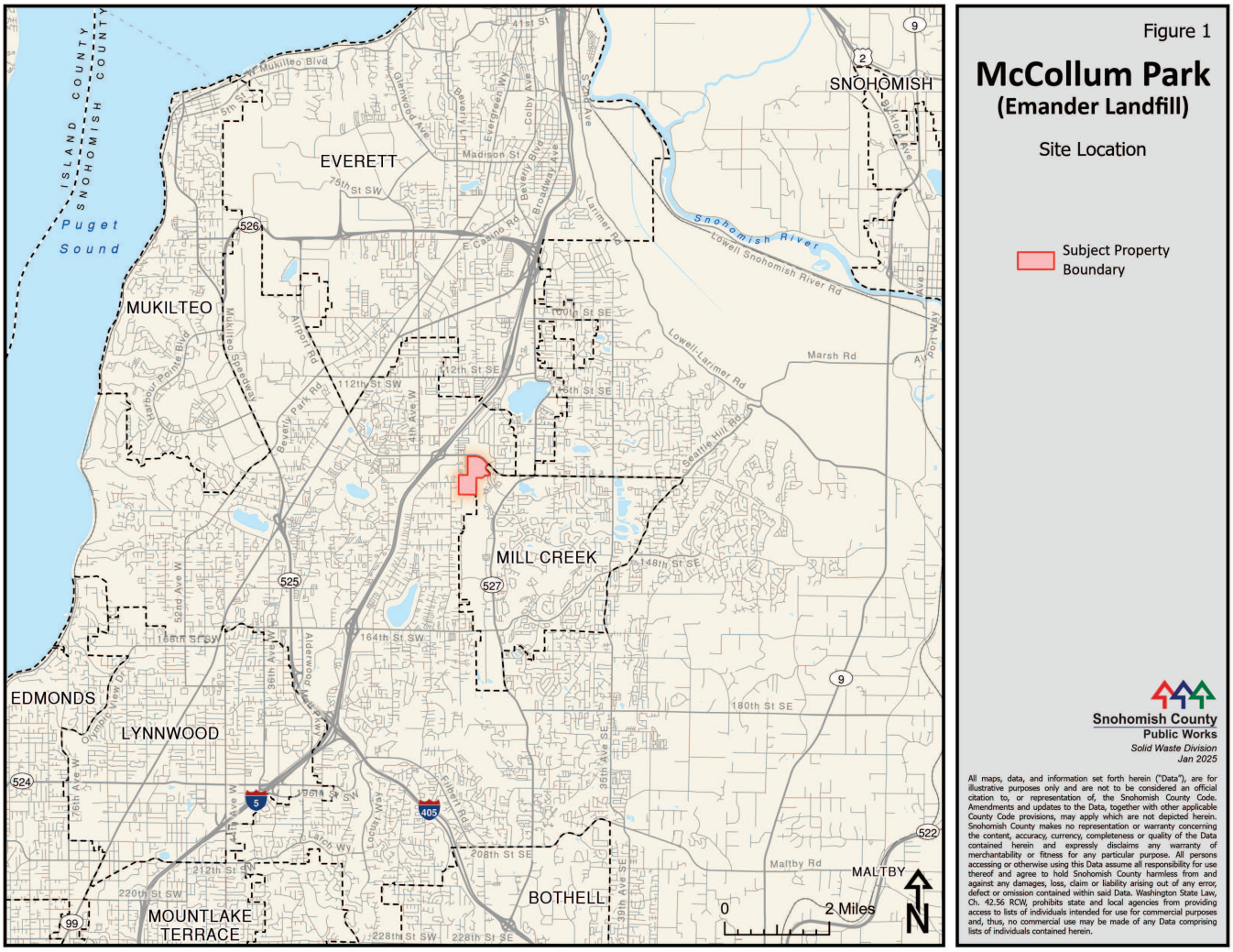


Figure 1
McCollum Park
(Emander Landfill)
Site Location
Subject Property Boundary
Snohomish County
Public Works
Solid Waste Division
Jan 2025
All maps, data, and information set forth herein ("Data"), are for illustrative purposes only and are not to be considered an official citation to, or representation of, the Snohomish County Code. Amendments and updates to the Data, together with other applicable County Code provisions, may apply which are not depicted herein. Snohomish County makes no representation or warranty concerning the content, accuracy, currency, completeness or quality of the Data contained herein and expressly disclaims any warranty of merchantability or fitness for any particular purpose. All persons accessing or otherwise using this Data assume all responsibility for use thereof and agree to hold Snohomish County harmless from and against any damages, loss, claim or liability arising out of any error, defect or omission contained within said Data. Washington State Law, Ch. 42.56 RCW, prohibits state and local agencies from providing access to lists of individuals intended for use for commercial purposes and, thus, no commercial use may be made of any Data comprising lists of individuals contained herein.
ISLAND COUNTY
SNOHOMISH COUNTY
Puget Sound
EVERETT
SNOHOMISH
MUKILTEO
MILL CREEK
EDMONDS
LYNNWOOD
BOTHELL
MALTBY
MOUNTLAKE TERRACE
Snohomish River
Lowell Snohomish River Rd
Marsh Rd
Lowell-Larimer Rd
Seattle Hill Rd
Maltby Rd
0
2 Miles
N

Appendix A

Wood surfaces shall be treated with a semi-transparent solvent borne penetrating oil. The basis of design for the penetrating oil is Ultra-Premium Penofin Red Label oil. All fasteners shall be stainless steel.

8-35.3 Construction Requirements

North Creek Trail Head Sign and Entry Bench shall be furnished and assembled per the details in the Plans and these Specifications.

Submittal Requirements

Contractor shall submit detailed dimensioned shop drawings showing methods of fastening, material descriptions including steel type and dimensions, and finishing methods. Show sign font type and size, material colors and activity markers as approved by Snohomish County Parks. Show dimensions and type of footings and subgrade preparation.

8-35.4 Measurement

There will be no specific measurement for the lump sum bid item “North Creek Trail Sign and Bench”.

8-35.5 Payment

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal:

“North Creek Trail Sign and Bench”, lump sum.
The lump sum contract price for “North Creek Trail Sign and Bench” shall be full compensation for furnishing, assembling, and installing the trail head sign and bench as shown in the Plans and described in the Specifications.

8-36 MCCOLLUM PARK LANDFILL SITE REQUIREMENTS NEW

8-36.1 Description

This Work includes adjusting and replacing off gassing vault lids with traffic rated lids, and relocating off-gassing vaults and ventilation pipes at locations shown on the Plans.

This Work includes HDPE liner repair due to penetration of the existing landfill liner during installation of the utilities, foundations, and other improvements shown on the Plans to be installed at the McCollum Park site.

8-36.2 Materials

Off Gassing System

PVC (polyvinyl chloride) pipe and fittings shall be Schedule 40 and conform to ASTM D 1785 and ASTM D 2665.

Grout shall meet or exceed the requirements of 9-20.3(2) Grout Type 2 for Nonshrink Applications.

HDPE Liner

60 mil textured high-density polyethylene (HDPE) liner shall conform to GRI-GM13.

HDPE Welding Rod
Metal battens shall be 0.25-inch thick by 2-inches wide stainless steel.

Stud anchor shall be zinc-plated carbon steel to ASTM B633, SC1, Type III; hot dipped galvanized to ASTM A 1534; Type 304 or 316 stainless steel.

Sealant shall be Para JT adhesive joint tape compound formulated with cross-linked polymeric elastomers or approved equal.

Gasket material shall be closed cell nitrile/pvc sponge, 0.25-inch thick, with adhesive on one side.

Clamps shall be minimum 0.75-inch wide Grade 304 stainless steel banding or Grade 304 stainless steel hose clamp.

Geogrid Reinforcing
All geogrid shall have a minimum tensile strength at 5 percent strain of 800 pounds per foot per ASTM D 6637.

8-36.3 Construction Requirements

Contractor Qualifications
Contractor(s) with a minimum of three (3) years documented experience with HPDE liner installation/repair; off gassing system installation/repair; and removal, handling, and disposal of landfill/hazardous material.

Submittals
In accordance to Section 1-05.3, Contractor shall submit the following items to the Engineer for acceptance prior to any site excavation activities at McCollum Park:

1. Detailed plan for excavation activities at McCollum Park including:
    a. Construction methods to ensure protection of existing landfill liner and off gassing system,
    b. Repair procedures for liner penetrations,
    c. Procedures for removal, handling and disposal of landfill material,
    d. Repair/reconnection procedures for off gassing system.
    Plan requires review and approval by Snohomish County Solid Waste.
2. Detailed drawings for off gassing system modifications described in this section.
3. Proposed disposal site for landfill material.
4. The source of all materials and Certificates of Compliance for Work described in this section.
5. Qualification documentation for Contractor's personnel who will be completing the Work described in this section.

Off Gassing System Modifications
As-built drawings for the existing off gassing system including details for the existing Off Gassing Vault, and Manifold Vault and Ventilation Pipes to be relocated are provided in Appendix G. All Work associated with the relocation and adjustment of the off gassing system at McCollum Park shall be coordinated with Snohomish County Solid Waste and a representative from Snohomish County Solid Waste shall be on-site during off gassing system modification Work.

HDPE Liner Repair
HDPE liner repairs shall be per the details in the Plans and these Specifications.

Geogrid Reinforcing for New Pavement and Structures

Geogrid reinforcement shall be installed below new pavement; structures; curb, gutter and sidewalk; gravel access road; transit platform; and driver restroom foundation as shown on the Plans. Geogrid placement shall be within the subbase approximately 6-inches minimum above the HDPE liner.

Contractor is responsible for all work, records, and reports required to perform the work described in this section. Contractor shall transport landfill material and dispose of it at a permitted facility. Contractor shall provide the Engineer with a copy of the shipping manifest or bill of lading indicating the amount of material hauled to disposal and bearing the disposal site operator's confirmation for receipt of the material.

8-36.4 Measurement

No specific unit of measurement shall apply to the lump sum items "Relocate Manifold Vault and Ventilation Pipes" and "Relocate Off Gassing Vault".

"Adjust Off Gassing Vault Lid" will be measured per each.

"New HS-20 Traffic Rated Lid (Off Gassing Vault)" will be measured per each.

"HDPE Liner Repair" will be measured per each.

"Geogrid Reinforcing" will be measured per square yard for the ground surface covered.

"Removal and Disposal of Landfill Material" will be measured per cubic yard.

8-36.5 Payment

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal:

"Relocate Manifold Vault and Ventilation Pipes", per lump sum.

"Relocate Off Gassing Vault", per lump sum.

The unit contract price per lump sum for "Relocate Manifold Vault and Ventilation Pipes" and "Relocate Off Gassing Vault" shall be full compensation for furnishing all labor, materials, tools, and equipment necessary to relocate and reconnect existing off gassing and manifold vault and all associated equipment and piping to the new locations shown on the Plans and per the details provided in the as-built drawings.

"Adjust Off Gassing Vault Lid", per each.

"New HS-20 Traffic Rated Lid (Off Gassing Vault)", per each.

The per each contract price for "Adjust Off Gassing Vault Lid" and "New HS-20 Traffic Rated Lid (Off Gassing Vault)" shall be full compensation for furnishing materials to adjust and replace vault lids as shown in the Plans and described in the Specifications.

"HDPE Liner Repair", per each.
The per each contract price for "HDPE Liner Repair" shall be full compensation for furnishing materials and constructing the liner repairs as shown in the Plans and described in these Specifications.

"Geogrid Reinforcing", per square yard.
The per square yard contract price for "Geogrid Reinforcing" shall be full compensation for furnishing

materials and installing geogrid reinforcing as shown in the Plans and described in these Specifications. Geogrid for SEW Walls is included in the per square foot wall price.

"Removal and Disposal of Landfill Material", per cubic yard.
The per cubic yard contract price for "Removal and Disposal of Landfill Material" shall be full pay for all costs associated with excavating, hauling, and disposing of materials at an approved facility.

8-37 GAS MAIN RELOCATION NEW

8-35.1 Description

This Work includes gas main relocation at the Edmonds College site as shown on the Plans.

8-35.2 Materials

4-Inch Diameter STW gas main shall be per Puget Sound Energy requirements.

8-35.3 Construction Requirements

Contractor shall contract directly with Puget Sound Energy to complete the gas main relocation work at the Edmonds College termini site. Gas main relocation will be completed by Puget Sound Energy staff or subcontractor.

Puget Sound Energy requires a minimum of 4-weeks (6-weeks typical) notice prior to relocation. Contractor shall take this notification time into account when planning Work.

8-35.4 Measurement

There will be no specific measurement for the lump sum bid item "Gas Main Relocation".

8-35.5 Payment

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal:

"Gas Main Relocation", lump sum.
The lump sum contract price for "Gas Main Relocation" shall be full compensation for gas main relocation as shown in the Plans.

END DIVISION 8

Appendix B

Submittal Transmittal & Response

Submittal Transmittal Number 030.02 **Date:** 6/3/22 **Due Date:**

Owner/Contract Name: Community Transit/Swift Orange Line **ITB #:** 2021-083 **Fed Aid #:**

The Contractor submits the following noted attachments to Engineer for review and response:

#	Bid Item #	Spec Sec #	DESCRIPTION	Response
1		SP8-36	Excavation, Trenching and HDPE Repair Plan (McCollum Park)	NE[1]
2				
3				
4				

Submitted by:

Cassie Brock	**Project Engineer**	**425-392-8016**
Name	**Title**	**Phone #**

The Engineer has reviewed the above noted documents and responded as noted above, under "**Response".**

Key:
- **NE** = NO EXCEPTIONS TAKEN
- **MC** = MAKE CORRECTIONS NOTED: No resubmittal required, but corrections noted are required
- **SI** = SUBMIT SPECIFIC ITEM: Resubmittal required – Not approved
- **RR** = REVISE AND RESUBMIT: Resubmittal required – Not approved
- **RJ** = REJECTED – see comments below

Note: Review is only for conformance with the general design concept of the Project and does not extend to consideration of structural integrity, safety, detailed compliance with Contract requirements and any other obligation of the Contractor. Any action shown is subject to the requirements of the construction Contract. Contractor is responsible for confirming and correlating all dimensions; fabricating and construction techniques; coordinating its work with that of all other trades; and the satisfactory performance of its entire work in strict accordance with the construction Contract. The review is undertaken solely to satisfy Engineer's obligations and does not relieve Contractor from its obligation fully to perform all Contract requirements, nor shall such review give rise to any right of action or suit in favor of Contractor or third persons, against the Owner.

- [X] **No Exceptions Taken**
- [ ] **Make Corrections Noted**
- [ ] **Rejected**
- [ ] **Revise and Resubmit**
- [ ] **Submit Item Specified**

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work.

Engineer's Comments and Sign-off: Otak By: WAS Date: 6/16/2022

# (key to above)	Comment
1	Liner Repair Subcontractor Qualifications need to resubmitted and approved prior to excavation at McCollum Park site.
2	
3	
4	

Matthew Matsumoto	Matthew Matsumoto, Resident Engineer	06/16/2022
Name	Title	Date

☐ See Attached Engineer's Comments ☐ See Mark-Up of Submittal Documents ☐ See Other Attachments

FOR REFERENCE ONLY

Submittal Transmittal & Response

Submittal Transmittal Number 030.01 **Date:** 5/11/22 **Due Date:**

Owner/Contract Name: Community Transit/Swift Orange Line **ITB #:** 2021-083 **Fed Aid #:**

The Contractor submits the following noted attachments to Engineer for review and response:

#	Bid Item #	Spec Sec #	DESCRIPTION	Response
1		SP8-36	Excavation, Trenching and HDPE Repair Plan (McCollum Park)	RR
2				
3				
4				

Submitted by:

Cassie Brock	Project Engineer	425-392-8016
Name	**Title**	**Phone #**

The Engineer has reviewed the above noted documents and responded as noted above, under "**Response**".

Key:
- **NE** = NO EXCEPTIONS TAKEN
- **MC** = MAKE CORRECTIONS NOTED: No resubmittal required, but corrections noted are required
- **SI** = SUBMIT SPECIFIC ITEM: Resubmittal required – Not approved
- **RR** = REVISE AND RESUBMIT: Resubmittal required – Not approved
- **RJ** = REJECTED – see comments below

Note: Review is only for conformance with the general design concept of the Project and does not extend to consideration of structural integrity, safety, detailed compliance with Contract requirements and any other obligation of the Contractor. Any action shown is subject to the requirements of the construction Contract. Contractor is responsible for confirming and correlating all dimensions; fabricating and construction techniques; coordinating its work with that of all other trades; and the satisfactory performance of its entire work in strict accordance with the construction Contract. The review is undertaken solely to satisfy Engineer's obligations and does not relieve Contractor from its obligation fully to perform all Contract requirements, nor shall such review give rise to any right of action or suit in favor of Contractor or third persons, against the Owner.

- ☐ **No Exceptions Taken**
- ☐ **Make Corrections Noted**
- ☐ **Rejected**
- ☒ **Revise and Resubmit**
- ☐ **Submit Item Specified**

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work.

Engineer's Comments and Sign-off: Otak By: KCK Date: 5/23/22

# (key to above)	Comment
1	Provide the following previously requested items: Submit proposed sources for all materials related to
2	liner repairs and off-gassing system adjustments/relocations.
3	
4	

see page 14

Matthew Matsumoto	Matthew Matsumoto, Resident Engineer	05/23/2022
Name	Title	Date

☐ See Attached Engineer's Comments ☐ See Mark-Up of Submittal Documents ☐ See Other Attachments

C.A. Carey Corporation

Excavation, Trenching and HDPE Repair Plan

Plan last updated: **6/3/2022**

Scope

This **Excavation and Trenching Plan (Plan)** addresses the requirements and safe practices to ensure the safety of employees and contractors who work in or around trenching, and excavation activities performed at **Swift Bus Rapid Transit (BRT) Orange Line ITB#2021-083**. These requirements apply to all work involving excavation, digging, handling and disposal of landfill material and trenching, grading, or ditching operations, as well as protection of existing landfill liner and off gassing system. Also repair of the liner and reconnection procedures for the off-gassing system.

Policy

C.A. Carey Corporation from here on known as **CAC,** will provide safe work areas for employees, visitors, and others who are or may be exposed to hazards in or around trenches and other excavation areas. All trenching and excavation activities will be evaluated to eliminate or minimize the potential of cave-ins, review environment contamination, and contact with underground utilities or other subsurface impediments. No digging, trenching, or excavation activities will be performed unless the requirements of this organization’s safety and environmental policies are met.

Plan Administration

Personnel Contact Information

Function	Name/Department	Contact Information
Plan Administrator	**Curtis Andrews/ Jimmy Lewing**	**425-392-8016 candrews@cacarey.com**
Supervisor(s)/Competent Person(s)	**Jimmy Lewing**	**207-254-9960 jlewing@cacarey.com**

Plan administrator. The plan administrator will be a competent person and will:

- Review and approve the digging, trenching, and excavation drawing and permit.
- Ensure that known underground utilities and structures have been identified and physically located and marked.
- Ensure that precautions will be taken to protect existing underground utilities and structures.
- Ensure that all responsible organizations have given their input for the proposed excavation site.
- Ensure that adequate safety control measures have been identified and implemented.
- Monitor the overall effectiveness of the program through audits and annual reviews.
- Provide or assist with arranging site worker training, competent person training, and retraining of those who may be involved in excavations.
- Conduct an audit of the trenching.
- Maintain records relating to training and audits.
- Investigate and document all reported accidents and/or near-miss accidents that are directly or indirectly related to trenching.

The plan administrator may designate a competent person with the authority to administer or implement one or more components of this Plan.

Competent person. The competent person must be able to demonstrate the training, experience, and knowledge of soil analysis, use of protective systems, and the requirements of this plan.

The competent person will be able to:

- Evaluate soil conditions and select appropriate protective measures.
- Construct protective systems in accordance with the excavation regulatory requirements.
- Preplan, such as contact utilities (gas, electric) to locate underground lines; plan for traffic control, if necessary; and determine proximity to structures that could affect choice of protective systems.
- Test for low oxygen, hazardous fumes, and toxic gasses, especially when gasoline engine–driven equipment is running, or the dirt has been contaminated by leaking lines or storage tanks.
- Ensure adequate ventilation or respiratory equipment, if necessary.
- Provide safe access into and out of the excavation.

- Provide appropriate protection if water accumulation is a problem.
- Inspect the site daily at the start of each shift, following a rainstorm, or after any other hazard-increasing event.
- Keep excavations open the minimum amount of time needed to complete operations.

The competent person must be able to detect:

- Conditions that could result in cave-ins
- Failures in protective systems
- Hazardous atmospheres
- Other hazards, including those associated with confined spaces.

The competent person will have the authority to take prompt corrective measures to eliminate existing and predictable hazards and stop work when required.

Supervisor. A supervisor must be classified as a competent person and will be in charge of each excavation. The supervisor will:

- Successfully complete training for classification as a competent person for trenching operations.
- Implement the Excavation and Trenching Plan for work areas under their control.
- Act as the competent person for excavation sites under his or her control.
- Ensure that the equipment necessary to complete an excavation safely is available and in good condition.
- Determine soil type.
- Ensure that all underground utility installations are located and marked before excavation begins.
- Receive written approval from the relevant utilities and landowners for digging, trenching, or excavating operations.
- Ensure that underground installations are protected, supported, or removed while the excavation is open. Notify the appropriate agencies when utility systems are exposed during the excavation process to allow the location and condition of the utility to be evaluated.
- Ensure worker protection and compliance with other applicable safety plans or programs.
- Ensure protection of the public with appropriate barricades.
- Determine what protective systems will be used to prevent cave-ins.
- Conduct daily inspections of excavations, the adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
- Immediately notify KBA if a utility system is damaged during the trenching or excavation process.

Employee. Each employee engaged in trenching or other excavation-related activities must:

- Complete training, and request assistance when uncertain about any activity he or she must perform.
- Use appropriate personal protective equipment (PPE).
- Adhere to the requirements of the Plan.
- Report all workplace injuries and unsafe conditions to the supervisor.

Emergency personnel contact information. See the *Emergency Contact Information* form for information about contacting the appropriate personnel during emergencies. Located in the field office.

Plan Review and Update

This Plan will be reviewed annually by the plan administrator or designee(s) to ensure the program's effectiveness and will be updated as determined by the review. This Plan will also be updated whenever:

- New types of protective systems or equipment are introduced to an excavation site.
- Evaluations of workplace hazards, injuries, and near misses demonstrate that the current plan is outdated or not effective.
- When regulatory or national consensus standards adopted as part of the Plan change.

Excavation and Trenching Safety Program

Hazard Assessment

Excavation and trenching work presents serious hazards to all workers involved. Cave-ins pose the greatest risk and are much more likely than other excavation-related accidents to result in worker fatalities. Other potential hazards include falls, falling loads, hazardous atmospheres, and incidents involving mobile equipment.

Before work begins on an excavation or trench, the competent person(s) will evaluate the specific hazardous conditions at the worksite through jobsite studies, observations, test borings for soil type or conditions, and consultations with local officials and utility companies. The following factors will be considered to determine the hazards associated with specific site conditions:

- Traffic
- Proximity and physical conditions of nearby structures
- Soil
- Surface water and groundwater
- Location of the water table
- Overhead and underground utilities
- Weather

Soil Classification

Before any work has begun on an excavation or trenching, the soil classification will need to be done to determine by the competent person what soil or material is present. There will be a visual inspection of the soil all the way to the liner and below to evaluate soil classification for digging conditions. Potholing with a Vac. truck may be conducted to determine the depth of the liner as well as soil, to be able to adjust as needed to the disposal location. This process will also help with actions needing to be taken for liner protection in the same area.

The supervisor or other competent person will determine the soil type using visual.

Visual Test

The entire excavation site, including the soil adjacent to the site, will be observed. During the visual test, the designated supervisor will check for crack-line openings along the failure zone that indicate tension cracks and observe the open side of the excavation for indications of layered geologic structuring. Other conditions to look for are signs of bulging, boiling, or sloughing, as well as signs of surface water seeping from the side of the excavation or from the water table.

Thumb penetration test. When the thumb is pressed firmly into the soil and penetrates no further than the length of the nail, it is probably Type B soil. If the thumb penetrates the full length of the thumb, it is Type C. This is the least accurate of the manual test methods.

Dry strength test. If a sample of dry soil is crumbled freely or with moderate pressure into individual grains, it is considered granular, or Type C. Dry soil that falls into clumps that subsequently break into smaller clumps is probably clay in combination with gravel, sand, or silt (Type B).

Plasticity or wet thread test. A moist sample of the soil is molded into a ball and then rolled into a thin thread approximately 1/8 inch in diameter by 2 inches in length. If the soil sample does not break when held by one end, it may be considered Type B. If the soil sample does break, it is considered Type C.

Surface Encumbrances

All surface encumbrances that are located so as to create a hazard to employees will be removed or supported, as necessary, to safeguard employees.

Liner Protection

CAC will exercise care when compacting materials of operating above the landfill liner at the McCollum Park, Park & Ride Terminus. The liner will be protected from damage and repaired where necessary per the details in the Plans. No construction equipment will be allowed to drive directly on the liner except for light ATVs. For heavier equipment, a minimum of 12 inches of cover soil is required under the tracks or tires of construction equipment with ground pressures of less than 5 pounds per square inch. The depth of cover soil shall be proportionally higher for heavier equipment.

Off-Gassing System

CAC will exercise care while any excavation is taking place as not to damage the off-gassing system. Proper depths of material will be placed or left alone over the top of the system. The pipe will be potholed when in the area to ensure the depth and location. Relocation of the off gasses vault will be performed per print. The as-built drawings provided will be referenced to the reinstallation of the system in its new location.

Underground Installations

The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, will be determined before opening an excavation.

Utility companies or owners will be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations before the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law) or cannot establish the exact location of these installations, the excavation work may proceed provided that such work is done with caution, and detection equipment or other acceptable means to locate utility installations are used.

When operations approach the location of underground utilities, excavation will progress with caution until the exact location of the utility is determined. While the excavation is open, underground installations will be protected, supported, or removed as necessary to safeguard employees.

Safety Procedures

General Requirements

If evidence of a situation that could result in possible cave-ins, slides, failure of protective systems, hazardous atmospheres, or other hazardous condition is identified, exposed workers will be removed from the hazard and all work in the excavation or trench stopped until all necessary safety precautions have been implemented.

Competent person. A competent person will oversee work performed at any excavation to ensure compliance with this Plan.

Worker training. Employees who work in or around excavations will be provided training according to their work activities. See the ***Training*** subsection of this Plan for specific training requirements.

Protective systems. The excavation or trench must either be sloped or supported as required to comply with OSHA worker protection requirements. See the ***Protective Systems*** subsection of this Plan for more information.

Personal protective equipment (PPE). Employees must use PPE as required by their job task.

Electrical installations. Work conducted on or around electrical utilization systems must be performed by the appointed electrical subcontractor.

Lockout/tagout. Work that may impact existing utilities that need to be locked and tagged out may be performed by appointed personnel per supervised safety protocols and procedures.

Exit route. The means of exit and the design specifications for such exit will be determined by the competent person and in accordance with the following guidelines:

- A stairway, ladder, ramp, personnel hoist, or other safe means of exit will be in trench excavations that are 4 ft (1.2 m) or more in depth.
- Exit route(s) will be placed within 25 lateral ft of workers.
- When two or more components form a ramp or runway, they must be connected to prevent displacement and be of uniform thickness.

- Cleats or other means of connecting runway components must be attached in a way that would not cause tripping (e.g., to the bottom of the structure).
- Structural ramps used in place of steps must have a nonslip surface.
- Earthen ramps may be used as a means of exit only if a worker can walk them in an upright position and only if they have been evaluated by a competent person.

Perimeter Protection

Protection will be provided to prevent personnel, vehicles, and equipment from falling into excavations.

Fall Protection

All wells, calyx holes, pits, and shafts will be barricaded or covered. Excavations will be backfilled as soon as possible. Upon completion of exploration and similar operations, test pits, temporary wells, and calyx holes will be backfilled immediately. Walkways or bridges will be provided with standard guardrails where people or equipment are required or permitted to cross over excavations.

Falling Loads

Workers and other personnel must be prevented from passing or standing underneath loads handled by lifting or digging equipment. They must stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped to provide adequate protection for the operator during loading and unloading operations.

Falling Material

Employees will not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at lower levels are adequately protected from the hazard of falling material or equipment.

Employees will be protected by scaling, ice removal, benching, barricading, rock bolting, wire mesh, or other means from loose rock or soil that could create a hazard by falling from the excavation wall. Special attention will be given to slopes that may be adversely affected by weather, moisture content, or vibration.

Placement of excavated material. Excavated material will be placed at least 2 ft (0.6 m) from the edge of an excavation or will be retained by devices that are sufficient to prevent the materials from falling into the excavation. In any case, material will be placed at a distance to prevent excessive loading on the face of the excavation. Materials such as boulders or stumps that may slide or roll into the excavation will be removed or made safe.

Hazardous Atmospheres

Workers will not be permitted to work in or near hazardous atmospheres unless required testing and monitoring, worker precautions, and rescue services are in place. Work conducted in enclosed areas where hazardous atmospheres or gases could accumulate (e.g., landfills, manure pits, gas distribution lines, or hazardous materials storage locations) must be done in accordance with the **Confined Spaces Plan**.

Types of atmospheres. Such atmospheres include those with the following:

- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- A combustible gas concentration greater than 10 percent of the lower flammable limit
- Concentrations of hazardous substances that exceed those specified in the threshold limit values (TLVs) for airborne contaminants established by the American Conference of Governmental Industrial Hygienists (ACGIH)

Atmospheric tests. Air quality tests will be taken before employees enter excavations more than 4 ft in deep when a hazardous atmosphere exists or could be expected to exist. If there is any possibility that the trench or excavation could contain a hazardous atmosphere, the supervisor or other competent person will ensure that:

- Atmospheric testing is conducted before worker entry and continuously during work.
- Where oxygen deficiency or a hazardous atmosphere exists or could reasonably be expected to exist, the atmospheres in the excavation will be evaluated before employees enter excavations greater than 4 ft (1.2 m) deep.
- Gas sniff testers will be worn by any person entering excavation. quality and quantity of the atmosphere, including checks for flammable gases and oxygen deficiency.

Worker precautions. Suitable precautions will be taken as necessary to protect workers in areas where hazardous atmospheres exist or potentially exist. These precautions will include the following:

- Engineering controls such as ventilation
- Respiratory protection
- Full body harnesses and lifelines

Rescue equipment. Where hazardous atmospheres exist or may reasonably be expected to exist, emergency rescue equipment will be on the worksite and readily accessible to rescue personnel. See the ***Emergency Rescue Operations*** subsection of this Plan for more information about emergency procedures.

Daily inspections. Daily inspections for hazardous atmospheres must be conducted by a competent person.

Walkways and Guardrails over Excavations

Walkways will be provided where workers or equipment are allowed to cross over excavations. Guardrails will be provided on walkways used by the general public regardless of the height above the excavation. Guardrails will be provided on walkways used only by on-site personnel if the walkway is 4 ft or more above lower levels. If workers pass below a walkway, guardrails and toe boards will be provided.

Confined Spaces

Employees entering excavations classified as confined spaces or that otherwise present the potential for emergency rescue, such as bell-bottom pier holes or similar deep and confined footing, will wear rescue equipment and maintain communication with the confined space attendant. See the **Confined Space Plan** for more information about safety procedures related to confined spaces.

Water Accumulation

Control measures. Employees will not work in excavations in which there is accumulated water or in which water is accumulating unless the water hazards posed by accumulation is controlled. Freezing, pumping, draining, and similar control measures will be planned and directed by a registered engineer. Consideration will be given to the existing moisture balances in surrounding soils and the effects on foundations and structures if the soil is disturbed.

Drainage. Diversion ditches, dikes, or other means will be used to prevent surface water entering an excavation and to provide good drainage of the area adjacent to the excavation.

Water control equipment. When continuous operation of groundwater control equipment is necessary, an emergency power source will be provided. Water control equipment and operations will be monitored by a competent person to ensure proper operation.

Dewatering. Magna has been subcontracted to perform sonic drilled vacuum well dewatering system per the contract drawings C4.306. They will be installing well points as per design and field conditions. Magna will provide the vacuum pumps and filter packs to the discharge piping to settlement tanks. As well as decommissioning of the wells once complete.

Mobile Equipment and Motor Vehicle Traffic Precautions

Traffic around the excavation or trench site must be controlled and barricades, signs, and/or flag persons used as needed to control both vehicular and pedestrian traffic.

High visibility PPE. Workers exposed to public vehicular traffic will be provided with and will wear warning vests or other suitable garments marked with or made of reflective or high-visibility material.

Barricades. When vehicles or mobile equipment are used or allowed adjacent to an excavation, substantial stop logs or barricades will be installed. The use of a ground guide is recommended.

Loading/unloading vehicles. Workers will stand away from vehicles being loaded or unloaded to avoid being struck by spillage or falling materials.

Hoisting operations. Excavating or hoisting equipment will not be allowed to raise, lower, or swing loads over or adjacent to personnel in the excavation without substantial overhead protection. Personnel will maintain a safe distance from a hoisting operation until the load has been placed.

Warning system. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system will be utilized, such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

Stability of Adjacent Structures

Protective systems. If the stability of adjoining buildings or walls is endangered by excavations, shoring, bracing, or underpinning will be provided to ensure the stability of the structure and to protect employees.

Support systems. Sidewalks, pavements, and related structures will not be undermined unless a support system is provided to protect employees and the sidewalk, pavement, or related structure.

Excavation below the level of adjacent structures. Excavations below the level of the base of footing of any foundation or retaining wall will not be permitted unless:

- A support system, such as underpinning, is provided to ensure the stability of the structure and to protect employees involved in the excavation work or in the vicinity thereof; *or*
- The excavation is in stable rock; *or*
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation or determines that the excavation will not pose a hazard to employees.

Site Inspections

When personnel will be in or around an excavation, a competent person will inspect the excavation, the adjacent areas, and protective systems daily:

- Before each work shift
- Throughout the work shifts as dictated by the work being done
- After every rainstorm
- After other events that could increase hazards (e.g., snowstorm, windstorm, thaw, earthquake)
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur
- When there is a change in size, location, or placement of the spoil pile
- Where there is any indication of change in adjacent structures

The competent person will use the attached *Excavation/Trench Inspection Checklist* or equivalent form when conducting inspections. All completed inspection forms will be maintained at the worksite during construction and stored at [insert location] after excavation work is completed.

Protective Systems

General Requirements

Excavations less than 5 ft deep. For excavations less than 5 ft (1.5 m) deep, the competent person will examine the excavation for potential cave-in hazards and determine if a protective system is needed.

Excavations 5 ft deep or deeper. All workers in an excavation or trench 5 ft deep or deeper will be protected from cave-ins by an adequate protective system. Protective systems will have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

Excavations more than 20 ft deep. Protective systems for all excavations more than 20 ft (6.0 m) deep will be designed and approved by a registered professional engineer.

Protective System Selection

[*See the attached **App F Protective System Selection** guide for a graphic summary of the process for selecting a protective system for excavations and trenches 20 ft deep or less. A combination of protective systems may be used for an excavation or trench*.]

The competent person will select the method of protection that is most suitable for the particular excavation site, taking into consideration soil type and surrounding structures. See the *Soil Classification* subsection of this Plan for more information.

Types of protective systems. Excavations in which employees could potentially be exposed to cave-ins will be protected by:

1. Sloping or benching the sides of the excavation; *or*
2. Supporting or shoring the sides of the excavation; *or*
3. Placing a shield between the side of the excavation and the work area.

Exempt Excavations

The following excavations do not require protective systems:

- Excavations made entirely in stable rock; *or*
- Excavations are less than 5 ft (1.52 m) deep and examination of the ground by a competent person provides no indication of a potential cave-in.

A fixed means to safely exit exempt excavations will be provided for workers.

Sloping and Benching Systems

The competent person or supervisor will select and construct slopes and configurations of sloping and benching systems from one of four options.

[*The 4 options for sloping/benching configurations are listed below, the competent person or supervisor will select the appropriate option in accordance with the best site-specific option*.]

Option 1

Slope the walls of the excavation at an angle so that soil does not roll into the excavation. *The degree of the sloping angle needed depends on the stability of the soil at the site. The maximum allowable slopes for excavations less than 20 ft deep based on soil type and angle to the horizontal are as follows:*

Soil Type	*Height/Depth Ratio*	*Slope Angle*
B	*1:1 or less*	*45*
C	*11/2:1*	*34*

Examples:

In Type B soil, a 10-ft deep trench must be sloped to a 45-degree angle. The total distance across such a trench would be 20 ft plus the width of the trench.

In Type C soil, the 10-ft deep trench would be sloped at a 34-degree angle. The total width of the trench would be 15 ft in both directions, for a total of 30 ft across plus the width of the trench.

Sloping will be greater if the areas near the excavation are subject to heavy loads (e.g., soil piles and vehicles).

Excavation in an Unclassified Soil

Even If the soil is not classified, excavations extend into the landfill deposits, shoring is anticipated unless the landfill deposits have high soil content at excavation of site. Shoring will also be used where excavation extended below groundwater.

Option 2

Determine maximum slope with site-specific variables. *Determine the maximum slope on the basis of site-specific variables. Consult the attached* ***App A Soil Classification*** *and* ***App B Sloping and Benching*** *of the regulations about procedures for Option 2.*

Option 3

Use tabulated data to determine the slope. *Use tabulated data, such as tables and charts approved by a registered professional engineer, to design the excavation. These data will be in writing and include sufficient explanatory information to enable the user to make a selection, including the criteria for determining the selection and limits of the data. A copy of the information will be kept at the worksite during construction of the protective system.*

Option 4

Benching Systems

Benching is not permitted in Type C soil.

Benching may be one of two types:

- *Single level or step not exceeding 4 ft high; or*
- *Multiple levels or steps, each not exceeding 4 ft high.*

Benching may be used in conjunction with simple sloping. Benches must be below the maximum allowable slope for that soil type. For example, a 10-ft-deep trench in Type B soil must be benched back 10 ft in each direction with the maximum 45-degree angle.

Worker Safeguards

Workers must not work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

Shoring

Shoring is used when the location or depth of the trench makes sloping back to the maximum allowable slope impractical. Shoring will be used for unstable soil or depths greater than 5 ft (1.5 m) unless benching, sloping, or another acceptable plan is accepted by the competent person.

McCollum Park doesn’t allow for benching. Shoring boxes will be installed and stacked to protect the excavation. The shoring boxes are certified and will be leased from a shoring company to ensure they have been properly inspected and certified to be used.

Installation and Removal of Shoring or Support Systems

Installation of a shoring or support system will be closely coordinated with the excavation of trenches. All shoring will be installed from the top down and removed from the bottom up.

Installation procedures. Members of shoring or support systems will be securely connected together to prevent sliding, falling, kick-outs, or other predictable failure.

Support systems will be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.

Individual members of support systems will not be subjected to loads exceeding those that those members were designed to withstand.

Removal procedures. Before temporary removal of individual members begins, additional precautions will be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

Removal will begin at, and progress from, the bottom of the excavation. Members will be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.

Backfilling procedures. Backfilling will progress together with the removal of support systems from excavations.

Excavation of material to a level no greater than 2 ft (0.6 m) below the bottom of the members of a support system will be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

Shields

A trench shield may be used as long as the protection it provides is equal to or greater than the protection that would be provided by the appropriate shoring system. The competent person or supervisor must follow manufacturer's instructions for premade boxes and shields once a design has been chosen.

Shields may be used in conjunction with sloping or benching.

Load requirements. Shield systems will not be subjected to loads exceeding those that the system was designed to withstand.

Installation requirements. Shields will be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

Worker protections. Workers will be protected from the hazard of cave-ins when entering or exiting the areas protected by shields. Workers will not be allowed in shields when shields are being installed, removed, or moved vertically.

Excavations below the depth of the shield. Excavations of earth material to a level not greater than 2 ft (.6 m) below the bottom of a shield will be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

Protective System Materials and Equipment

Maintenance of Materials and Equipment

Materials and equipment used for protective systems will be free from damage or defects that might impair their proper function. Manufactured materials and equipment used for protective systems will be used and

maintained in a manner that is consistent with the recommendations of the manufacturer and in a manner that will prevent employee exposure to hazards.

Damaged Materials and Equipment

When material or equipment that is used for protective systems is damaged, a competent person will examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot ensure that the material or equipment is able to support the intended loads or is otherwise suitable for safe use, such material or equipment will be removed from service and will be evaluated and approved by a registered professional engineer before being returned to service.

Materials sources

When material needs to be repaired or replaced, the sources that will be used are as follows: Oldcastle precast for any concrete vaults or lids. Ferguson will be used for any off gasses pipe or parts and pieces. NW linings will be used for the liner repair, and their suppliers for the liner repair material / parts and pieces are Solmax, Raven, Megaplast, and GSE. A competent person will examine the material and evaluate its suitability for use. Making sure it meets specifications.

Emergency Rescue Operations

In the event of an emergency requiring rescue from an excavation, workers will not attempt to enter an unprotected excavation or trench to perform rescue. Local emergency services will be notified using the standard reporting system.

Rescue operations that can be performed safely from outside the excavation, such as hoisting a harnessed victim, will be carried out. Other personnel in the excavation will exit immediately and may aid only when their own safety is ensured.

Contractors

All contractors and contractor employees must have their own excavation and trenching safety policies that are in compliance with federal and any applicable state and local regulations. They must also comply with the requirements of this Plan and any additional requirements stipulated by the plan administrator, competent person, or the *Contractor Safety Plan.*

Enforcement of Safety Procedures

All employees, including all levels of management, will be held accountable for obeying the worksite safety and health rules. The following four-step disciplinary policy will be applied to everyone by the appropriate level of supervisor:

- Oral warning
- Written reprimand
- Suspension
- Dismissal

Visitors, including contractors who violate safety and health rules and procedures, will be escorted from the site. Should the disciplined person request a review of the disciplinary action, the supervisor will review the situation and make a recommendation to management, which reserves the right for final decision.

Training

All employees, including contractors, involved in trenching or excavation work must be trained in the requirements of this Plan before any trenching- or excavation-related activities begin.

Supervisor Training

All supervisors of trenching and excavation activities must satisfy OSHA requirements for a competent person. Such supervisors must attend competent person training conducted by a trainer approved by the plan administrator or designee.

Employee Training

Personnel who perform work in trenches or excavations must comply with the requirements of this Plan and receive appropriate training that will include:

- Safe work practices during work in excavations
- The use of personal protective equipment (PPE) that will typically be required during work in excavations
- Procedures to be followed if a hazardous atmosphere exists or could reasonably be expected to develop during work in an excavation
- Emergency and nonentry rescue methods and procedures for calling rescue services

Hazardous Material Disposal

Contaminated/Hazardous Waste materials generated in McCollum Park will be fully evaluated to determine what class of waste it is. Per the advice of Snohomish County Solid waste, All material dug out of the liner will be taken in a solo dump truck to Snohomish County's Solid waste transfer station located at 10700 Minuteman Dr. Everett WA. Any contamination in groundwater will be disposed of at Mar-Vac in Seattle. Water will be loaded into storage holding tanks until they can be removed for proper disposal in Mar-Vac tanker trucks.

Any material dug from below the liner will be treated as hazardous waste. All precautions will be taken to ensure that no material will enter any storm system or noncontaminated dirt. If weather is not dry, due to rain or snow, excavation will not be performed, and any material has not been removed for disposal from the site will be covered with Vis-queen to protect it from rainwater.

NORTHWEST LININGS AND GEOTEXTILES HDPE/LLDPE-FIELD QUALITY CONTROL MANUAL

I. INTRODUCTION

A. This manual describes the Quality Control Procedures utilized by Northwest Linings (NWL)

Installation Personnel to assure quality workmanship and installation integrity of HDPE/LLDPE Geomembranes.

B. Geosynthetic components of lining systems which are addressed in this manual are HDPE/LLDPE Geomembranes. NWL recognizes that specific documentation of the specific installation is required to substantiate this Quality Control Program.

II. HDPE/LLDPE GEOMEMBRANE INSTALLATION

A. Earth Work

1. The general and/or earthwork contractor shall be responsible for preparing and maintaining the subgrade in a condition suitable for liner installation unless agreed otherwise.

2. Surfaces to be lined shall be smooth and free of debris, roots, and angular or sharp rocks to a depth of four (4) inches. All fill shall consist of well-graded material free of organics, trash, clayballs or other harmful matter. No sharp edged stones, stones larger than one (1) inch diameter or hard objects shall be allowed within the top four (4) inches of the subgrade. The surface shall be compacted in accordance with project specifications but in no event below the minimum required to provide a firm unyielding foundation sufficient to permit the movement of vehicles and welding equipment over the surface without causing rutting or other harmful effects. The subgrade shall have no sudden sharp or abrupt changes in grade.

3. The earthwork contractor shall protect the subgrade from becoming too dry, flooding and freezing. Protection, if required, may consist of a thin plastic protective cover (or other material as approved by the engineer) installed over the subgrade until the placement of the liner begins. Subgrade found to have cracks greater than 1/2 inch in width or depth or which exhibit swelling, heaving or other similar conditions shall be reworked by the general contractor to remove these defects.

4. Surface acceptance: Upon request, NWL will provide the Owner's Representative with a written acceptance of the surface to be lined. This acceptance will be limited to an amount of area that NWL is capable of lining in a particular work shift. Subsequent repairs to the subgrade and the surface shall remain the responsibility of the earthwork contractor.

B. Crest Anchorage System

1. The anchor trench shall be excavated by the earthwork contractor to lines and widths shown on the design drawings prior to geomembrane placement.

2. Anchor trenches excavated in clay soils susceptible to desiccation cracks should be excavated only the distance required for that days liner placement to minimize the potential for cracking of the clay soils.

3. Corners in the anchor trench shall be slightly rounded where the geomembrane enters the trench to minimize sharp bends in the liner.

C. Preparation for Geomembrane Deployment

1. Panel Layout: Prior to liner deployment, layout drawings shall be produced to indicate the panel configuration and location of seams.

2. Identification: Each panel used shall be given a numeric or alpha-numeric identifier consistent with the layout drawing. This identification number shall be related to a manufacturing roll number.

D. Field Panel Placement

1. Location: NWL will attempt to install field panels at the location indicated on the layout drawing. If

panels are positioned in a location other than that indicated on the layout drawings, the revised location shall be noted in the field on a layout drawing which will be modified at the completion of the project to reflect actual panel locations.

2. Weather Conditions: Geomembrane deployment shall not be done during any precipitation, in the presence of excessive moisture (i.e. fog, dew), in an area of standing or ponded water, or during high winds.

3. Method of Deployment:

    1. The method and equipment used to deploy the panels must not damage the geomembrane or the supporting subgrade surface. The supporting sub-grade must be prepared and maintained in a condition to support the equipment needed for the installation.

    2. The rolls of liner will be deployed from a spreader bar apparatus supported by a fork lift, loader or other piece of heavy equipment that can safely lift and move the rolls. Heavy equipment will not be allowed to operate directly on geomembrane.

    3. No personnel working on the liner will smoke, wear shoes that can damage the geomembrane, or engage in actions which could result in damage to the geomembrane.

    4. Adequate temporary ballast and/or anchoring, (i.e. sandbags,) which will not damage the geomembrane, will be placed to prevent uplift of the liner by wind.

    5. The geomembrane will be deployed in a manner to minimize wrinkles.

    6. Rubber tired and tracked ATV's and similar equipment are acceptable to operate on the geomembrane with ground pressure less than 8 psi. Tires and tracks will be checked for sharp edges, rocks or debris that may damage the liner before operating on the geomembrane. Driving paths will be as straight as possible avoiding sharp turns, sudden stops and starts.

    7. Any damage to a panel of geomembrane will be repaired in accordance with Section IV. Any area of a panel seriously damaged (torn, twisted, or crimped) will be marked, cut out, and removed from the work area with resulting seaming and/or repairs performed in accordance with Section IV of this document.

E. Field Seaming

1. General Requirements:

    1. Layout: In general, seams shall be oriented parallel to the slope, (down hill) not across the slope. Whenever possible, horizontal seams should be located not less than five (5) feet from the toe of the slope. Each seam shall be numbered in a manner compatible with the panel layout drawing for documentation of seam testing results.

    2. Personnel: All personnel performing seaming operations shall be trained in the operation of the equipment being used and will qualify by successfully welding a test seam as described herein. The project foreman will provide direct supervision of all personnel seaming to verify proper welding procedures are followed.

F. Equipment:

1. Fusion Welding: Fusion Welding consists of placing a heated wedge, mounted on a self propelled vehicular unit, between two (2) overlapped sheets such that both sheets are heated to temperatures ranging from 600 degrees F. to 950 degrees F. After being heated by the wedge, the overlapped edges pass through a set of preset pressure rollers which compress the panels together forming a continuous homogenous fusion weld. The fusion welder is equipped with a temperature readout device which continuously monitors the temperature of the wedge.

2. Extrusion Fillet Welding: Extrusion welding consists of introducing a ribbon of molten resin along the edge of the seam overlap to the two sheets to be welded. The molten polymer causes some of the material of each sheet to be liquefied resulting in a homogeneous bond between the molten weld bead and the surfaces of the sheets. The extrusion welder is equipped with gauges giving the temperature in the apparatus and the preheat temperature at the nozzle.

G. Seam Preparation:

1. Fusion Welding:

    1. Overlap the panels approximately four (4) inches.

    2. Clean the seam area prior to seaming to assure the area is clean and free of moisture, dust, dirt and debris.

    3. No grinding is required for fusion welding.

    4. Adjust the panels so that seams are aligned with the fewest possible number of wrinkles and "fishmouths".

2. Extrusion Welding:

    1. Overlap the panels a minimum of three (3) inches.

    2. Temporarily bond the panels to be welded taking care not to damage the geomembrane.

    3. Grind seam overlap prior to welding within 15 minutes of welding operation in manner that does not damage the geomembrane.

    4. Clean the seam area prior to seaming to assure the area is clean and free of moisture, dust dirt and debris of any kind.

    5. Purge the extruder prior to beginning the seam to remove all heat-degraded Extrudate from the barrel.

    6. Keep welding rod clean and off the ground.

H. Test Seams:

Test seams shall be performed at the beginning of each seaming period and at least once each five hours for each seaming apparatus used that day. Test seams shall be made on fragment pieces of the liner and under the same conditions as actual seams.

1. Test Seam Length:

The test seam shall be at least three feet long, made by joining 2 pieces at least 9" in width.

2. Sample Procedures:

    1. Visually inspect the seam for squeeze out, footprint, pressure and general appearance.

    2. Two samples one inch wide shall be cut from the test seam. The samples shall then be tested in peel and shall not fail in the seam. Failure shall be a film tear bond (FTB). If a sample fails, the entire procedure shall be repeated. ASTM D6392 will be method of testing samples GRI GM19 will be used for strength and locus of break.

    3. If any of the second set of samples fail, the machine shall not be accepted and used for seaming until the problem is corrected and 2 passing tests are achieved.

4. After completion of the test the remaining portion of the test seam shall be discarded. Documentation of the test seams will be maintained by listing machine I.D. number, operators name, temperature control setting and test results.

5. Passing test results records shall be maintained on NWL's test weld report form.

6. If test samples are to act as destructive samples then the sample shall be marked, logged and saved. If samples are to be cut from the actual finished seam for Lab Testing, the test seams shall be discarded per above.

I. General Seaming Procedures:

1. Seaming shall extend to the outside edge of panels to be placed in the anchor trench.

2. While welding a seam, monitor and maintain the proper overlap.

3. Inspect seam area to assure area is clean and free of moisture, dust, dirt and debris of any kind.

4. While welding a seam, monitor temperature gauges to assure proper settings are maintained and that the machine is operating properly.

5. Align wrinkles at the seam overlap to allow welding through a wrinkle.

6. Fishmouths or wrinkles at seam overlaps that cannot be welded through shall be cut along the ridge in order to achieve a flat overlap. The cut area shall be seamed. Any portion where the overlap is inadequate shall be patched with an oval or round patch extending six inches beyond the cut in all directions.

7. All cross/butt seams between two rows of seamed panels shall be welded during the coolest time of the day to allow for contraction of the geomembrane.

8. All "T" joints shall have the overlap from the wedge welder seam trimmed back to allow an extrusion fillet weld. Then grind two inches on either side of the seam and extrusion weld all of the area prepared by grinding.

J. Weather Conditions:

NWL relies on the experience of the Project Superintendent and the results of test seams to determine seaming restriction by weather. Many factors, such as ambient temperature, humidity, wind, sunshine, etc., can effect the integrity of field seams and must be taken into account when deciding whether or not seaming should proceed. Test seams are required prior to daily production seaming to determine if the weather conditions will effect NWL's ability to produce quality seams.
Additional non-destructive and destructive testing of production seams substantiate the decision made by the Project Superintendent to seam on any given day.

SECTION III Seam Testing-Quality & Control-Geomembranes

A. Concept:

NWL installation crews will non-destructively test all field seams over their full length using air pressure testing, vacuum testing or other approved method, to verify the continuity and integrity of the seams.

B. Air Pressure Testing:

The weld seam created by the fusion welding process is composed of two welded seams separated by an unwelded channel approximately 3/8 of an inch wide. This channel permits seams to be tested by inflating the sealed channel

with air to a predetermined pressure and observing the stability

of the pressurized channel over time. Method of test ASTM D5820 Practice for Pressurized Air Channel Eval of Dual Seamed Geomembranes.

C. Equipment for air testing:

1. An air pump (manual or motor driven) capable of generating and sustaining a pressure of 30 PSI.
2. A rubber hose with fittings and connections.
3. A sharp hollow needle with a pressure gauge capable of reading and sustaining a pressure of 30 PSI.
4. Procedure for air testing:
5. Seal both ends of the seam to be tested.
6. Insert needle in the sealed channel.
7. Inflate the test channel to a pressure between 25 to 30 PSI, in accordance with the following schedule, close valve, and allow 2 minutes for the injected air to come into equilibrium in the channel. Observe initial pressure after approximately 2 minutes.

INITIAL PRESSURE SCHEDULE*			MAX. PRESSURE DIFF. MATERIAL (MIL)
MIN. PSI		MAX. PSI	AFTER 5 MINUTES
40	25	30	4
50	26	30	4
60	27	30	4
80	30	30	4
100	30	30	4

* Initial pressure settings are read after a two minute relaxing period. The purpose of this period is to permit the air temperature and pressure to stabilize.

8. Observe and record the air pressure five minutes after the relaxing period ends. If loss of pressure exceeds the value above or if the pressure does not stabilize, locate the faulty area and repair.
9. Upon completion of the pressure test the end of the seam opposite the pressure gauge is cut. A decrease in gauge pressure must be observed or the air channel will be considered blocked and the test will be repeated after the blockage is corrected.
10. Remove needle and seal resulting hole by extrusion welding.
11. Record test results on non-destructive test form
12. In the event of a Non-Complying Air pressure test, the following procedure shall be followed.
13. Check seam-end seals and retest seams.
14. If non-compliance reoccurs, cut one inch samples from each end of the seam and additional samples at the distance specified.
15. Perform destructive field peel test on the samples.
16. If all samples pass destructive testing remove the overlap left by the wedge welder and perform an

Air Pressure/Soap Test or vacuum test.

17. If a leak is detected by the air pressure/soap or the vacuum test, repair by extrusion welding. Test repair by vacuum testing.
18. If no leak is discovered air pressure/soap testing, the seam will pass non-destructive testing.
19. If no leak is discovered by vacuum testing, the seam will pass non-destructive testing.
20. If one or more samples fail the peel test, additional samples will be taken.
21. When two passing samples are located, the seam between these two locations will be considered complying. The area outside of this length will be considered non-complying and the entire length extrusion welded.
22. Test the entire length of the repaired seam by vacuum testing.

D. Air Pressure Testing/Soap Testing:

This test is used when the seam fails the air pressure test due to slow pressure loss. The procedure is to constantly supply pressure to the seam air channel while spraying the length with a soap and water solution and visually examining the seam for bubbles. Note: This option is not recommended during high wind conditions.

1. Equipment for Air Pressure/Soap Testing:
    1. The same equipment as the air pressure test.
    2. A soap solution and means to apply the solution.
2. Procedure for Air Pressure/Soap Testing:
    1. Trim excess overlap material off at edge of seam
    2. Insert needle gauge assembly in opposite ends of the seam to be tested to show that pressure is continuous throughout the channel.
    3. Maintain 30 psi
    4. Apply soap solution to the weld edge and visually examine for bubbles.
    5. If no bubbles appear the problem is with the inside track "secondary weld". This seam is acceptable providing it has passed peel tests.
    6. If any bubbles appear on the outside track “Primary weld”, repair defect by extrusion welding and vacuum test the repair.

E. Vacuum Testing:

This test is used when the geometry of the weld makes air pressure testing impossible or impractical or when attempting to locate the precise location of a defect believed to exist after air pressure testing. Method of testing is based on ASTM D5641 Practice for Geomembrane Seam Eval by Vacuum Chamber.

1. Equipment for vacuum testing:
    1. Vacuum box consisting of a rigid housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole or valve assembly and a vacuum gauge.

2. Vacuum pump assembly or compressor with a venturi equipped with a pressure controller and pipe connections.

3. A rubber pressure/vacuum hose with fittings and connections.
4. A soap solution with a means to apply the solution.

2. Procedure for Vacuum Testing:

1. Trim excess overlap from seam.

2. Apply soap solution to the area to be tested.

3. Place the vacuum box over the area and apply sufficient downward pressure to seal the box against the liner.

4. Open the vacuum valve and apply a minimum of 5 in. Hg vacuum to the area as indicated by the gauge on the box.

5. Ensure that a leak-tight seal is created.

6. For a period of not less than five seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.

7. If no bubbles appear after five to ten seconds, close the valve and move overlap and repeat the process.

3. Procedure for non-complying test:

1. Mark all areas where soap bubbles appear and repair the marked areas.

2. Retest repaired areas.

4. Procedure for non-destructive testing of extrusion welds that are not on flat surfaces or accessible for the equipment: ASTM D6365 Practice for Nondestructive Testing of Geomembranes Seams using the Spark Test.

F. Destructive Testing:

The purpose of destructive testing is to determine and evaluate seam strength. These tests require direct sampling and thus subsequent patching. Therefore, destructive testing should be held to a minimum to reduce the amount of repairs required.

1. Procedure for Destructive Testing:

1.1. Destructive test samples shall be marked and cut out randomly at a minimum average frequency of one test location every 700 feet of seam length.

1.2. Additional test may be taken in areas of contamination, offset welds, visible crystallinity or other potential cause of faulty welds.

1.3. ASTM D6392 will be method of testing samples GRI GM19 will be used for strength and locus of break standards.

1) Sample Size:

a) The sample should be twelve inches wide with a seam fourteen inches long centered lengthwise in

the sample. The sample may be increased in size to accommodate independent lab testing by the owner or by specific project specifications.

b) A one inch sample shall be cut from each end of the test seam for field testing on a calibrated field tensiometer.

2) The one inch wide samples shall be tested in the field for peel. If any field sample fails to pass FTB, it will be assumed the sample fails destructive testing. The procedures outlined in Section 2 shall be followed to locate passing samples to send to the laboratory.

a) If the sample passes the field test, the remaining portion of the sample test strip may be sent to Northwest Linings for laboratory testing to evaluate seam strength and confirm field testing.

1. Procedure in the event of Destructive Test Failure:

1. Cut additional field samples for testing. In the case of a field production seam, the samples must lay a minimum of ten feet in each direction from the location of the failed sample. Perform a field test with the tensiometer for peel strength. and confirm field testing.

2. If the laboratory samples pass, then reconstruct the seam up to the two passing sample locations.

1. Heat tack the overlap along the length of the seam to be reconstructed and extrusion weld.

2. Vacuum test the extrusion weld.

3. If either of the samples fails then additional samples are taken in accordance with the above procedure until two passing samples are found to establish the zone in which the seam should be reconstructed.

4. All passing seams must be bounded by two locations from which samples passing destructive test have been taken.

5. In the case of reconstructed seams exceeding 150 feet, a sample must be taken and pass destructive testing.

6. All destructive seam samples sent to Northwest Linings shall be numbered and recorded on a destructive seam test form.

3. Northwest Linings Quality Assurance Laboratory Testing:

The remaining destructive sample will be sent to a qualified laboratory and will be tested in "Seam Strength" and "Peel Adhesion" (ASTM D6392 will be method of testing samples GRI GM19 will be used for strength and locus of break). Five specimens shall be tested for each test method with data recorded. Four out of the five specimens must pass for each test in order for the seam to pass the destructive test.

SECTION IV Defects and Repairs

A. Inspection

1. Northwest Linings Project Superintendent shall conduct a detailed walk through and visually check all seams and non-seam areas of the geomembrane for defects, holes, blisters and signs of damage during installation.

2. All other NWL installation personnel shall at all times be on the lookout for any damaged areas. Damaged areas shall be marked and repaired.

B. Procedure

1. Repair procedures: Any portion of the geomembrane showing a flaw, or failing destructive or non-destructive test shall be repaired. Several methods exist for repairs, and the decision as to the appropriate method shall be made by NWL's Project Superintendent. Methods available for repair:

1. Patching - used to repair large holes, tears and destructive sample locations. All patches shall extend at least six inches beyond the defect and all corners of patches shall be rounded.

2. Grinding and welding - used to repair sections of extruded seams.

3. Spot welding or seaming - used to repair small tears, pinholes or other minor localized flaws.

4. Capping - used to repair lengths of failed extruded areas.

5. Removal of a bad seam and replacement with a strip of new material seamed into place.

C. Verification of Repairs:

1. Every repair shall be non-destructively tested using the methods set out in this manual Repairs which pass the non-destructive test shall be deemed adequate. Large repairs may require a destructive test. Repair test results shall be logged on a repair report form. The repair location shall be recorded on a record drawing.

Off-Gasses system sub-contractor qualifications

CAC will be subcontracting to Hawk Mechanical Contractors to perform the off-gassing system relocation. Their service includes work performed on Commercial Buildings, Hospitals and Clinics, Laboratories, Research and Development, High-rise Offices and Mixed-Use Projects, Industrial Facilities and Chemical Plants, Wastewater and Water Treatment Facilities

Since 1996, Hawk Mechanical has served western Washington’s commercial, industrial, medical, and public works sectors. Hard work, innovation, and customer service are the core values that play a vital role in Hawks company’s success. Over the years they have evolved into a multi-faceted mechanical contracting firm, serving their clients throughout the state. Their expertise covers a wide range of disciplines, which include:

- Piping and Plumbing Fabrication and Installation
- Process Piping
- Medical Gas Piping
- Equipment Installation
- Service, including certified back flow testing
- 3D Coordination and Building Information Modeling
- LEED Installation and Energy modeling

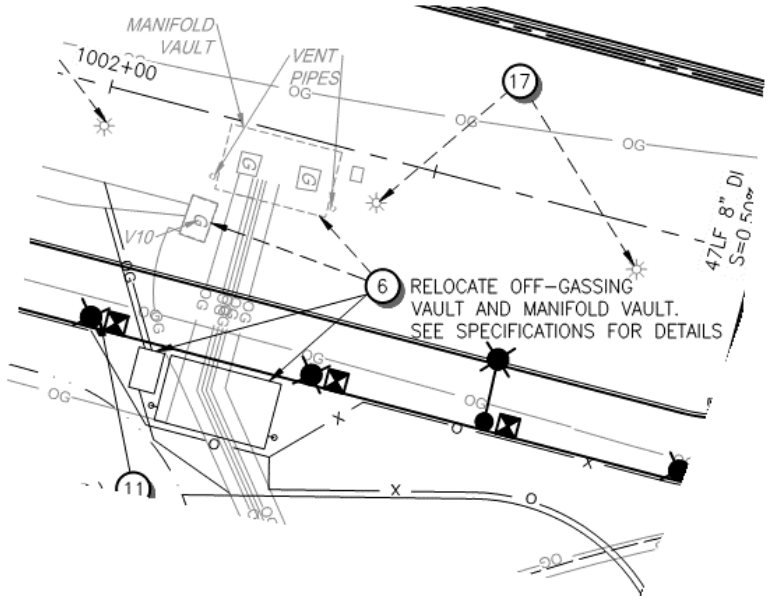
They are experienced in the installation of the following types of plumbing and piping:
Cast Iron Soil Pipe (Hubless and bell and spigot), Ductile Iron Pipe (Flanged, grooved, and mechanical joint), Copper Tube (Sweat, sil-brazed, flared, grooved, and press-fit) Carbon Steel (Welded, grooved, flared, and screwed), Stainless Steel (Welded, grooved, flared, and screwed), PEX,PVC, CPVC, ABS, Polyethylene, Kynar, Polypropylene (Solvent welded, fused, screwed, grooved, and mechanical joints), Aluminum Tube (Compression or flared) Fiberglass (Hand lay-up, flanged, and grooved)

They continue to maintain their reputation for excellent customer satisfaction through quality workmanship, teamwork, dedication, and safety.

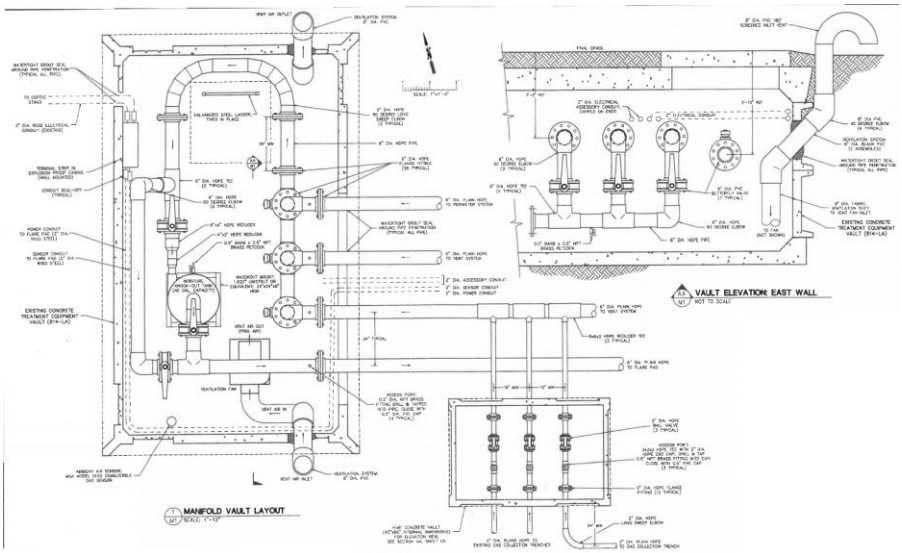
At Hawk Mechanical they make every effort to ensure that their job sites are clean and safe so that their employees can perform their work effectively and efficiently. they strive to recognize and eliminate all safety hazards without impacting job schedules. In addition to their comprehensive safety program, Hawk conducts regular training seminars and safety meetings, weekly toolbox talks, weekly site inspections, and daily pre-task planning.

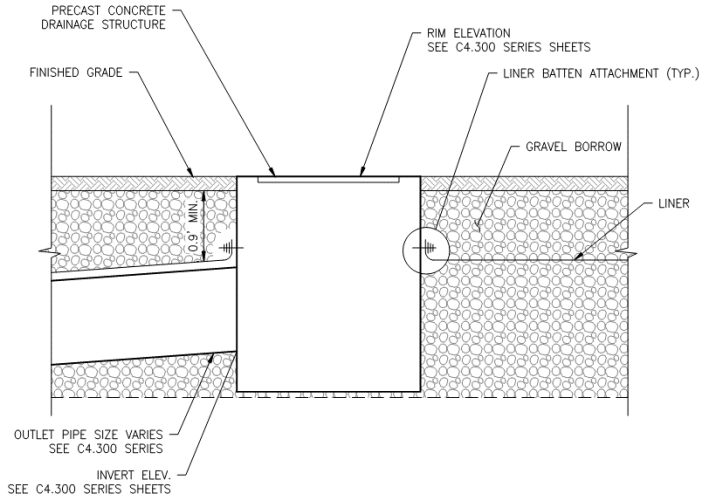
Hawk Mechanical is a member of the AGC Safety Team and has been awarded AGC's Top EMR and "As low as you can go" Awards for 2019, 2018 & 2017.

Off-Gasses System relocation details and Liner repair details around structures



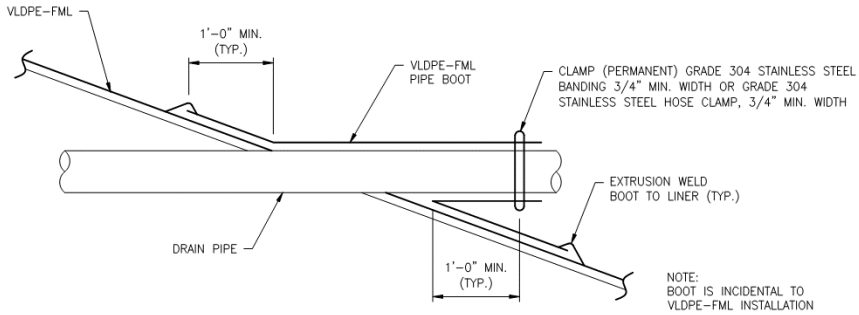
Off-Gasses vault will be relocated to the new location per detail above. Mechanical Sub will be following the as-built detail below on proper assembly.





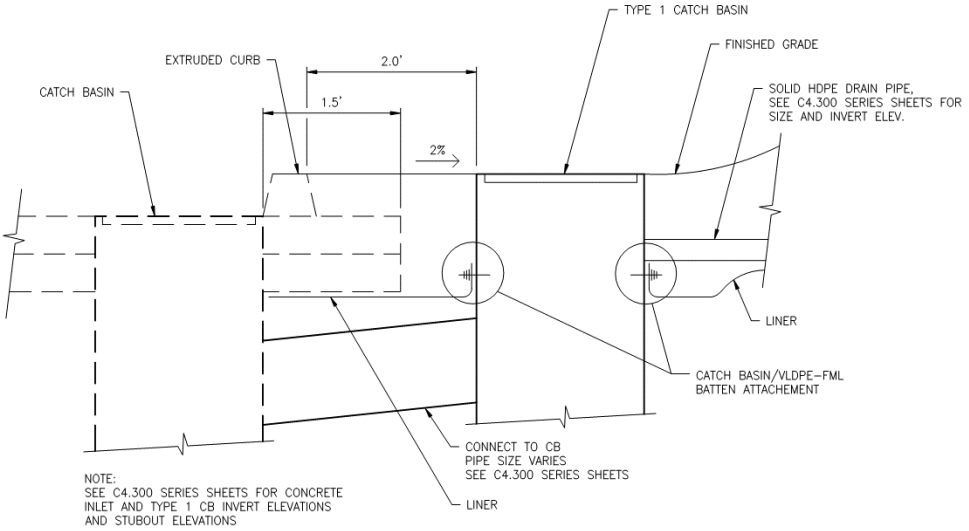
STRUCTURE LINER REPAIR

NOT TO SCALE



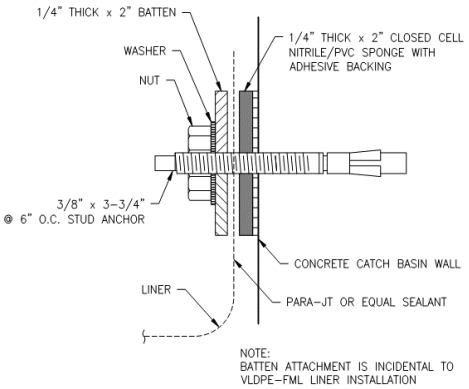
PIPE OUTLET LINER REPAIR

NOT TO SCALE

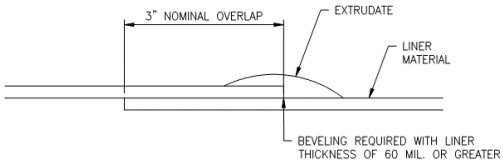


CATCH BASIN CONNECTION AND LINER REPAIR

NOT TO SCALE



NOTE:
BATTEN ATTACHMENT IS INCIDENTAL TO VLDPE-FML LINER INSTALLATION



NOTES:
1. LINER SHEETS TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING.

2. GRINDING NOT TO EXCEED $\frac{1}{4}$" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN IN NOT REMOVING TOO MUCH MATERIAL WHEN GRINDING.

3. VACUUM TESTING IS THE NONDESTRUCTIVE SEAM TEST METHOD FOR EXTRUSION WELDS.

LINER BATTEN ATTACHMENT SECTION AND EXTRUSION WELD

NOT TO SCALE

Appendix C

Submittal Transmittal & Response

Submittal Transmittal Number 032.01 **Date:** 6/24/22 **Due Date:**

Owner/Contract Name: Community Transit/Swift Orange Line **ITB #:** 2021-083 **Fed Aid #:**

The Contractor submits the following noted attachments to Engineer for review and response:

#	Bid Item #	Spec Sec #	DESCRIPTION	Response
1		SP8-36.3(5)	Liner Repair Qualifications (Northwest Linings)	NE
2				
3				
4				

Submitted by:

Cassie Brock	**Project Engineer**	**425-392-8016**
Name	**Title**	**Phone #**

The Engineer has reviewed the above noted documents and responded as noted above, under "**Response".**

Key:
- **NE** = NO EXCEPTIONS TAKEN
- **MC** = MAKE CORRECTIONS NOTED: No resubmittal required, but corrections noted are required
- **SI** = SUBMIT SPECIFIC ITEM: Resubmittal required – Not approved
- **RR** = REVISE AND RESUBMIT: Resubmittal required – Not approved
- **RJ** = REJECTED – see comments below

Note: Review is only for conformance with the general design concept of the Project and does not extend to consideration of structural integrity, safety, detailed compliance with Contract requirements and any other obligation of the Contractor. Any action shown is subject to the requirements of the construction Contract. Contractor is responsible for confirming and correlating all dimensions; fabricating and construction techniques; coordinating its work with that of all other trades; and the satisfactory performance of its entire work in strict accordance with the construction Contract. The review is undertaken solely to satisfy Engineer's obligations and does not relieve Contractor from its obligation fully to perform all Contract requirements, nor shall such review give rise to any right of action or suit in favor of Contractor or third persons, against the Owner.

- [X] **No Exceptions Taken**
- [ ] **Make Corrections Noted**
- [ ] **Rejected**
- [ ] **Revise and Resubmit**
- [ ] **Submit Item Specified**

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work.

Otak By: WAS Date: 6/24/2022

Engineer's Comments and Sign-off:

# (key to above)	Comment
1	
2	
3	
4	

Name	Title	Date

- [ ] See Attached Engineer's Comments
- [ ] See Mark-Up of Submittal Documents
- [ ] See Other Attachments

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Construction: 253-796-0012 | F: 253-872-6953
www.northwestlinings.com

60-MIL HDPE PROJECT REFERENCE LIST: 2019

JOB #	PROJECT NAME	CITY	STATE	APPLICATION	MATERIAL = 60-MIL HDPE	MATERIAL SF
P19302	Rowe Farms Sawyer Ranch Irrigation Pond Liner	Wapato	WA	Irrigation	HDPE 60 mil Textured	97,780
N19002	Kennewick Irrigation District 2018 HDPE Purchase	Kennewick	WA	Irrigation	HDPE 60 mil Microspike T2	325,220
P19305	Stemilt Mattawa Capstone Unit 55	Mattawa	WA	Irrigation	HDPE 60 mil Textured	93,960
P19308	Saddle View LLC Blk 251 Unit 29	Mattawa	WA	Irrigation	HDPE 60 mil Textured	116,500
P19309	Black Starr Ranch Fire Pond Lining	Yakima	WA	Fire Pond	HDPE 60 mil Smooth	19,600
N19008	Eagle Mountain City Reuse Water Sewage	Eagle Mountain	UT	Water Reservoir	HDPE 60 mil SS Textured	717,700
N19007	VA Data - PDX 63 Data Center Evap Pond	Umatilla	OR	Evaporation Pond	HPDE 60 smooth	101,850
P19312	Stadelman Fruit 2 ponds	Outlook	WA	Irrigation	HDPE 60 mil Textured	141,600
P19314	Pine 43 Irrigation Pond Liner	Meridian	ID	Irrigation	HDPE 60 mil	19,907
N19009	Blue Bench LF Class 1 Module #2 Cell	Duchesne	UT	Landfill Cell	HDPE 60 mil DS Textured	2,709,000
P19321	Columbia Reach Chiawana Orchard Rd SW	Royal City	WA	Irrigation	HDPE 60 mil	96,524
P19322	National Frozen Foods Surge Pond	Moses Lake	WA	Wastewater	HDPE 60 mil	32,500
N19010	City of Spirit Lake Lagoon Cell No 5	Spirit Lake	ID	Wastewater	HPDE 60 T2	265,680
N19011	Sundance Reverse Osmosis Pond Lining	Casa Grande	AZ	Evaporation Pond	HDPE 60 mil	362,392
N19012	Healdsburg 2018 WRF Pond Lining	Healdsburg	CA	Water Reservoir	HDPE 60 mil Textured	168,826
P19327	Anacortes Tank Foundation	Anacortes	WA	Secondary Containment	HDPE 60 mil Smooth	33,950
P19328	Wiley Allred Sand Slopes Acres Unit 74	Royal City	WA	Irrigation	HDPE 60 mil	63,100
N19013	Nu-West Gyp Pond 1 Auxiliary Holding Pond	Soda Springs	ID	Water Reservoir	HDPE 60 mil	1,166,000
N19015	Ottumwa/Wapello Landfill Phase 3 Cell Construction	Ottumwa	IA	Landfill Cell	HDPE 60 mil	274,884
P19333	Young Pond Liner Repair Replace	Selah	WA	Irrigation	HDPE 60 mil	14,821
P19334	Dirt Hugger Leachate Pond Liner Expansion	Dallesport	WA	Wastewater	HDPE 60 mil	13,006
P19335	Stemilt Road T Pond Liner Quincy	Quincy	WA	Irrigation	HDPE 60 mil	60,858
N19019	Hay Road DM 8.1 Base Liner	Vacaville	CA	Landfill Cell	HDPE 60 mil	388,000
N19020	Pacificorp Dave Johnson Unit 0 Pond	Glenrock	WY	Wastewater	HDPE 60 mil	503,200
P19338	Floral Water Storage Ponds (South Pond)	Mona	UT	Water Reservoir	HDPE 60 mil	43,250
N19021	Famiglia Water Pond 2	Quincy	WA	Irrigation	HDPE 60 mil	291,146
N19022	City of Quincy 1 Water Brine Evap Ponds Cell 5	Quincy	WA	Evaporation Pond	HDPE 60 mil DS Textured	453,992
N19023	Crowheart Energy, LLC Sect 9 & 10 Storage Ponds	Sweetwater	WY	Water Reservoir	HDPE 60 mil smooth	184,800
P19342	Town of Bonanza WWTF Improvement	Bonanza	OR	Stormwater	HDPE 60 mil	104,793
N19025	Landfill of North Iowa-Cell A Phase 3	Clearlake	IA	Landfill Cell	HDPE 60 MIL T2	
P19343	J&M Orchards Golf Pond	Quincy	WA	Golf Course	HDPE 60 mil Textured	51,175
P19344	St. Regis Irrigation Pond	St Regis	MT	Irrigation	HDPE 60 mil T2	55,942
P19347	Darling Mountain Orchards	Ellensburg	WA	Irrigation	HDPE 60 mil Textured	35,000
P19350	City of Tacoma SWM Drainage & Traffic	Tacoma	WA	Landfill Cell	HDPE 60 MIL	20,220
N19030	City of Fargo Cell 19 Construction & Closure	Fargo	ND	Landfill cell	HDPE 60 mil	483,585
N19031	Wisco Oilfield Special Waste Landfill Cell 1 Phase 2	Williston	ND	Landfill Cell	HDPE 60 mil	229,859

N19033	Holt Dairy Excess Water Pond	Newcastle	UT	Wastewater	HDPE 60 mill	**481,232**
N19034	Kootenai County Solid Waste Central Corridor	Coeur d'Alene	ID	Landfill Cap	HDPE 60 mil T2	**125,769**
P19355	Wyckoff Farms Ernie's Tank Lining Containment	Grandview	WA	Secondary Containment	HDPE 60 mil DS Textured	**1,926**
N19035	Tumble Creek Ponds and Streams Lining	Cle Elum	WA	Irrigation	HDPE 60 mil T2	**198,500**
P19358	Plummer Community Wastewater System Improvements	Plummer	ID	Wastewater	HDPE 60 mil	**66,033**
P19360	City of Spokane Erie & Trent Storm Facility	Spokane	WA	Stormwater	HDPE 60 mil Conductive	**22,590**
N19040	H&S Bosma Lagoon Number 6	Granger	WA	Wastewater	HDPE 60 mil	**78,185**
N19041	H&S Bosma Lagoon Number 10	Granger	WA	Wastewater	HDPE 60 mil	**92,904**
N19042	Horn Rapids LF Phase 1B and Leachate	Richland	WA	Landfill Cell	HDPE 60 mil DS Textured	**908,576**
P19361	Ostrom Mushroom Farms Goody Water Pond	Sunnyside	WA	Water Reservoir	HDPE 60 mil T2	**41,094**
P19362	CHS Missoula Rail Expansion Liner Tie-In	Missoula	MT	Secondary Containment	HDPE 60 mil T2	**1,000**
N19043	City of Council WWTP System Improvements	Council	ID	Wastewater	HDPE 60 mil T2	**517183**
P19365	City of Caldwell Lagoon Replacement	Caldwell	ID	Wastewater	HDPE 60 mil Smooth	**26,846**
P19367	Elkan Inc. Wolff Pond	Watford City	ND	Water Reservoir	HDPE 60 mil	**149,209**
N19044	Great River Energy Stanton Site Restoration Phase II	Stanton	ND	Landfill Cap	HDPE 60 mil T2	**194,335**
P19371	Golden Sunlight Mine Water System	Whitehall	MT	Water Reservoir	HDPE 60 mil T2	**5,864**
P19373	Solemn Cellars Fire Pond	Walla Walla	WA	Fire Pond	HDPE 60 mil T2	**12,660**
N19046	Makani Lake Pond 18	Kailua Kona	HI	Golf Course	HDPE 60 mil smooth	**131,698**
P19375	J&J Farming Lagoon Liner	Moses Lake	WA	Wastewater	HDPE 60 mil smooth	**45,705**
P19376	RNK Dairy Lagoon Liner	Winona County	MN	Wastewater	HDPE 60 mil	**63,913**
N19047	City of Culdesac 2019 Wastewater Improvement	Culdesac	ID	Wastewater	HDPE 60 mil T2	**56,619**
P19380	City of Billings Solid Waste Phase 3 Partial LF Closure	Billings	MT	Landfill Cap	HDPE 60 mil T2	**93,449**
P19381	Twin Falls National Veterans Burial Ground	Buhl	ID	Stormwater	HDPE 60 mil T2	**8,832**
N19048	40 Mile Colony Sewage Lagoon and Sanitary Expansion	Lodge Grass	MT	Wastewater	HDPE 60 mil	**256,147**
P19383	City of Ridgefield Heron Drive Storm	Ridgefield	WA	Stormwater	HDPE 60 mil DS Textured	**4,215**
N19050	Waimanalo Gulch LF Cells E8 & E9	Kapolei	HI	Landfill Cell	HDPE 60 mil Textured	**351,262**
P19387	The Crossings WW Reuse Pond Liner	Athol	ID	Wastewater	HDPE 60 mil smooth	**112,393**
P19388	City of Wendell Lagoon Repair	Wendell	ID	Wastewater	HDPE 60 mil Smooth	**65,000**
P19389	Bennett Mt Ranch Pond Liner	Mountain Home	ID	Decorative Pond	HDPE 60 mil T1	**17,303**
P19393	C.I.D. Year 2019 Main Canal HDPE Lining	Kennewick	WA	Canals	HDPE 60 mil T2	**122,791**
N19053	Bryce Canyon National Park Sewage Lagoon Cell 4	Bryce	UT	Wastewater	HDPE 60 mil T1	**171,991**
P19401	Spring Creek Terraces Sewer Lagoon Rehabiliation	Burley	ID	Wastewater	HDPE 60 mil Textured	**68,093**
P19403	Stadelman Fruit Sand Hollow Pond	Royal City	WA	Irrigation	HDPE 60 mil	**66,482**
P19406	Nucla's WWTP Improvements Phase IIB Lagoon	Nucla	CO	Wastewater	HDPE 60 mil T2	**105,552**
N19059	Deschutes County Knott Landfill Cell 8	Bend	OR	Landfill Cell	HDPE 60 mil T2	**574,289**
P19410	FRH Enterprises Calf Yard Lagoons	Mabton	WA	Wastewater	HDPE 60 mil Textured	**84,845**
P19411	Idaho Military Division Water Storage Tank Potable	Boise	ID	Potable Water	HDPE 60 mil T1	**86,116**
					TOTAL SF =	**15,151,221**

60-MIL HDPE PROJECT REFERENCE LIST: 2020

JOB #	PROJECT NAME	CITY	STATE	APPLICATION	MATERIAL = 60-MIL HDPE	MATERIAL SF
P20301	Auvil Fruit Irrigation Pond	George	WA	Irrigation	HDPE 60 mil Textured	**103,953**
N20002	Hunters Point Naval Shipyard Parcel E-2	San Francisco	CA	Remediation	HDPE 60 mil T2	**1,190,872**
P20307	Lyon County Phase 10A-2	Lynd	MN	Landfill Cell	HDPE 60 mil Textured	**245,569**
P20309	Chiawana Orchards MMT Pond	Royal City	WA	Irrigation	HDPE 60 mil Textured	**74,000**
P20311	Douglas Fruit Radar Range Pond Liner	Othello	WA	Irrigation	HDPE 60 mil T2	**37,500**
P20312	Flicker Orchards Tree Matters Pond	Quincy	WA	Irrigation	HDPE 60 mil SST	**98,788**

P20313	South Park Estates Lagoon Liner	Shelley	ID	Wastewater	HDPE 60 mil smooth	**66,950**
P20316	Wayne-Ringgold-Decatur County Landfill Phase 4 Cell	Grand River	IA	Landfill Cell	HDPE 60 mil T2	**239,700**
P20318	NWFM LLC Mt Clemens Pond	Naches	WA	Irrigation	HDPE 60 mil Textured	**50,372**
P20319	Randy Allred Orchards Unit 1 Mattawa	Mattawa	WA	Irrigation	HDPE 60 mil T2	**44,380**
P20320	Northern Fruit Wolverine Pond	Royal City	WA	Irrigation	HDPE 60 mil T1	**81,287**
P20323	Douglas Fruit Lakeview Pond Liner	Othello	WA	Irrigation	HDPE 60 mil T2	**5,011**
P20333	Missoula White Pine	Missoula	MT	Wastewater	HDPE 60 mil T2	**62,109**
P20334	Lucky Badger Orchards 8 MG Pond, 3 MG Pond	Orondo	WA	Irrigation	HDPE 60 mil	**98,661**
N20009	Basin Electric - Laramie River Station CCR	Wheatland	WY	Wastewater	HDPE 60 mil	**1,033,000**
P20336	Columbia Reach Yakima Pond Repair	Yakima	WA	Irrigation	HDPE 60 mil	**10,671**
N20010	Sky Ridge Farms Pond Liner	Sunnyside	WA	Wastewater	HDPE 60 mil	**130,000**
P20337	T&K Annahat Pond Liner	Toppenish	WA	Irrigation	HDPE 60 mil smooth	**52,345**
P20340	Hope House Evaporation Pond	Owyhee County	ID	Evaporation Pond	HDPE 60 mil	**10,031**
P20342	Washington Orchard Management Irrigaiton Pond	Zillah	WA	Irrigation	HDPE 60 mil Textured	**60,210**
N20013	Goose Ridge Vineyards Irrigation Pond	Burbank	WA	Irrigation	HDPE 60 mil Textured	**192,830**
P20350	Gilbert Hintz Farms Irrigation Pond Liner	Othello	WA	Irrigation	HDPE 60 mil Textured	**116,120**
P20351	Cove Tasting Room Fire Pond	Walla Walla	WA	Fire Pond	HDPE 60 mil smooth	**2,953**
N20019	Tohono O'Odham Nation Hanam KE:K LIHTC Subdivision Sewa	Sells	AZ	Wastewater	HDPE 60 mil	**134,659**
N20020	IDOC DPW Proj. 20-071, WW Lagoon Repair	Kuna	ID	Wastewater	HDPE 60 mil smooth	**646,340**
N20022	Kaiser Mead Groundwater Extraction & Cleanup	Mead	WA	Remediation	HDPE 60 mil Textured	**99,308**
N20023	SVZ Lagoon Liner	Othello	WA	Wastewater	HDPE 60 mil Smooth	**195,175**
P20354	Prins Farms Lagoon	Granger	WA	Wastewater	HDPE 60 mil Textured	**86,923**
N20025	Sun Haven Farms	Prosser	WA	Irrigation	HDPE 60 mil Textured	**224,656**
P20355	Huntington Travel Lagoons	Huntington	OR	Wastewater	HDPE 60 mil smooth	**59,588**
P20358	Riverfront Park North Bank Playground Biorention Pond	Spokane	WA	Stormwater	HDPE 60 mil	**9,870**
P20359	Fargo LF Cell 18-19 Flap HPDE 60 mil T2	Fargo	ND	Landfill Cell	HDPE 60 mil T2	**72,923**
P20362	Veldhuis Dairy Shop Field Irrigation Pond	Grandview	WA	Irrigation	HDPE 60 mil T1	**32,351**
N20026	LRI LF Cell 8A - Install	Graham	WA	Landfill Cell	HDPE 60 mil Smooth	**196,789**
P20364	Rosebud County LF Leachate Pond	Rosebud	MT	Wastewater	HDPE 60 mil	**23,150**
N20029	Liberty Dairy Lagoon	Granger	WA	Wastewater	HDPE 60 mil smooth	**114,893**
N20030	Talen J.E. Corette Plant Fly Ash Cover	Billings	MT	Wastewater	HDPE 60 mil Textured	**261,000**
N20032	Camp Umatilla Water Treatment Facility	Hermiston	OR	Wastewater	HDPE 60 mil smooth	**295,600**
N20033	Great Salt Lake Minerals Corporation Pond 207	Ogden	UT	Water Reservoir	HDPE 60 mil smooth	**111,516.00**
P20375	TILZ Soils & Compost Leachate Pond Liner	Bainbridge Island	WA	Wastewater	HDPE 60 mil Textured	**6,525**
P20377	Fryslan Pond	Grandview	WA	Wastewater	HDPE 60 mil HDPE	**149,750**
N20035	Peterson Ranch	Buffalo	MT	Refinery	HDPE 60 mil HDPE T2	**190,600**
P20379	Platte Valley Energetics Lagoon	Grand Island	NE	Wastewater	HDPE 60 mil Smooth	**155,000**
N20039	D&A Consolidated Lagoon #1	Outlook	WA	Wastewater	HDPE 60 mil smooth	**161,639**
N20040	George Deruyter & Sons Heifer Area Catch Basin	Outlook	WA	Wastewater	HDPE 60 mil smooth	**79,944**
P20380	Duchesne Valey WTP Process Improvement	Orem	UT	Wastewater	HDPE 60 mil Smooth	**34,400**
P20381	Abeja Winery Fire Pond	Walla Walla	WA	Fire Pond	HDPE 60 mil T1	**20,780**
P20382	AFC Fire Pond	Wieser	ID	Fire Pond	HDPE 60 mil Textured	**39,422**
N20043	JVB Dairy Liner Replacement	Ione	OR	Wastewater	HDPE 60 mil T1	**272,465**
N20044	Ephrata Landfill Phase 3	Ephrata	WA	Landfill Cell	HDPE 60 mil Textured	**388,150**
P20385	Cutthroat Creek Fire Pond	Driggs	ID	Fire Pond	HDPE 60 mil Textured	**18,507**
N20045	Golob Farms Lagoon Retrofit	Granger	WA	Wastewater	HDPE 60 mil T1	**189,285**
N20046	H&S Bosma Lagoon 7	Granger	WA	Wastewater	HDPE 60 mil Smooth	**90,000**

P20390	Randy Rust Decorative/ Fire Pond	Grayland	WA	Fire Pond	HDPE 60 mil	**39,970**
P20391	Royal Bluff Orchard Irrigation Pond	Royal City	WA	Irrigation	HDPE 60 mil T1	**94,993**
P20393	5D Ranch Lagoon 2	Pasco	WA	Wastewater	HDPE 60 mil Textured	**94,027**
P20394	J&K Dairy Lagoon	Sunnyside	WA	Wastewater	HDPE 60 mil Textured	**69,692**
P20395	Steve Shiflett Orchards Pond	Wenatchee	WA	Irrigation	HDPE 60 mil Textured	**43,088**
N20048	George Deruyter Pond #4	Outlook	WA	Wastewater	HDPE 60 mil Smooth	**76,260**
P20396	Zirkle East Ranch South Pond	Ellensburg	WA	Irrigation	HDPE 60 mil T2	**38,750**
N20049	Cow Palace Facility Settling Basin AB Liner	Granger	WA	Wastewater	HDPE 60 mil T1	**71,500**
P20399	Zirkle Fruit Badger Pocket Ranch Pond	Ellensburg	WA	Irrigation	HDPE 60 mil Textured	**29,325**
N20050	KID 2020 HDPE Liner Purchase	Kennewick	WA	Irrigation	HDPE 60 mil Microspike	**1,947,206**
P20403	City of Firth WWTP Upgrade	Firth	ID	Wastewater	HDPE 60 mil T1	**62,271**
P20404	White Bravo II	Pasco	WA	Irrigation	HDPE 60 mil Textured	**36,980**
N20051	Coulee Flats Dairy Lagoon Liner	Mesa	WA	Wastewater	HDPE 60 mil Textured	**159,570**
P20408	Pioneer Enterprises Grandview Pond	Grandview	WA	Evaporation Pond	HDPE 60 mil Textured	**26,233**
P20409	McDougall Fruit HiColor Orchard Liner Replacement	Wenatchee	WA	Irrigation	HDPE 60 mil T1	**59,710**
P20411	NWFM Cheyne North Ranch Irrigation Pond	Zillah	WA	Irrigation	HDPE 60 mil Textured	**39,309**
P20412	NWFM LLC Harrison Ranch Irrigation Pond	Sunnyside	WA	Irrigation	HDPE 60 mil T1	**64,424**
N20053	Happy Jack Landfill Phase 2 Cells 1 &2	Cheyenne	WY	Landfill Cell	HDPE 60 T2	**598,000**
P20413	City of Tacoma SWM CNG Fueling Station	Tacoma	WA	Landfill Cap	HDPE 60 mil Smooth	**12,925**
P20414	Luebber Orchards Irrigation Pond	Malaga	WA	Irrigation	HDPE 60 mil T1	**62,698**
P20417	Prazer Steam Boat Irrigation Pond	Quincy	WA	Irrigation	HDPE 60 mil Textured	**58,599**
P20418	Double M Irrigation Pond	Quincy	WA	Irrigation	HDPE 60 mil Textured	**30,000**
P20419	Prazer Frenchman Irrigation Pond	George	WA	Irrigation	HDPE 60 mil Textured	**61,161**
P20420	Prazer Sunshine Middle Irrigation Pond	Royal City	WA	Irrigation	HDPE 60 mil Textured	**71,146**
P20421	Prazer Sunshine Bench Irrigation Pond	Othello	WA	Irrigation	HDPE 60 mil T1	**31,826**
P20422	Prazer Sunshine Dodson Irrigation	Royal City	WA	Irrigation	HDPE 60 mil T1	**61,316**
P20423	Prazer Nu Chief Irrigation Pond	Quincy	WA	Irrigation	HDPE 60 mil Textured	**62,330**
P20424	Brown Boy Onion Road Irrigation Pond	Royal City	WA	Irrigation	HDPE 60 mil Textured	**108,647**
N20055	Eagle Sewer District WW Lagoon Expansion	Eagle	ID	Wastewater	HDPE 60 mil T1	**449,218**
P20426	Tawaovi Sewage Lagoons	Tuba	AZ	Wastewater	HDPE 60 mil	**136,620**
P20427	USDOT US-89 Farmington to I-84 Detention Pond	Layton	UT	Detention Pond	HDPE 60 mil	**89,982**
P20429	Lucky Badger Orchards Sister Pond Liner	Orondo	WA	Irrigation	HDPE 60 mil T1	**98,661**
P20430	Stadalman Fruit Sand Hollow 62 Pond Liner	Royal City	WA	Irrigation	HDPE 60 mil T1	**153,873**
P20431	Thompson Falls WW System Improvements	Thompson Falls	MT	Wastewater	HDP 60 mil Textured	**92,575**
P20432	CHS Laurel Tank 160 HDPE Liner	Laurel	MT	Secondary Containment	HDPE 60 mil	**4,885**
P20433	Envirocom Runoff Containment Pond	Burbank	WA	Stormwater	HDPE 60 mil T1	**12,858**
P20436	J&J Farming Lagoon Liner 2020	Moses Lake	WA	Wastewater	HDPE 60 mil	**45,705**
					TOTAL SF =	**13,564,853**

60-MIL HDPE PROJECT REFERENCE LIST: 2021

JOB #	PROJECT NAME	CITY	STATE	APPLICATION	MATERIAL = 60-MIL HDPE	MATERIAL SF
P21302	Dovex Pond	Orondo	WA	Irrigation	HDPE 60 mil Smooth	**98,661**
N21001	Basin Electric BAP 2	Wheatland	WY	Wastewater	HDPE 60 mil Smooth	**975,000**
N21002	West Hawaii LF Cell 13	Waikoloa Village	HI	Landfill Cell	HDPE 60 mil Textured	**63,044**
P21305	Zirkle Fruit Blackhawk Ranch Pond	Ellensburg	WA	Irrigation	HDPE 60 mil Textured	**55,057**
P21306	Cherry Creek Orchards Garfield Street Pond	Kennewick	WA	Irrigation	HDPE 60 mil Textured	**25,180**
N21004	Baker City WWTP System Improvements	Baker City	OR	Wastewater	HDPE 60 mil Textured	**370,000**

P21308	City of Filer Arsenic WTP	Filer	ID	Wastewater	HDPE 60 mil	**8,575**
N21005	Cascade Pacific Pulp New ASB Pond	Halsey	OR	Stormwater	HDPE 60 mil Textured	**1,186,700**
P21311	Goose Ridge Well #4 Pond	Benton City	WA	Irrigation	HDPE 60 mil Textured	**100,058**
N21007	River Point Farms WW Pond	Plymouth	WA	Wastewater	HDPE 60 mil Smooth	**163,700**
P21314	Sand Slope Acres Irrigation Pond	Othello	WA	Irrigation	HDPE 60 mil T1	**61,303**
N21008	Lewis and Clark County LF Phase 4A Expansion	Helena	MT	Landfill Cell	HDPE 60 mil T2	**362,500**
N21009	Tributary Pond 10 Restoration	Driggs	ID	Decorative Pond	HDPE 60 mil Textured	**130,658**
N21010	Cowlitz County HQ Rd LF Cell 9 Construction	Kelso	WA	Landfill Cell	HDPE 60 mil T2	**651,639**
P21315	Hansen Fruit Irrigation Pond	Mattawa	WA	Irrigation	HDPE 60 mil Textured	**235,300**
P21318	Country Hollow Division 2 SW Ponds	Puyallup	WA	Stormwater	HDPE 60 mil Textured	**24,815**
P21319	Waimanalo Gulch Flat Area Installation	Kapolei	HI	Water Reservoir	HDPE 60 mil Textured	**75,000**
N21013	Nu-West 2021 Conda Phosphate GYP 2/3 SE	Soda Springs	ID	Mine	HDPE 60 mil	**270,282**
N21014	Headwaters Utility District	Broadwater County	MT	Water Reservoir	HDPE 60 mil Textured	**79,500**
P21323	Willow Drive Nursery Pond Liner and Floating Cover	Ephrata	WA	Fire Pond	HDPE 60 mil smooth	**14,167**
P21324	City of Spokane Landfill Improvements	Spokane	WA	Landfill Cell	HDPE 60 mil T2	**34,845**
N21020	City of Vader WWTP Improvements	Vader	WA	Wastewater	HDPE 60 mil Textured	**59,500**
N21021	LRI Phase V A Closure	Graham	WA	Landfill Cell	HDPE 60 mil T2	**36,663**
N21022	LRI Landfill Cell 8B Construction	Graham	WA	Landfill Cell	HDPE 60 mil T2	**230,209**
N21023	Sunrise Pond IV-3	Puyallup	WA	Stormwater	HDPE 60 mil Textured	**1,541,750**
P21327	RP Development Fire Pond Liner	Post Falls	ID	Fire Pond	HDPE 60 mil Textured	**10,010**
N21024	Parma WWTP Upgrade	Parma	ID	Wastewater	HDPE 60 mil T2	**427,907**
P21329	Castle Grove 2021	Harrah	WA	Wastewater	HDPE 60 mil Textured	**30,116**
P21330	Sandpiper Shores Master Utility WW Improvements	Coolin	ID	Wastewater	HDPE 60 T2	**20,418**
P21331	ZWB Pond Liner	La Verkin	UT	Decorative Pond	HDPE 60 mil T1	**127,975**
P21332	Boeing Everett Site Stormwater Upgrade	Everett	WA	Stormwater	HDPE 60 mil Textured	**85,020**
P21333	White Alpha - Agrimacs	Ephrate	WA	Irrigation	HDPE 60 mil Textured	**63,000**
N21028	IDF-Leachate Tank Repairs Hanford	Richland	WA	Secondary Containment	HDPE 60 mil Smooth	

TOTAL SF = **7,618,552**

APPROX (3) YEAR TOTAL = **36,334,626**

NORTHWEST LININGS &
GEOTEXTILE PRODUCTS, Inc.
"Helping to Protect the Environment"
21000 77th Avenue South
Kent, WA 98032
(253) 872-0244 • (800) 729-6954
FAX: (253) 872-0245
www.northwestlinings.com

June, 2022

RE: Northwest Linings & Geotextile Products, Inc. qualified welding technician list.

The following personnel are qualified seaming technicians for HDPE and Geotextile installations:

Adalberto, Aguilar
Alvarado, Armando (MS)*
Atkinson, Thomas
Arellano, Luis (MS)
Arellano, Ranferi (MS/QC)*
Arita, Edgar
Antillion, Jose
Aveleda, Demertrio
Azraq (Hijazi) Abdallah
Bryant, Jeremy
Briggs, Alex
Ceja, Juan (MS)
Carrilo, Fausto
Castillo, Luis
Chapel, Brandon
Chanthavong, Bouthy(MS)*
Chavez, Alvaro
Cruz, Natalio (MS)
Cruz, Runel (MS/QC)*
Galvin, Juan Carlos
Garcia, Michael
Garcia, Rudy
Gomez, Gabriel
Guajardo, Jesus
Gutierrez, Frank (MS/QC)
Guillien, Serafin
Hargas, Saeed (QC)
Inthavong, John (MS)
Jaimes, Deonicio
Jones, Bruce (MS/QC)*
Kaiyarath, Phouthone
Leon, Bertaldo
Lim, Scott
Mastachi, Luis
Mondragon, Antanocio (MS)
Mondragon, Joel (MS/QC)*
Montoya, Julian
Montoya, George
Muntufre, Jose
Old Bear, Lance (MS/QC)
Old Bear, Joseph (MS/QC)*
Palacios, Jose (MS)
Penaloza, Ranferi (MS)
Pineda, Ranferi (MS/QC)**
Phimmasouk, Viengsith
Phothisarath, Donny
Phouthavong, Sue (MS/QC)*
Rios, Alex (MS/QC)*
Rebolo, Arturo (QC)
Romero, Jesus
Ruiz, Albert
Salgado, Adrian
Salgado, Gerardo
Sanchez, Samuel
Santana, Franco
Santana, Pedro
Saothong, Pornchai
Sayakhoumman, Brandon (MS/QC)*
Servin, Anselmo (MS)
Scruggs, Ron (MS/QC)*
Soch, Oscar
Souvannaraj, Albert (MS/QC)
Tebeje Yanni Tesema, (MS/QC)
Terrones, Jose R. (MS/QC)
Tsosie, Jerald
Valdez, Ismael
Vargas, Aldo
Vargas, Alfonso (MS/QC)*
Vargas, Irving
Vongpachanh, Anavong
Vongpachanh, Phothisane
Vongpachanh, Steve
Vorachchak, Chanthala

**** Site supervisors***
All technicians listed above have seamed over 1 million square feet of Geotextile/GCL
MS - denotes a Master Seamer with over 2 million SF of Geotextile/GCL seaming experience.
QC - denotes a Quality Control Technician that has performed QC on over 2 million SF of Geotextile/GCL.
This is a partial list of qualified NWL technicians.

Northwest Linings & Geotextile Products, Inc.
"Installing & Supplying Geosynthetic Products Since 1973"
20824 77th Avenue South ● Kent, WA ● 98032
(253) 872-0244 ● Fax (253) 872-0245
www.northwestlinings.com

THE HISTORY OF NORTHWEST LININGS & GEOTEXTILE PRODUCTS, INC.

BY: ROD W. NEWTON, CEO

NORTHWEST LININGS & GEOTEXTILE PRODUCTS, INC. was formed in 1973 for the purpose of supplying and installing Geomembrane liners for irrigation water and wastewater containment.

The principal Geomembrane lining products in the mid to late 1970's were PVC and Hypalon. The typical liner installations were, Irrigation Ponds, Domestic Sewage Lagoons, Water Reservoirs, Floating Covers for Water Reservoirs, and Fire Sprinkler Water Containment Basins. Northwest Linings concentrated on these areas of business and installed 20,000,000 S.F. of Liners and Covers from 1973 to 1979.

In 1979, Northwest Linings & Geotextile Products, Inc. expanded into the area of Wholesale Distribution of Soil Stabilization and Drainage Fabrics. Northwest Linings & Geotextile Products, Inc. approached Amoco Fabrics and obtained an agreement to develop a line of filter fabrics for them, which were labeled Pro-Pex Filter Fabrics. After several years, Northwest Linings & Geotextile Products, Inc. decided to private label their geotextile products under the "PermeaTex" name and now purchase from other sources. The company changed its name in 1980 to Northwest Linings & Geotextile Products, Inc., and moved from Bellevue to their current location in Kent, Washington.

The Filter Fabric supply business has grown steadily since 1979 and Northwest Linings & Geotextile Products, Inc. has become the leading supplier of Geotextile products to the Northwest Market. Currently in our warehouse is a stock of over 1 million Square Yards of Soil Separation, Erosion Control, and Drainage Fabrics. In addition, we handle a complete line of Geosynthetic products including geogrids, gabions, erosion blankets, drainage boards, etc...

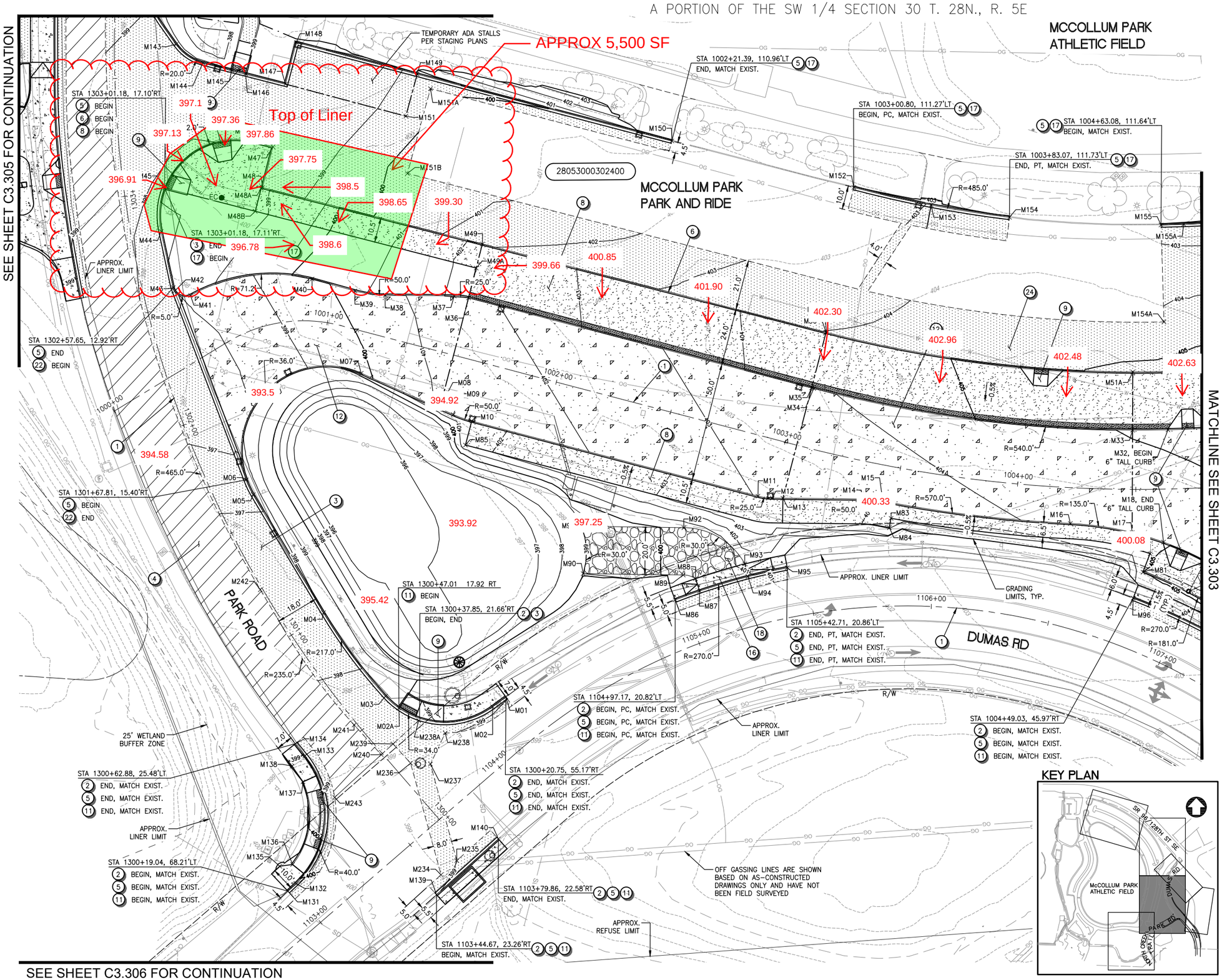
In the early 1980's, several new membrane liner products were developed for Hazardous Waste containment. These products include HDPE, XR-5, Urethane and Neoprene. At the same time, several major pieces of legislation were passed by U.S. Congress, which demanded that landfills be lined and capped and that geomembranes and Secondary Containment be placed under all Hazardous Waste products. With these changes, the construction arm of Northwest Linings has expanded and now has several highly trained work crews that specialize in these areas of work. Geographically Northwest Linings has also expanded into Hawaii, Alaska and British Columbia.

Since inception in 1973, Northwest Linings has supplied and installed over 350,000,000 square feet of Geomembrane Liner at over 3,000 installations. In addition, over 120,000,000 Square Yards of Soil Stabilization and Drainage Fabrics have been supplied to the Construction Industry through their wholesale division. Projected into the 2000's is growth into the areas of Drainage Composites, Geotextile Tubes, Aqua-Barrier, Silt & Sediment Control Products, Green LEED products, and Tank Coatings. With recent staff and sales expansion, Northwest Linings & Geotextile Products, Inc. is progressively moving ahead into the next decade.

Appendix D

Docusign Envelope ID: E5EAFB5C-AEEE-4109-B112-9F46911B3568

A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E



SEE SHEET C3.306 FOR CONTINUATION

CONSTRUCTION NOTES

1. CONSTRUCTION GRIDLINE, SEE 100-SERIES SHEETS.
2. CONSTRUCT ASPHALT PAVEMENT REPAIR PER SECTION ON SHEET C3.403 AT EDMONDS COLLEGE & PER DUMAS RD ASPHALT PAVEMENT REPAIR DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
3. CONSTRUCT PARK RD ASPHALT PAVEMENT REPAIR AND OVERLAY SECTION PER DETAIL ON SHEET C3.404.
4. 2" HMA GRIND AND OVERLAY PER DETAIL ON SHEET C3.401 AT EDMONDS COLLEGE & PER PARK RD DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
5. CONSTRUCT CEMENT CURB AND GUTTER PER WSDOT STD PLAN F-10.12-04.
6. CONSTRUCT CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-04.
7. CONSTRUCT STATION PLATFORM VERTICAL CURB PER DETAIL ON SHEET C3.400.
8. CONSTRUCT TRANSIT CENTER PLATFORM. SEE SHEET C3.403 FOR DETAILS.
9. CONSTRUCT CURB RETURN AND CURB RAMP OVER 4" CSTC, SEE C3.5 SERIES PLANS FOR LAYOUT.
10. DRIVER RESTROOM, SEE SHEET C6.405 FOR DETAILS.
11. CONSTRUCT CEMENT CONCRETE SIDEWALK PER WSDOT STD PLAN F-30.10-04 OVER 4" CSTC.
12. CONSTRUCT 15 IN. TRANSIT CENTER CEMENT CONCRETE ROADWAY PER DETAIL ON SHEET C3.403.
13. CONSTRUCT TRAFFIC ISLAND, SEE C3.5 SERIES PLANS FOR LAYOUT.
14. CONSTRUCT RETAINING WALL, W-SERIES SHEETS FOR WALL TYPE, ELEVATION, AND DETAILS.
15. CONSTRUCT CEMENT CONCRETE STAIRS PER DETAIL ON SHEET W2.5.
16. CONSTRUCT CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 1 PER WSDOT STD PLAN F-80.10-04.
17. CONSTRUCT PARKING LOT/ DRIVEWAY ASPHALT REPAIR PER DETAIL ON SHEET C3.401 AT EDMONDS COLLEGE & PER DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
18. CONSTRUCT GRAVEL ACCESS ROAD SECTION PER DETAIL ON SHEET C3.404.
19. CONSTRUCT TRANSIT CENTER STRUCTURAL SIDEWALK PER DETAIL ON SHEET W4.2.
20. CONSTRUCT SPEED HUMP PER SNOHOMISH COUNTY PUBLIC WORKS STD DETAIL 7-170.
21. CONSTRUCT EDMONDS COLLEGE 11 IN. CEMENT CONCRETE ROADWAY PER DETAILS ON SHEET C3.403.
22. CONSTRUCT VALLEY GUTTER PER DETAIL ON SHEET C3.404.
23. CONSTRUCT ASPHALT BERM PER DETAIL ON SHEET C3.404.
24. CONSTRUCT ADA PARKING STALLS, SEE C3.6 SERIES PLANS FOR LAYOUT.
25. GREENSCREEN VINE TRELLIS, SEE SHEET C6.400.
26. CONSTRUCT ASPHALT PATH PER SECTION ON SHEET C3.404.

GENERAL NOTES

1. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS AND STATION AND OFFSET REFERENCES ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
3. THE FINISHED GRADE CONTOURS SHOWN CORRESPOND TO FINISHED PAVEMENT AND TRANSITION GRADES.

LEGEND

- EXISTING R/W
- R/W EASEMENT
- PROPERTY LINE
- PERMANENT EASEMENT
- UTILITY EASEMENT
- TCE — TEMPORARY CONSTRUCTION EASEMENT
- RETAINING WALL
- GRADING LIMITS
- GRADE BREAK
- CEMENT CONCRETE SIDEWALK
- TRANSIT CENTER PLATFORM
- HMA/ASPHALT PAVEMENT
- HMA/GRIND AND ASPHALT OVERLAY
- SAWCUT
- GRAVEL ACCESS ROAD/WALKWAY
- 15" THICK TRANSIT CENTER CEMENT CONCRETE ROADWAY
- TRANSIT CENTER STRUCTURAL SIDEWALK
- CONTROL POINTS, SEE SHEETS C3.308-C3.309A

SCALE IN FEET 20 0 40'-0" 20 40

CALL BEFORE YOU DIG 1-800-424-5555

NO.	REVISION COMMENTS	BY	REVIEW	DATE
DESIGNER	DRAWN BY		CHECKED BY	

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

11/4/21

100% SUBMITTAL

communitytransit **Swift** ORANGE LINE

TERMINI SITE GRADING AND PAVING PLANS
EASTERN TERMINUS McCOLLUM PARK
(STATION EB 3223 WB 3224)

TITLE

Otak
11241 Willows Road NE, Suite 200
Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C3.302
DRAWING NO.

SHEET 173 OF 622

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Plotted: Nov 04, 2021 - 2:47pm K:\Project\32800\32880H\CADD\ACAD\Dwg\C3.300-C3.309A.dwg Layout Name: C3.302

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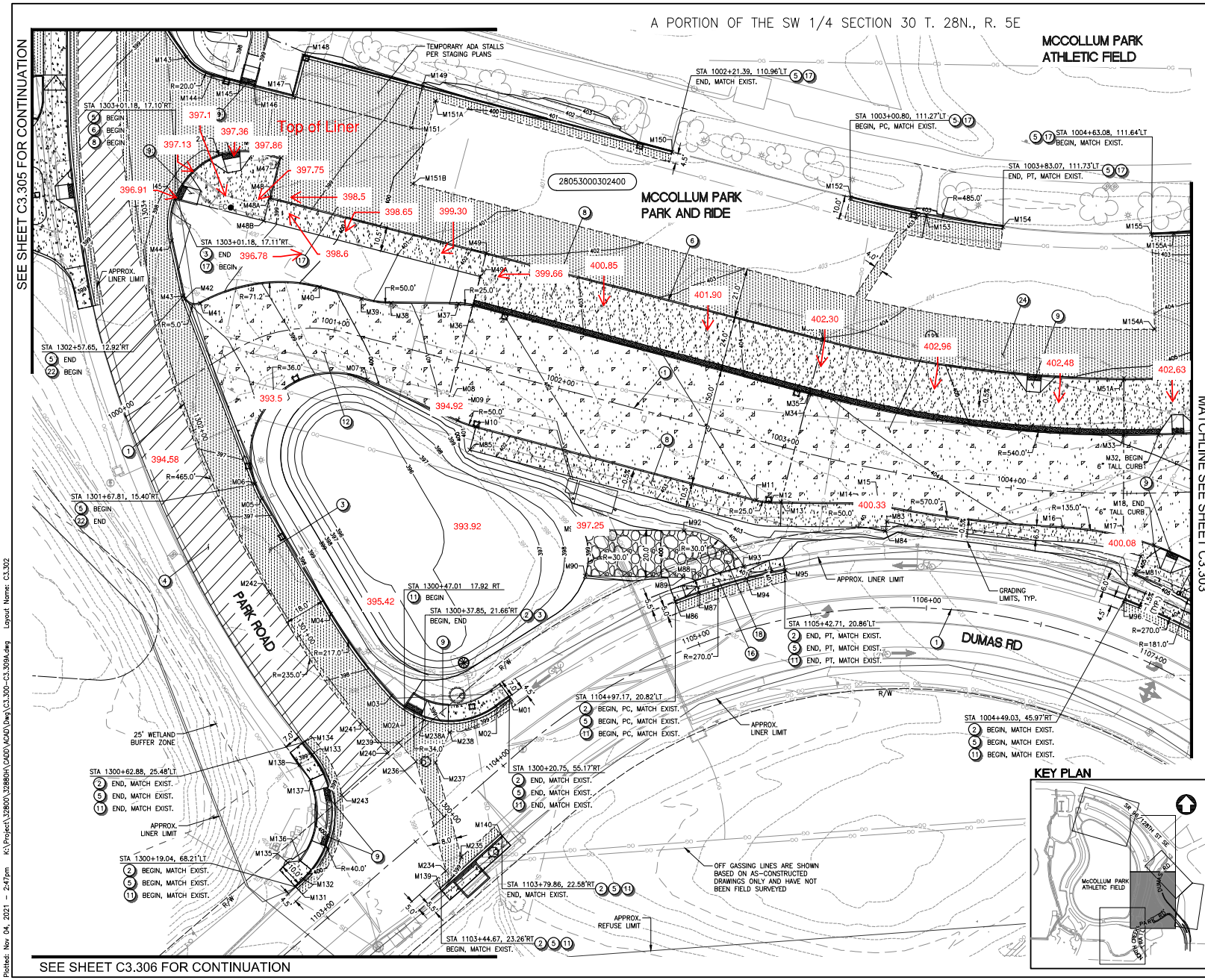

CONSTRUCTION NOTES

1. CONSTRUCTION GRIDLINE, SEE 100-SERIES SHEETS.
2. CONSTRUCT ASPHALT PAVEMENT REPAIR PER SECTION ON SHEET C3.403 AT EDMONDS COLLEGE & PER DUMAS RD ASPHALT PAVEMENT REPAIR DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
3. CONSTRUCT PARK RD ASPHALT PAVEMENT REPAIR AND OVERLAY SECTION PER DETAIL ON SHEET C3.404.
4. 2" HMA GRIND AND OVERLAY PER DETAIL ON SHEET C3.401 AT EDMONDS COLLEGE & PER PARK RD DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
5. CONSTRUCT CEMENT CURB AND GUTTER PER WSDOT STD PLAN F-10.12-04.
6. CONSTRUCT CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-04.
7. CONSTRUCT STATION PLATFORM VERTICAL CURB PER DETAIL ON SHEET C3.400.
8. CONSTRUCT TRANSIT CENTER PLATFORM. SEE SHEET C3.403 FOR DETAILS.
9. CONSTRUCT CURB RETURN AND CURB RAMP OVER 4" CSTC, SEE C3.5 SERIES PLANS FOR LAYOUT.
10. DRIVER RESTROOM, SEE SHEET C6.405 FOR DETAILS.
11. CONSTRUCT CEMENT CONCRETE SIDEWALK PER WSDOT STD PLAN F-30.10-04 OVER 4" CSTC.
12. CONSTRUCT 15 IN. TRANSIT CENTER CEMENT CONCRETE ROADWAY PER DETAIL ON SHEET C3.403.
13. CONSTRUCT TRAFFIC ISLAND, SEE C3.5 SERIES PLANS FOR LAYOUT.
14. CONSTRUCT RETAINING WALL, W-SERIES SHEETS FOR WALL TYPE, ELEVATION, AND DETAILS.
15. CONSTRUCT CEMENT CONCRETE STAIRS PER DETAIL ON SHEET W2.5.
16. CONSTRUCT CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 1 PER WSDOT STD PLAN F-80.10-04.
17. CONSTRUCT PARKING LOT/ DRIVEWAY ASPHALT REPAIR PER DETAIL ON SHEET C3.401 AT EDMONDS COLLEGE & PER DETAIL ON SHEET C3.404 AT MCCOLLUM PARK P&R.
18. CONSTRUCT GRAVEL ACCESS ROAD SECTION PER DETAIL ON SHEET C3.404.
19. CONSTRUCT TRANSIT CENTER STRUCTURAL SIDEWALK PER DETAIL ON SHEET W4.2.
20. CONSTRUCT SPEED HUMP PER SNOHOMISH COUNTY PUBLIC WORKS STD DETAIL 7-170.
21. CONSTRUCT EDMONDS COLLEGE 11 IN. CEMENT CONCRETE ROADWAY PER DETAILS ON SHEET C3.403.
22. CONSTRUCT VALLEY GUTTER PER DETAIL ON SHEET C3.404.
23. CONSTRUCT ASPHALT BERM PER DETAIL ON SHEET C3.404.
24. CONSTRUCT ADA PARKING STALLS, SEE C3.6 SERIES PLANS FOR LAYOUT.
25. GREENSCREEN VINE TRELLIS, SEE SHEET C6.400.
26. CONSTRUCT ASPHALT PATH PER SECTION ON SHEET C3.404.

GENERAL NOTES

1. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS AND STATION AND OFFSET REFERENCES ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
3. THE FINISHED GRADE CONTOURS SHOWN CORRESPOND TO FINISHED PAVEMENT AND TRANSITION GRADES.

LEGEND

- EXISTING R/W
- R/W EASEMENT
- PROPERTY LINE
- PERMANENT EASEMENT
- UTILITY EASEMENT
- TEMPORARY CONSTRUCTION EASEMENT
- RETAINING WALL
- GRADING LIMITS
- GRADE BREAK
- CEMENT CONCRETE SIDEWALK
- TRANSIT CENTER PLATFORM
- HMA/ASPHALT PAVEMENT
- HMA/GRIND AND ASPHALT OVERLAY
- SAWCUT
- GRAVEL ACCESS ROAD/WALKWAY
- 15" THICK TRANSIT CENTER CEMENT CONCRETE ROADWAY
- TRANSIT CENTER STRUCTURAL SIDEWALK
- CONTROL POINTS, SEE SHEETS C3.308-C3.309A

SCALE IN FEET

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11/4/21

communitytransit Swift ORANGE LINE - 100% SUBMITTAL
TERMINI SITE GRADING AND PAVING PLANS
EASTERN TERMINUS McCOLLUM PARK
(STATION EB 3223 WB 3224)

TITLE

Otak
11241 Willows Road NE, Suite 200
Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C3.302
DRAWING NO.

SHEET 173 OF 622

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A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

28053000302400

MCCOLLUM PARK
ATHLETIC FIELD

MCCOLLUM PARK
PARK AND RIDE

MATCHLINE SEE SHEET C3.304

MATCHLINE SEE SHEET C3.302

SEE SHEET C3.307 FOR CONTINUATION

SR 96 / 128TH ST SE

DUMAS RD

OFF GASSING LINES ARE SHOWN BASED ON AS-CONSTRUCTED DRAWINGS ONLY AND HAVE NOT BEEN FIELD SURVEYED

GRADING LIMITS, TYP.

STA 1008+26.13, 103.63'LT (5)(17) END, MATCH EXIST.

STA 1008+21.96, 41.69'LT (5)(17)(26) BEGIN, MATCH EXIST.

STA 1008+20.69, 20.94'LT (5)(17)(26) END, MATCH EXIST.

STA 1008+17.22, 41.26'RT (5)(17)(26) END, MATCH EXIST.

STA 1007+15.08, 32.50'RT (5) BEGIN (6) END

STA 1007+01.43, 39.12'RT (26) BEGIN

STA 1006+55.94, 84.09'RT (8) END (11) BEGIN

STA 1005+13.68, 61.45'RT (8) BEGIN (19) END

STA 1004+77.92, 30.82'RT (8) END (19) BEGIN

STA 1108+65.95, 145.99'LT (2) END, MATCH EXIST. (5) END, MATCH EXIST.

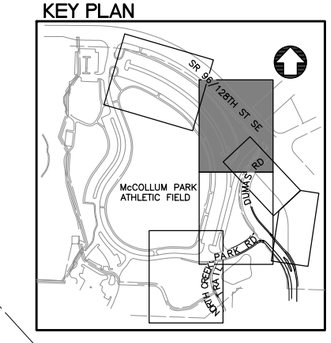
STA 1108+50.28, 62.86'LT (11) END

APPROX. LINER LIMIT

APPROX. REFUSE LIMIT

401.93

KEY PLAN



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20 0 20 40
SCALE IN FEET

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DESIGNER | DRAWN BY | CHECKED BY

KEVIN C. KRAXBERGER
STATE OF WASHINGTON
39870
REGISTERED
PROFESSIONAL ENGINEER
11/4/21

100% SUBMITTAL

communitytransit
Swift ORANGE LINE
TERMINI SITE GRADING AND PAVING PLANS
EASTERN TERMINUS MCCOLLUM PARK P R
(STATION EB 3223 WB 3224)

TITLE

Otak
11241 Willows Road NE, Suite 200
Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C3.303
DRAWING NO.

SHEET 174 OF 622

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A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

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DESIGNER | DRAWN BY | CHECKED BY

KEVIN C. KRAXBERGER, STATE OF WASHINGTON, 39870, REGISTERED PROFESSIONAL ENGINEER

11/4/21

communitytransit Swift ORANGE LINE - 100% SUBMITTAL

TERMINI SITE GRADING AND PAVING PLANS
EASTERN TERMINUS MCCOLLUM PARK P R
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32880.H
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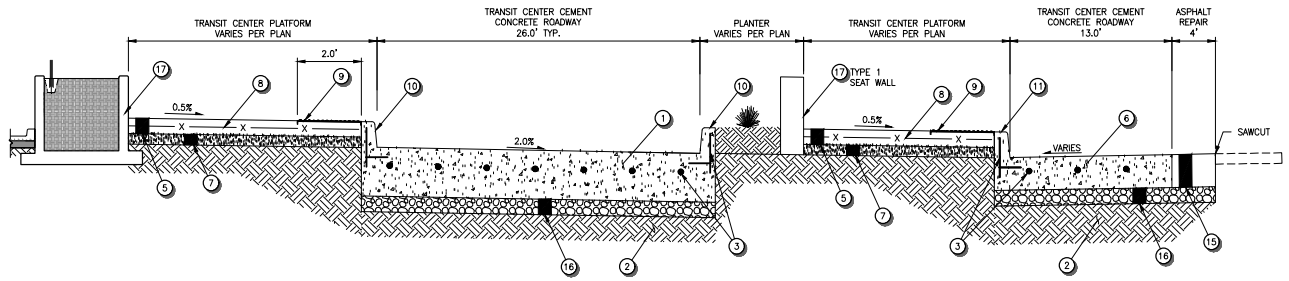
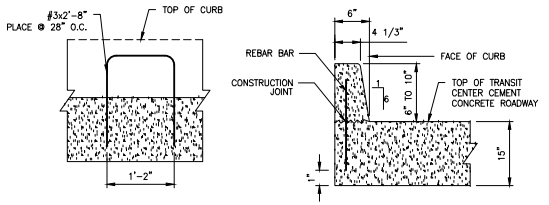


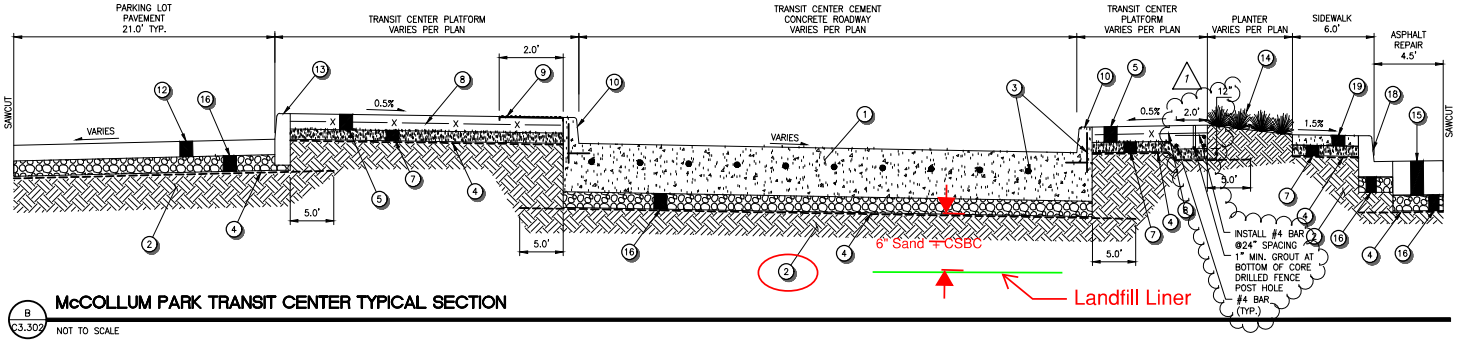
A C3.300 NOT TO SCALE

EDMONDS COLLEGE TRANSIT CENTER TYPICAL SECTION



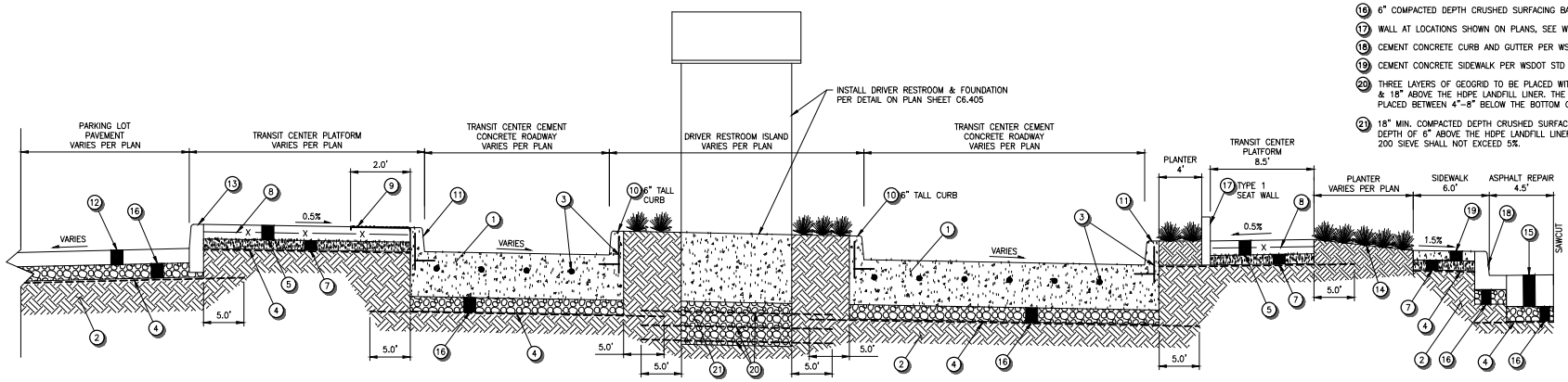
TRANSIT CENTER CEMENT CONCRETE ROADWAY 6"-10" CURB DETAIL

NOT TO SCALE



B C3.302 NOT TO SCALE

McCOLLUM PARK TRANSIT CENTER TYPICAL SECTION



C C3.303 NOT TO SCALE

McCOLLUM PARK TRANSIT CENTER DRIVER RESTROOM ISLAND SECTION

CONSTRUCTION NOTES

1. 15" TRANSIT CENTER CEMENT CONCRETE ROADWAY, 24 HR.
2. SUBGRADE COMPACTED TO 95% OF MAXIMUM DENSITY PER ASTM D-1557. SUBGRADE TO CONSIST OF UNDISTURBED NATIVE MATERIALS OR STRUCTURAL FILL. STRUCTURAL FILL MATERIAL TO CONSIST OF SUITABLE ON-SITE MATERIALS OR GRAVEL BORROW AS DESCRIBED IN SPECIFICATIONS. AT MCCOLLUM PARK P&R, WHERE FINISHED GRADE IS OVER 2-FEET HIGHER THAN EXISTING GRADE, FILL MATERIAL SHALL BE PLACED 4 WEEKS IN ADVANCE OF CONSTRUCTING UTILITIES, STRUCTURES, AND HARDSCAPE. ADDITIONAL FILL OR PRELOAD TO BE CONSIDERED IN AREAS OF HEAVIER STRUCTURES OF FOUNDATIONS PER GEOTECHNICAL RECOMMENDATIONS. EXPOSED SUBGRADE SHALL BE EVALUATED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF STRUCTURAL FILL & GEOGRID.
3. DOWEL BAR (TRANSVERSE JOINT) OR TIE BAR (LONGITUDINAL JOINT) PER WSDOT STD PLAN A-60.10-03.
4. INSTALL GEOGRID PER GEOTECHNICAL RECOMMENDATIONS AT McCOLLUM PARK TERMINI. GEOGRID TO EXTEND 5FT BEYOND EDGE OF PLATFORMS, ROADWAYS, AND FOUNDATION ELEMENTS. PLACE ON GRANULAR SUBGRADE OR WITHIN CRUSHED ROCK LAYER PER GEOTECHNICAL ENGINEER DIRECTION.
5. 6" DEPTH CEMENT CONCRETE TRANSIT CENTER PLATFORM.
6. 11" CEMENT CONCRETE ROADWAY 24 HR.
7. 4" COMPACTED DEPTH CRUSHED SURFACING TOP COURSE.
8. W4.0xW4.0 – 6x6 @ MIDHEIGHT OF SLAB.
9. DETECTABLE WARNING SURFACE PER WSODT STD. PLAN F-45.10-03, LIMITS PER C3.31-SERIES JOINTING PLANS.
10. 6"-10" TRANSIT CENTER CEMENT CONCRETE ROADWAY DOWELED CURB PER DETAIL ON THIS SHEET. CURB HEIGHT VARIES BETWEEN 6" AND 10" AS SHOWN ON PLANS.
11. 10" HEIGHT DOWELED CURB, SEE SHEET C3.401.
12. 6" COMPACTED DEPTH HMA CL. ½" P.G. 70-22.
13. 6" HEIGHT CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-04.
14. SEE LANDSCAPING PLANS FOR DETAILS.
15. 11" COMPACTED DEPTH HMA CL. ½" P.G. 70-22.
16. 6" COMPACTED DEPTH CRUSHED SURFACING BASE COURSE.
17. WALL AT LOCATIONS SHOWN ON PLANS, SEE W-SERIES FOR DETAILS.
18. CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-04.
19. CEMENT CONCRETE SIDEWALK PER WSDOT STD PLAN F-30.10-04.
20. THREE LAYERS OF GEOGRID TO BE PLACED WITHIN CSBC LAYER APPROX. 6", 12", & 18" ABOVE THE HDPE LANDFILL LINER. THE TOP GEOGRID LAYER SHALL BE PLACED BETWEEN 4"-8" BELOW THE BOTTOM OF THE RESTROOM FOUNDATION.
21. 18" MIN. COMPACTED DEPTH CRUSHED SURFACING BASE COURSE OR PLACE TO A DEPTH OF 6" ABOVE THE HDPE LANDFILL LINER. FINES CONTENT PASSING NO. 200 SIEVE SHALL NOT EXCEED 5%.

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NO.	REVISION COMMENTS	BY	REVIEW	DATE
1	FENCE AND GATE REVISIONS	RS	JM	3/19/2024

DESIGNER | DRAWN BY | CHECKED BY

REFER TO ORIGINAL DRAWINGS FOR SIGNATURES AND SEALS

3/20/2024

communitytransit
Swift ORANGE LINE – 100% SUBMITTAL
SITE GRADING AND PAVING DETAILS
TERMINI ROADWAY SECTIONS

TITLE

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328804
PROJECT NUMBER

C3.403
DRAWING NO.

SHEET 192 OF 622

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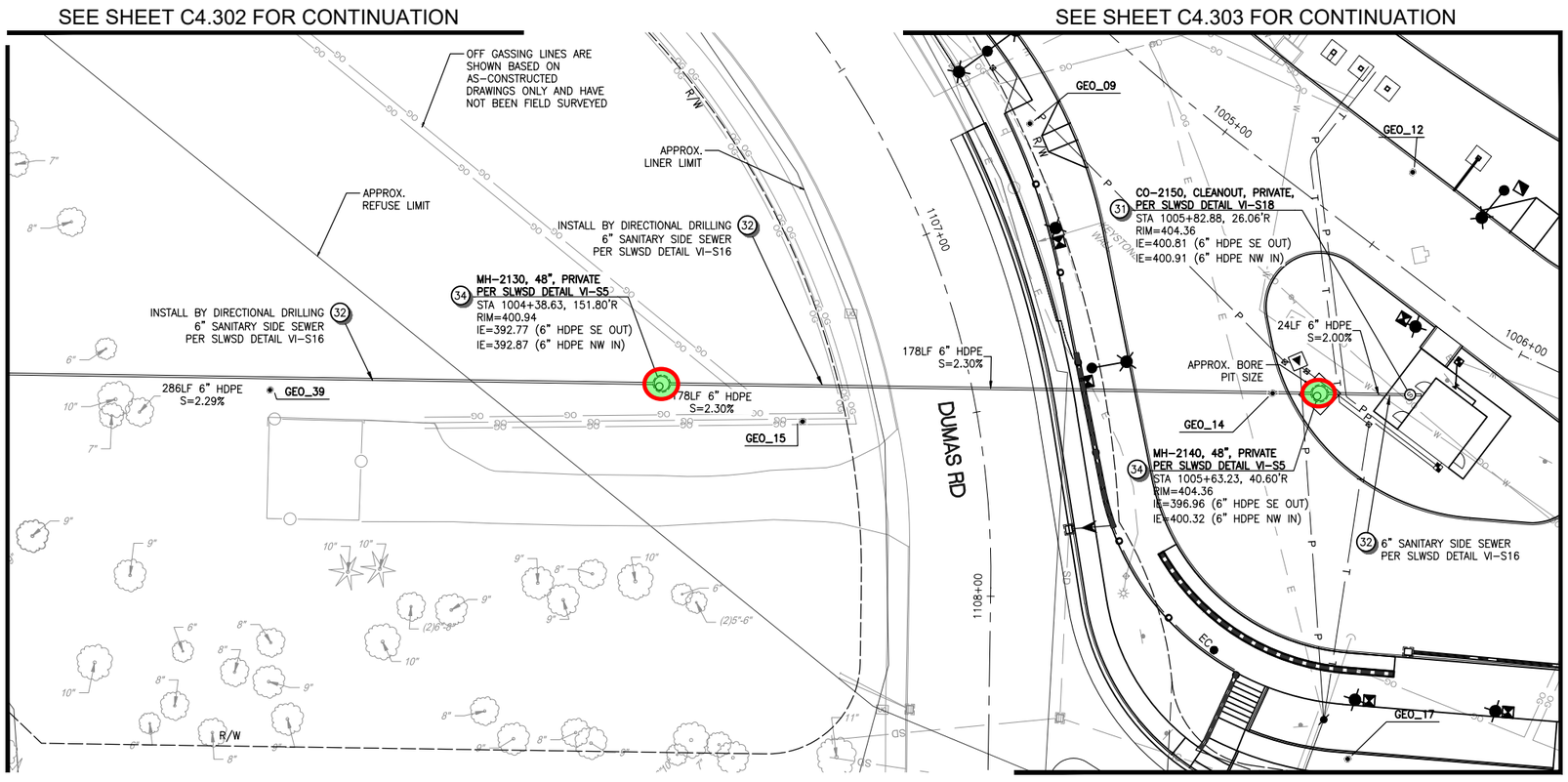
Plotted: Mar 20, 2024 – 2:52pm K:\PROJECT_328001_328804\CADD\ACAD\Dwg\C3.403.dwg Layout Name: C3.403

A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

BI E-152: HDPE Liner Repair

Sheet total: 2 each

6-2-2023 SMB ✓



CONSTRUCTION NOTES

8. OUTLET 3" STORM DRAIN PIPE THROUGH CURB PER DETAIL ON SHEET C4.400.
9. INSTALL 2" CONDUIT FOR FUTURE COMMUNICATION CONNECTION. TERMINATE CONDUIT AT EMPTY TYPE 1 UTILITY JUNCTION BOX ADJACENT TO PLATFORM. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
10. INSTALL CONDUIT TO WITHIN 2' OF EXISTING PUD ELECTRIC JUNCTION BOX WITH 5' OF CABLE COILED. PUD TO COMPLETE CONDUIT INTO JUNCTION BOX, COMPLETE THE CONNECTION AND ENERGIZE THE CIRCUIT.
11. SEE SIGNAL AND ILLUMINATION PLANS FOR PROPOSED IMPROVEMENTS.
12. INSTALL 2" CONDUIT WITH 3#6 CONDUCTORS. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
13. INSTALL 3" CONDUIT FOR COMMUNICATION CONNECTION. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
14. INSTALL SCUPPER/DRAINAGE CURB CUT, SEE SHEETS C4.411-C4.412 FOR DETAILS.
15. INSTALL CONTROL STRUCTURE, SEE SHEETS C4.409-C4.410 & C4.427 FOR DETAILS.
16. PAVEMENT RESTORATION LIMITS, SEE C3 SERIES FOR DETAILS.
17. REMOVE AND RELOCATE EXISTING PEDESTRIAN SCALE OR PARKING LOT LIGHT. SEE TS SHEETS.
18. INSTALL STORMWATER TREATMENT FACILITY, SEE DETAILS ON SHEETS C4.408 & C4.422-C4.423.
19. INSTALL DRAINAGE SWALE PER SHEETS C4.412 & C4.427.
20. REMOVE AND RELOCATE HYDRANT AND VALVE PER CITY OF LYNNWOOD DETAIL 5-07.
21. MEDIA FILTER DRAIN PER DETAIL ON SHEET C4.427.
22. INSTALL DETENTION VAULT, SEE SHEET C4.405-C4.406 FOR DETAILS.
23. RELOCATE EXISTING WATER MAIN PER DETAIL ON SHEET C4.603
24. INSTALL OUTLET PROTECTION, SEE SHEET C4.427.
25. CLEAN & VACTOR EXISTING DRAINAGE STRUCTURE.
26. INSTALL CONCRETE RUNNEL, SEE SHEET C4.412.
27. INSTALL GRATED TRENCH DRAIN PER DETAIL ON SHEET C4.411.
28. INSTALL ELECTRICAL PUD METERING UNIT.
29. INSTALL 3" CONDUIT WITH 3#6 CONDUCTORS (STATION SERVICE), AND 4-2/0 CONDUCTORS (RESTROOM SERVICE). SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
30. INSTALL 2" WATER SERVICE CONNECTION.
31. INSTALL SANITARY SEWER CLEAN OUT.
32. INSTALL 6" SANITARY SEWER SERVICE.
33. INSTALL 12" SANITARY SEWER MAIN PER SLWSD DETAIL VI-S1.
34. INSTALL SANITARY SEWER MANHOLE.
35. INSTALL DEBRIS BARRIER, SEE SHEET C4.411.
36. INSTALL 2" CONDUIT WITH 4#2 CONDUCTORS FOR OFFGASSING POWER SERVICE.
37. INSTALL BACKFLOW ASSEMBLY PER SLWSD DETAIL VI-W19.
38. INSTALL 1-1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5-02.

GENERAL NOTES

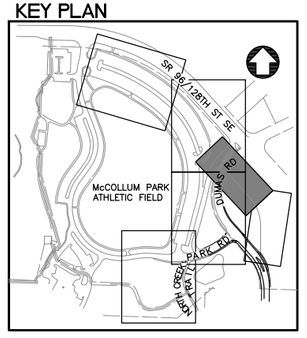
1. ALL PROPOSED STORM & SEWER PIPE SLOPES, TYPES & STRUCTURE ID'S NOT CALLED OUT IN C4.3 SERIES ARE SHOWN IN PROFILE VIEW ON C4.5 & C4.6 SERIES PLANS.

LEGEND

- EXISTING R/W
- R/W EASEMENT
- PROPERTY LINE
- PERMANENT EASEMENT
- UTILITY EASEMENT
- TCE — TEMPORARY CONSTRUCTION EASEMENT
- P — POWER
- T — COMMUNICATION
- W — WATER
- OG — OFFGASSING LINE
- GEO_XX — EXPLORATION POINT (SEE GEOTECHNICAL REPORT FOR DATA)
- DRAINAGE SWALE
- UD — UNDERDRAIN
- RETAINING WALL

20 0 20 40
SCALE IN FEET

KEY PLAN



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DESIGNER | DRAWN | NO. | REVISION COMMENTS

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

11/4/21

communitytransit

Swift ORANGE LINE - 100% SUBMITTAL

TERMINI UTILITY PLANS
EASTERN TERMINUS - MCCOLLUM PARK P&R
(STATION # EB 3223 & WB 3224)

TITLE

Otak
11241 Willows Road NE, Suite 200
Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C4.30
DRAWING NO.

SHEET 258 OF 622

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Plotted: Nov 04, 2021 - 3:02pm K:\Project\32800\32880H\CADD\ACAD\Dwg\C4.300-C4.307.dwg Layout Name: C4.307

C4.305 FOR CONTINUATION

A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

28053000302400

MCCOLLUM PARK ATHLETIC FIELD

MCCOLLUM PARK PARK AND RIDE

DUMAS RD

PARK RD

CB-2440, CONC. INLET
STA 1002+07.34, 109.87'LT

149LF 8" DI
S=1.74%

CB-2340, CONC. INLET
STA 1003+34.76, 110.39'LT

92LF 8" DI
S=0.50%

CB-2320, TYPE 1
STA 1001+69.58, 23.92'LT

CB-2330, TYPE 1
STA 1002+99.81, 23.92'LT

138LF 12" DI
S=0.50%

48LF 12" DI
S=0.79%

130LF 12" DI
S=0.50%

CB-2410, TYPE 1
STA 1000+79.84, 21.14'RT

20LF 12" DI
S=6.17%

21LF 12" DI
S=0.50%

IE=395.50

IE=398.03

CB-2310, TYPE 1
STA 1001+69.58, 23.92'RT

47LF 8" DI
S=0.50%

6 RELOCATE OFF-GASSING VAULT AND MANIFOLD VAULT. SEE SPECIFICATIONS FOR DETAILS

MANIFOLD VAULT

VENT PIPES

PREVIOUSLY ABANDONED WATER LINE

SNOCO PUD TRANSFORMER 5

POWER FOR OFFGASSING 36 10

4 OFFGASSING POWER J-BOX

GEO_09

CB-2335, CONC. INLET
STA 1002+99.65, 23.40'RT

2 J-BOX

CONSTRUCTION GRIDLINE

APPROX. LINER LIMIT

CONSTRUCTION GRIDLINE

TYPICAL ISOLATION VAULT AND SUMP

INSTALL VALLEY GRATE PER DETAIL ON SHEET C4.400

34LF 12" DI
S=0.50%

CB-2460, TYPE 1
STA 1000+30.56, 79.30'RT

CB-2450, TYPE 1
STA 1000+34.08, 45.68'RT

CB-2475, TYPE 2-54" OVERFLOW STRUCTURE
STA 1104+15.47, 44.80'L
RIM=398.00
IE=394.68 (12" DI E OUT)

4" DIA. SLOTTED HDPE PIPE

IE=395.50 35

IE=397.51

GEO6

20LF 18" DI
S=0.50%

25LF 8" DI
S=0.73%

19LF 12" DI
S=0.50%

115LF 12" DI
S=0.52%

J-BOX (X2) 2

CB-2492, EXIST. TYPE 1
STA 1104+16.89, 20.58'L
RIM=398.91
IE=397.69 (8" DI SW OUT) 1 2

7 CB-2480, TYPE 2-48"
STA 1103+75.91, 23.24'LT

25' WETLAND BUFFER ZONE

APPROX. LINER LIMIT

APPROX. LINER LIMIT

APPROX. LINER LIMIT

32LF 18" DI
S=4.42%

CB-2470, TYPE 1
STA 1104+06.58, 28.04'L
RIM=399.27
IE=394.58 (12" EXIST. DI E OUT)
IE=394.58 (12" DI W IN) 1 7

9LF 18" DI
S=0.50%

54LF 18" DI
S=1.66%

CB-2490, TYPE 2-72" CONTROL STRUCTURE
STA 1104+04.92, 35.98'LT 7 15

4" DIA. SLOTTED HDPE PIPE

2 J-BOX

CB-2465, TYPE 2-48"
STA 1103+72.47, 25.53'RT 1 7

23LF 18" DI
S=0.86%

IE=392.36

APPROX. REFUSE LIMIT

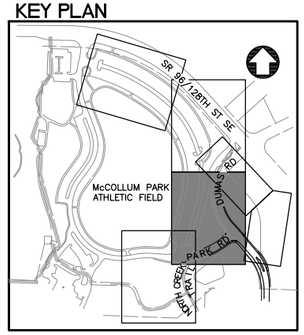
APPROX. REFUSE LIMIT

OFF GASSING LINES ARE SHOWN BASED ON AS-CONSTRUCTED DRAWINGS ONLY AND HAVE NOT BEEN FIELD SURVEYED

MATCHLINE SEE SHEET C4.303

SEE SHEET C4.306 FOR CONTINUATION

KEY PLAN



CONSTRUCTION NOTES

BI E-152: HDPE Liner repair

Sheet total: 6 each

1-31-2023 SMB ✓

8 INSTALL STORM DRAIN PIPE THROUGH CURB PER DETAIL ON SHEET C4.400.

9 INSTALL 2" CONDUIT FOR FUTURE COMMUNICATION CONNECTION. TERMINATE CONDUIT AT EMPTY TYPE 1 UTILITY JUNCTION BOX ADJACENT TO PLATFORM. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.

10 INSTALL CONDUIT TO WITHIN 2' OF EXISTING PUD ELECTRIC JUNCTION BOX WITH 5' OF CABLE COILED. PUD TO COMPLETE CONDUIT INTO JUNCTION BOX, COMPLETE THE CONNECTION AND ENERGIZE THE CIRCUIT.

11 SEE SIGNAL AND ILLUMINATION PLANS FOR PROPOSED IMPROVEMENTS.

12 INSTALL 2" CONDUIT WITH 3#6 CONDUCTORS. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.

13 INSTALL 3" CONDUIT FOR COMMUNICATION CONNECTION. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.

14 INSTALL SCUPPER/DRAINAGE CURB CUT, SEE SHEETS C4.411-C4.412 FOR DETAILS.

15 INSTALL CONTROL STRUCTURE, SEE SHEETS C4.409-C4.410 & C4.427 FOR DETAILS.

16 PAVEMENT RESTORATION LIMITS, SEE C3 SERIES FOR DETAILS.

17 REMOVE AND RELOCATE EXISTING PEDESTRIAN SCALE OR PARKING LOT LIGHT. SEE TS SHEETS.

18 INSTALL STORMWATER TREATMENT FACILITY, SEE DETAILS ON SHEETS C4.408 & C4.422-C4.423.

19 INSTALL DRAINAGE SWALE PER SHEETS C4.412 & C4.427.

20 REMOVE AND RELOCATE HYDRANT AND VALVE PER CITY OF LYNNWOOD DETAIL 5-07.

21 MEDIA FILTER DRAIN PER DETAIL ON SHEET C4.427.

22 INSTALL DETENTION VAULT, SEE SHEET C4.405-C4.406 FOR DETAILS.

23 RELOCATE EXISTING WATER MAIN PER DETAIL ON SHEET C4.603

24 INSTALL OUTLET PROTECTION, SEE SHEET C4.427.

25 CLEAN & VACTOR EXISTING DRAINAGE STRUCTURE.

26 INSTALL CONCRETE RUNNEL, SEE SHEET C4.412.

27 INSTALL GRATED TRENCH DRAIN PER DETAIL ON SHEET C4.411.

28 INSTALL ELECTRICAL PUD METERING UNIT.

29 INSTALL 3" CONDUIT WITH 3#6 CONDUCTORS (STATION SERVICE), AND 4-2/0 CONDUCTORS (RESTROOM SERVICE). SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.

30 INSTALL 2" WATER SERVICE CONNECTION.

31 INSTALL SANITARY SEWER CLEAN OUT.

32 INSTALL 6" SANITARY SEWER SERVICE.

33 INSTALL 12" SANITARY SEWER MAIN PER SLWSD DETAIL VI-S1.

34 INSTALL SANITARY SEWER MANHOLE.

35 INSTALL DEBRIS BARRIER, SEE SHEET C4.411.

36 INSTALL 2" CONDUIT WITH 4#2 CONDUCTORS FOR OFFGASSING POWER SERVICE.

37 INSTALL BACKFLOW ASSEMBLY PER SLWSD DETAIL VI-W19.

38 INSTALL 1-1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5-02.

GENERAL NOTES

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- DRAINAGE SWALE
- UD — UNDERDRAIN
- RETAINING WALL

20 0 20 40
SCALE IN FEET

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NO.	REVISION COMM	DESIGNER	DATE	BY

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

11/4/21

communitytransit
Swift ORANGE LINE - 100% SUBMITTAL
TERMINI UTILITY PLANS
EASTERN TERMINUS - MCCOLLUM PARK P&R
(STATION # EB 3223 & WB 3224)

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32880.H
PROJECT NUMBER

C4.302
DRAWING NO.

SHEET 253 OF 622

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FNR 528
Page 2 of 2

C4.305 FOR CONTINUATION

A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

BI E-152: HDPE Liner Repair

Sheet total: 5 each

9-22-2023 SMB ✓

28053000302400

MCCOLLUM PARK ATHLETIC FIELD

MCCOLLUM PARK PARK AND RIDE

CB-2440, CONC. INLET
STA 1002+07.34, 109.87'LT

149LF 8" DI
S=1.74%

CB-2340, CONC. INLET
STA 1003+34.76, 110.39'LT

92LF 8" DI
S=0.50%

CB-2320, TYPE 1
STA 1001+69.58, 23.92'LT

CB-2330, TYPE 1
STA 1002+99.81, 23.92'LT

138LF 12" DI
S=0.50%

48LF 12" DI
S=0.79%

130LF 12" DI
S=0.50%

20LF 12" DI
S=6.17%

CB-2410, TYPE 1
1000+79.84, 21.14'RT

1 ea

1 ea

1 ea

1 ea

GEO1

GEO2

GEO3

GEO4

GEO5

GEO6

GEO7

GEO8

GEO_09

APPROX. LINER LIMIT

CONSTRUCTION GRIDLINE

TYPICAL ISOLATION VAULT AND SUMP

PARK RD

DUMAS RD

INSTALL VALLEY GRATE PER DETAIL ON SHEET C4.400

34LF 12" DI
S=0.50%

IE=395.50

IE=398.03

CB-2310, TYPE 1
STA 1001+69.58, 23.92'RT

CB-2450, TYPE 1
STA 1000+34.08, 45.68'RT

CB-2475, TYPE 2-54" OVERFLOW STRUCTURE
STA 1104+15.47, 44.80'L
RIM=398.00
IE=3 E OUT)

4" DIA. SLOTTED HDPE PIPE

IE=395.50

1 ea

Temporary terminations paid under bid item

20LF 18" DI
S=0.50%

25LF 8" DI
S=0.73%

19LF 12" DI
S=0.50%

J-BOX (X2)

CB-2480, TYPE 2-48"
STA 1103+75.91, 23.24'LT

CB-2492, EXIST. TYPE 1
STA 1104+16.89, 20.58'L
RIM=398.91
IE=397.69 (8" DI SW OUT)

CB-2335, CONC. INLET
STA 1002+99.65, 23.40'RT

CB-2470, TYPE 1
STA 1104+06.58, 28.04'L
RIM=399.27
IE=394.58 (12" EXIST. DI E OUT)
IE=394.58 (12" DI W IN)

CB-2490, TYPE 2-72" CONTROL STRUCTURE
STA 1104+04.92, 35.98'LT

CB-2465, TYPE 2-48"
STA 1103+72.47, 25.53'RT

32LF 18" DI
S=4.42%

9LF 18" DI
S=0.50%

54LF 18" DI
S=1.66%

23LF 18" DI
S=0.86%

IE=392.36

MANIFOLD VAULT

VENT PIPES

RELOCATE OFF-GASSING VAULT AND MANIFOLD VAULT. SEE SPECIFICATIONS FOR DETAILS

47LF 8" DI
S=0.50%

PREVIOUSLY ABANDONED WATER LINE

SNOCO PUD TRANSFORMER

POWER FOR OFFGASSING

OFFGASSING POWER J-BOX

CONSTRUCTION GRIDLINE

APPROX. LINER LIMIT

OFF GASSING LINES ARE SHOWN BASED ON AS-CONSTRUCTED DRAWINGS ONLY AND HAVE NOT BEEN FIELD SURVEYED

APPROX. REFUSE LIMIT

25' WETLAND BUFFER ZONE

R/W

MATCHLINE SEE SHEET C4.303

SEE SHEET C4.306 FOR CONTINUATION

CONSTRUCTION NOTES

8. OUTLET 3" STORM DRAIN PIPE THROUGH CURB PER DETAIL ON SHEET C4.400.
9. INSTALL 2" CONDUIT FOR FUTURE COMMUNICATION CONNECTION. TERMINATE CONDUIT AT EMPTY TYPE 1 UTILITY JUNCTION BOX ADJACENT TO PLATFORM. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
10. INSTALL CONDUIT TO WITHIN 2' OF EXISTING PUD ELECTRIC JUNCTION BOX WITH 5' OF CABLE COILED. PUD TO COMPLETE CONDUIT INTO JUNCTION BOX, COMPLETE THE CONNECTION AND ENERGIZE THE CIRCUIT.
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12. INSTALL 2" CONDUIT WITH 3#6 CONDUCTORS. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
13. INSTALL 3" CONDUIT FOR COMMUNICATION CONNECTION. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
14. INSTALL SCUPPER/DRAINAGE CURB CUT, SEE SHEETS C4.411–C4.412 FOR DETAILS.
15. INSTALL CONTROL STRUCTURE, SEE SHEETS C4.409–C4.410 & C4.427 FOR DETAILS.
16. PAVEMENT RESTORATION LIMITS, SEE C3 SERIES FOR DETAILS.
17. REMOVE AND RELOCATE EXISTING PEDESTRIAN SCALE OR PARKING LOT LIGHT. SEE TS SHEETS.
18. INSTALL STORMWATER TREATMENT FACILITY, SEE DETAILS ON SHEETS C4.408 & C4.422–C4.423.
19. INSTALL DRAINAGE SWALE PER SHEETS C4.412 & C4.427.
20. REMOVE AND RELOCATE HYDRANT AND VALVE PER CITY OF LYNNWOOD DETAIL 5–07.
21. MEDIA FILTER DRAIN PER DETAIL ON SHEET C4.427.
22. INSTALL DETENTION VAULT, SEE SHEET C4.405–C4.406 FOR DETAILS.
23. RELOCATE EXISTING WATER MAIN PER DETAIL ON SHEET C4.603
24. INSTALL OUTLET PROTECTION, SEE SHEET C4.427.
25. CLEAN & VACTOR EXISTING DRAINAGE STRUCTURE.
26. INSTALL CONCRETE RUNNEL, SEE SHEET C4.412.
27. INSTALL GRATED TRENCH DRAIN PER DETAIL ON SHEET C4.411.
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37. INSTALL BACKFLOW ASSEMBLY PER SLWSD DETAIL VI–W19.
38. INSTALL 1–1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5–02.

GENERAL NOTES

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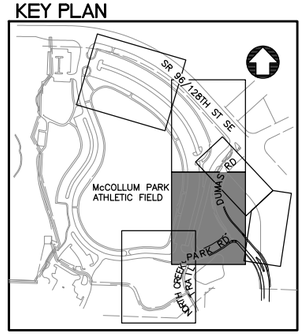
- DRAINAGE SWALE
- UD — UNDERDRAIN
- RETAINING WALL

20 0 20 40
SCALE IN FEET

KEY PLAN



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DESIGNER | DRAWN | NO. | REVISION COMMENTS | DATE

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

11/4/21

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Swift ORANGE LINE – 100% SUBMITTAL

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EASTERN TERMINUS - MCCOLLUM PARK P&R
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32880.H
PROJECT NUMBER

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SHEET 253 OF 622

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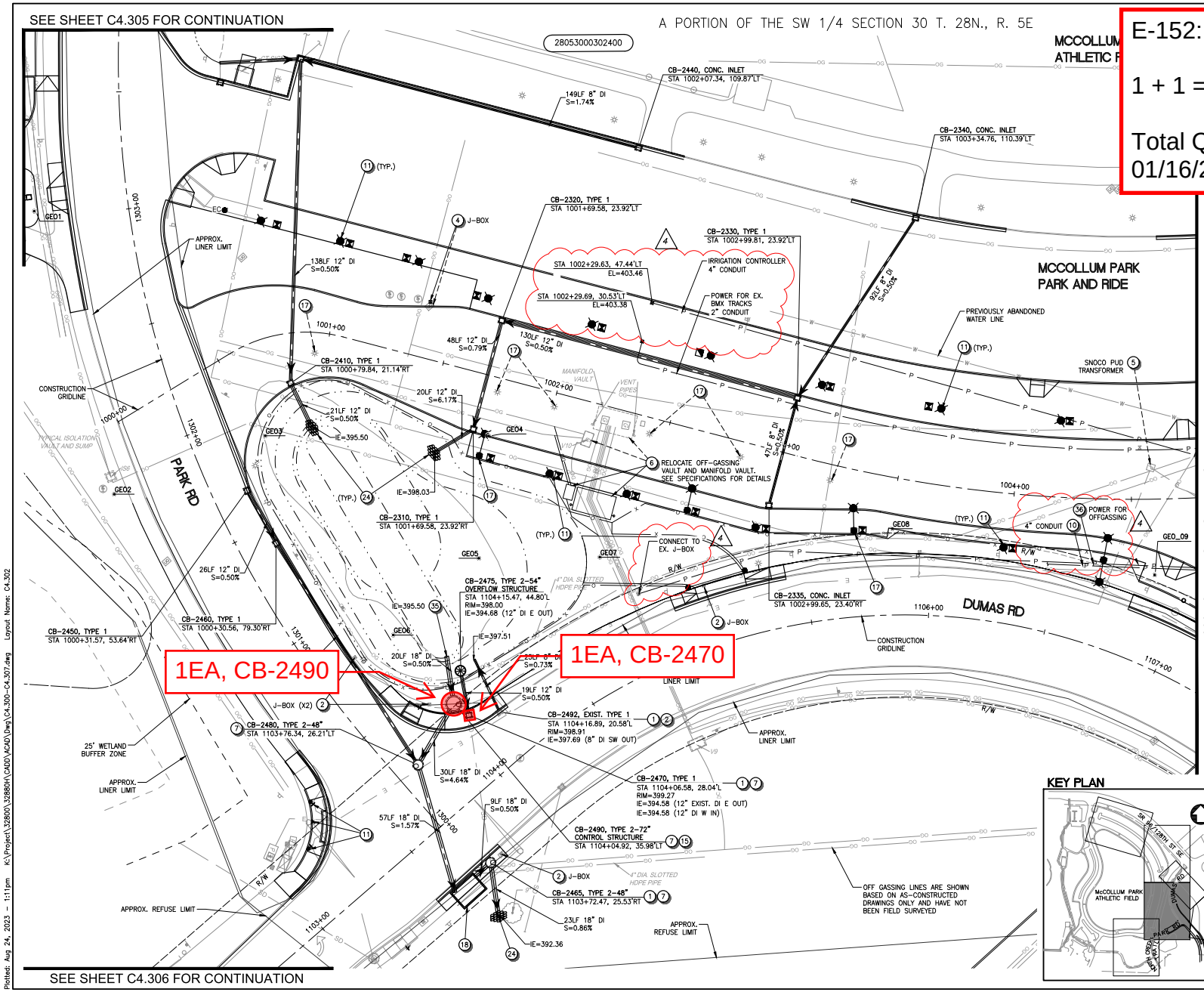
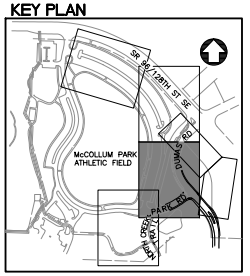
E-152: HDPE Liner Repair

1 + 1 = 2 EA

Total Qty: 2 EA
01/16/2024 JR ✓





TO COMPLETE CONDUIT INTO JUNCTION BOX. COMPLETE THE CONNECTION AND ENERGIZE THE CIRCUIT.

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36. INSTALL 2" CONDUIT WITH 4#2 CONDUCTORS FOR OFFGASSING POWER SERVICE.
37. INSTALL WASHINGTON STATE APPROVED 2" BACKFLOW ASSEMBLY IN RESTROOM MECHANICAL ROOM.
38. INSTALL 1–1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5–02.

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Plotted: Aug 24, 2023 – 1:11pm K:\Project\32880\32880H\CADD\ACAD\Dwg\C4.300–C4.307.dwg Layout Name: C4.302

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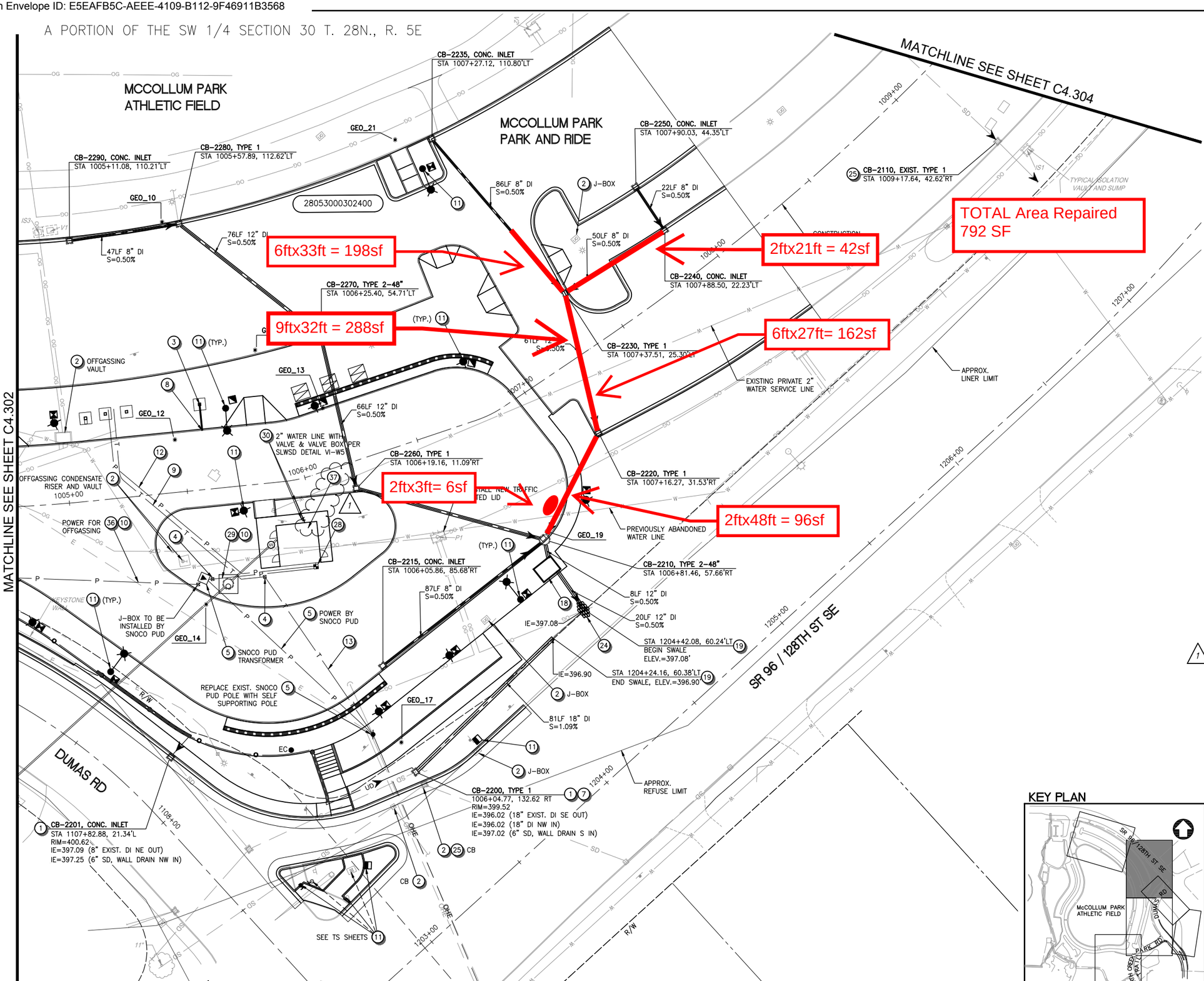

CONSTRUCTION NOTES

1. CONNECT TO EXISTING DRAINAGE STRUCTURE.
2. ADJUST EXISTING UTILITY TO FINISH GRADE.
3. CONNECT STORM DRAINAGE TO STUB AT STATION COLUMN. SEE SHEET C4.400 FOR DETAILS.
4. INSTALL TYPE 1 UTILITY JUNCTION BOX PER WSDOT STD PLAN J-40.10-04.
5. EXISTING UTILITY TO BE RELOCATED BY OTHERS.
6. RELOCATE EXISTING UTILITY.
7. INSTALL SOLID LOCKING LID PER WSDOT STD PLAN B-30.20-04.
8. OUTLET 3" STORM DRAIN PIPE THROUGH CURB PER DETAIL ON SHEET C4.400.
9. INSTALL 2" CONDUIT FOR FUTURE COMMUNICATION CONNECTION. TERMINATE CONDUIT AT EMPTY TYPE 1 UTILITY JUNCTION BOX ADJACENT TO PLATFORM. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
10. INSTALL CONDUIT TO WITHIN 2' OF EXISTING PUD ELECTRIC JUNCTION BOX WITH 5' OF CABLE COILED. PUD TO COMPLETE CONDUIT INTO JUNCTION BOX. COMPLETE THE CONNECTION AND ENERGIZE THE CIRCUIT.
11. SEE SIGNAL AND ILLUMINATION PLANS FOR PROPOSED IMPROVEMENTS.
12. INSTALL 2" CONDUIT WITH 3#6 CONDUCTORS. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
13. INSTALL 3" CONDUIT FOR COMMUNICATION CONNECTION. SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
14. INSTALL SCUPPER/DRAINAGE CURB CUT, SEE SHEETS C4.411-C4.412 FOR DETAILS.
15. INSTALL CONTROL STRUCTURE, SEE SHEETS C4.409-C4.410 & C4.427 FOR DETAILS.
16. PAVEMENT RESTORATION LIMITS, SEE C3 SERIES FOR DETAILS.
17. REMOVE AND RELOCATE EXISTING PEDESTRIAN SCALE OR PARKING LOT LIGHT. SEE TS SHEETS.
18. INSTALL STORMWATER TREATMENT FACILITY, SEE DETAILS ON SHEETS C4.408 & C4.422-C4.423.
19. INSTALL DRAINAGE SWALE PER SHEETS C4.412 & C4.427.
20. REMOVE AND RELOCATE HYDRANT AND VALVE PER CITY OF LYNNWOOD DETAIL 5-07.
21. MEDIA FILTER DRAIN PER DETAIL ON SHEET C4.427.
22. INSTALL DETENTION VAULT, SEE SHEET C4.405-C4.406 FOR DETAILS.
23. RELOCATE EXISTING WATER MAIN PER DETAIL ON SHEET C4.603
24. INSTALL OUTLET PROTECTION, SEE SHEET C4.427.
25. CLEAN & VACTOR EXISTING DRAINAGE STRUCTURE.
26. INSTALL CONCRETE RUNNEL, SEE SHEET C4.412.
27. INSTALL GRATED TRENCH DRAIN PER DETAIL ON SHEET C4.411.
28. INSTALL ELECTRICAL PUD METERING UNIT.
29. INSTALL 3" CONDUIT WITH 3#6 CONDUCTORS (STATION SERVICE), AND 4-2/0 CONDUCTORS (RESTROOM SERVICE). SEE SHEET C4.400 FOR UTILITY TRENCH DETAILS.
30. INSTALL 2" WATER SERVICE CONNECTION.
31. INSTALL SANITARY SEWER CLEAN OUT.
32. INSTALL 6" SANITARY SEWER SERVICE.
33. INSTALL 12" SANITARY SEWER MAIN PER SLWSD DETAIL VI-S1.
34. INSTALL SANITARY SEWER MANHOLE.
35. INSTALL DEBRIS BARRIER, SEE SHEET C4.411.
36. INSTALL 2" CONDUIT WITH 4#2 CONDUCTORS FOR OFFGASSING POWER SERVICE.
37. INSTALL WASHINGTON STATE APPROVED 2" BACKFLOW ASSEMBLY IN RESTROOM MECHANICAL ROOM.
38. INSTALL 1-1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5-02.

GENERAL NOTES

1. ALL PROPOSED STORM & SEWER PIPE SLOPES, TYPES & STRUCTURE IES NOT CALLED OUT IN C4.3 SERIES ARE SHOWN IN PROFILE VIEW ON C4.5 & C4.6 SERIES PLANS.

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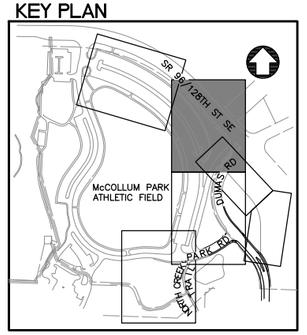
20 0 20 40
SCALE IN FEET

CALL BEFORE YOU DIG 1-800-424-5555

KEY PLAN



NO.	REVISION COMMENTS	BY	DATE
1	REV 1 - SLWSD BACKFLOW ASSEMBLY	MHB	01/11/22

DESIGNER — DRAWN BY — CHECKED BY: KK

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

1/11/22

community transit
Swift ORANGE LINE - 100% SUBMITTAL
TERMINI UTILITY PLANS
EASTERN TERMINUS - MCCOLLUM PARK P&R
(STATION # EB 3223 & WB 3224)

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425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C4.303
DRAWING NO.

SHEET 254 OF 622

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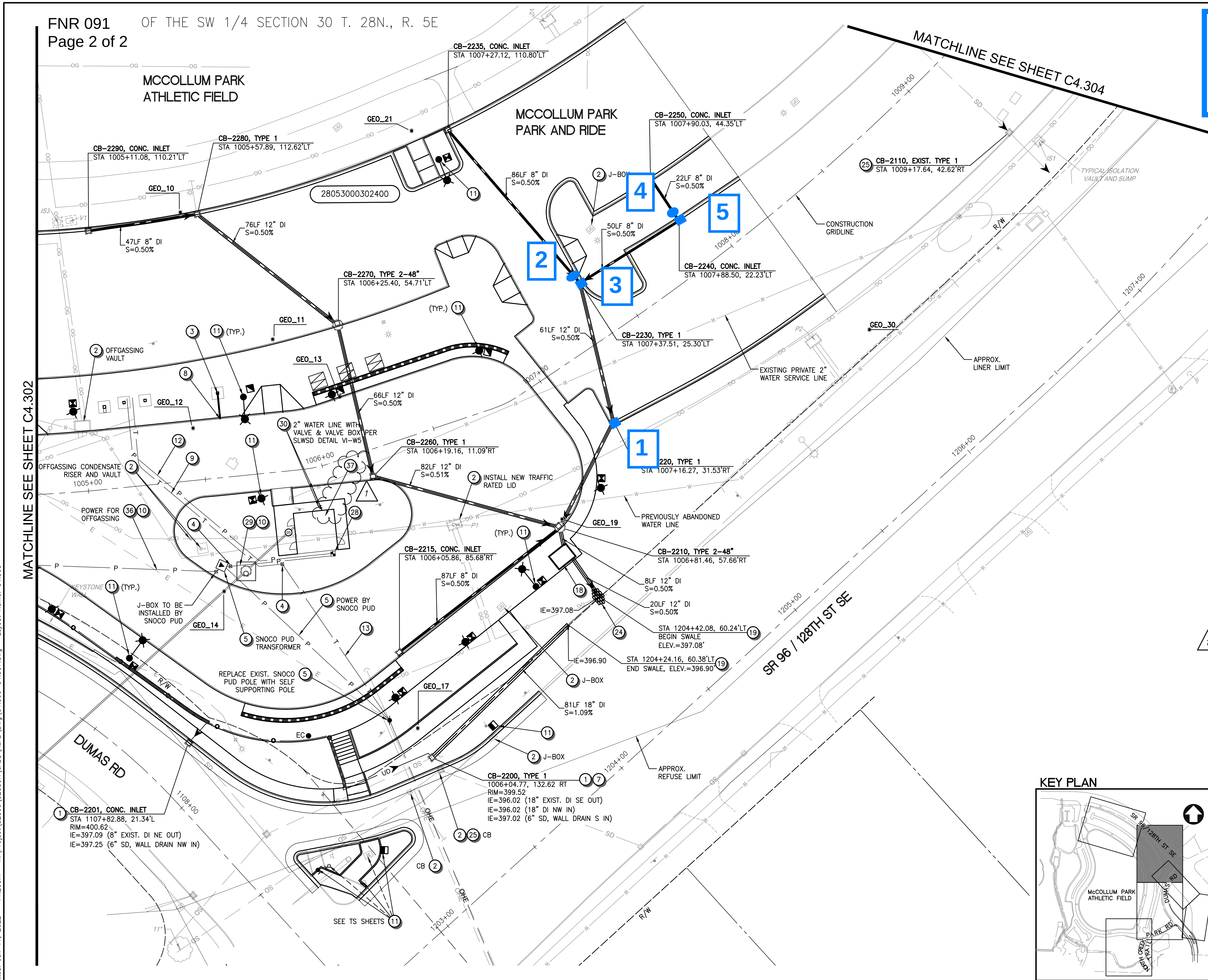
FNR 091
Page 2 of 2

BI E-152 HDPE Liner Repair

Sheet Total: 5 each

9-30-2022 SMB ✓



CONSTRUCTION NOTES

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DRAINAGE SWALE
UD — UNDERDRAIN
RETAINING WALL

SCALE IN FEET: 20 0 20 40

CALL BEFORE YOU DIG 1-800-424-5555

NO. | REVISION COMMENT | DESIGNER | DRAWN
REV 1 - SLWSD BACKFLOW ASSEMBLY

KEVIN C. KRAXBERGER, STATE OF WASHINGTON, 39870 REGISTERED PROFESSIONAL ENGINEER
1/11/22

communitytransit
Swift ORANGE LINE - 100% SUBMITTAL
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425.822.4446
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32880.H
PROJECT NUMBER

C4.303
DRAWING NO.
SHEET 254 OF 622

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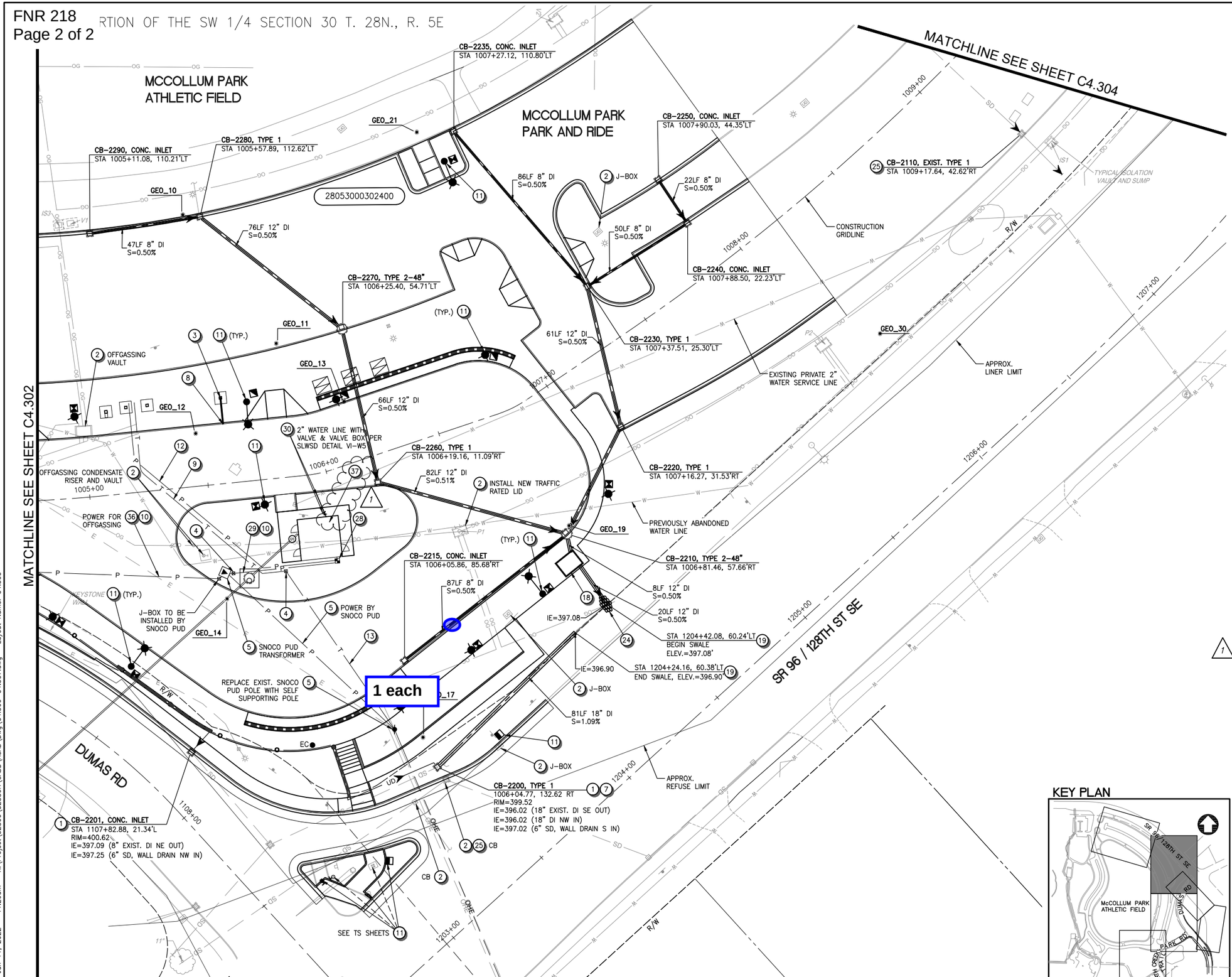
RTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

BI E-152 HDPE Liner Repair

Sheet Total: 1 each

2-01-2023 SMB ✓



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- RETAINING WALL

20 0 20 40
SCALE IN FEET

KEY PLAN

CALL BEFORE YOU DIG 1–800–424–5555

NO.	REVISION	DESIGNER	
1	REV 1 – SLWSD BACKFLOW		

KEVIN C. KRAJEWSKI — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER
1/11/22

communitytransit
Swift ORANGE LINE – 100% SUBMITTAL
TERMINI UTILITY PLANS
EASTERN TERMINUS - MCCOLLUM PARK P&R
(STATION # EB 3223 & WB 3224)

TITLE

Otak
11241 Willows Road NE, Suite 200
Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C4.303
DRAWING NO.

SHEET 254 OF 622

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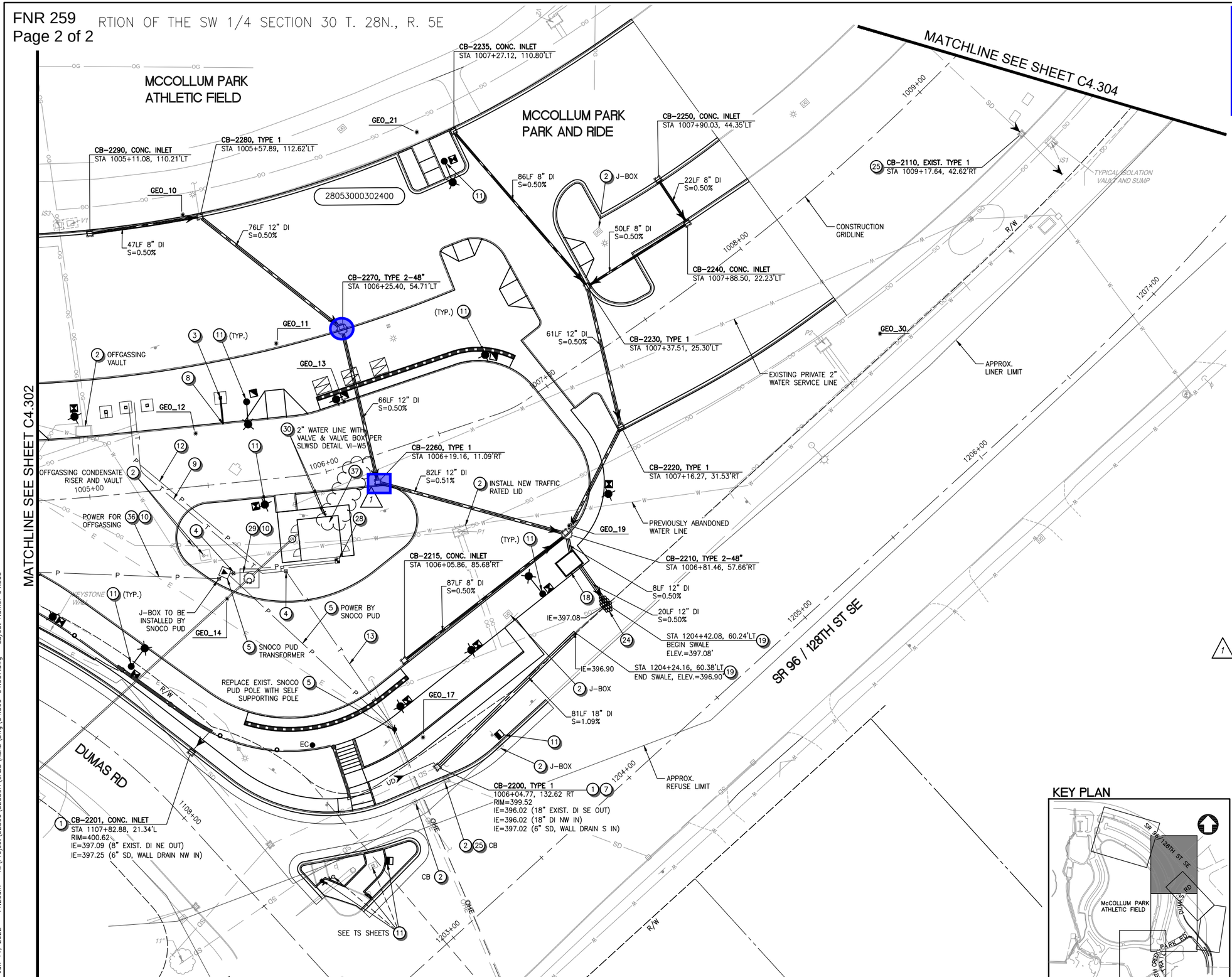
RTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E

BI E-152: HDPE Liner Repair

Sheet Total: 2 each

3-17-2023 SMB ✓



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E-152 HDPE Liner Repair

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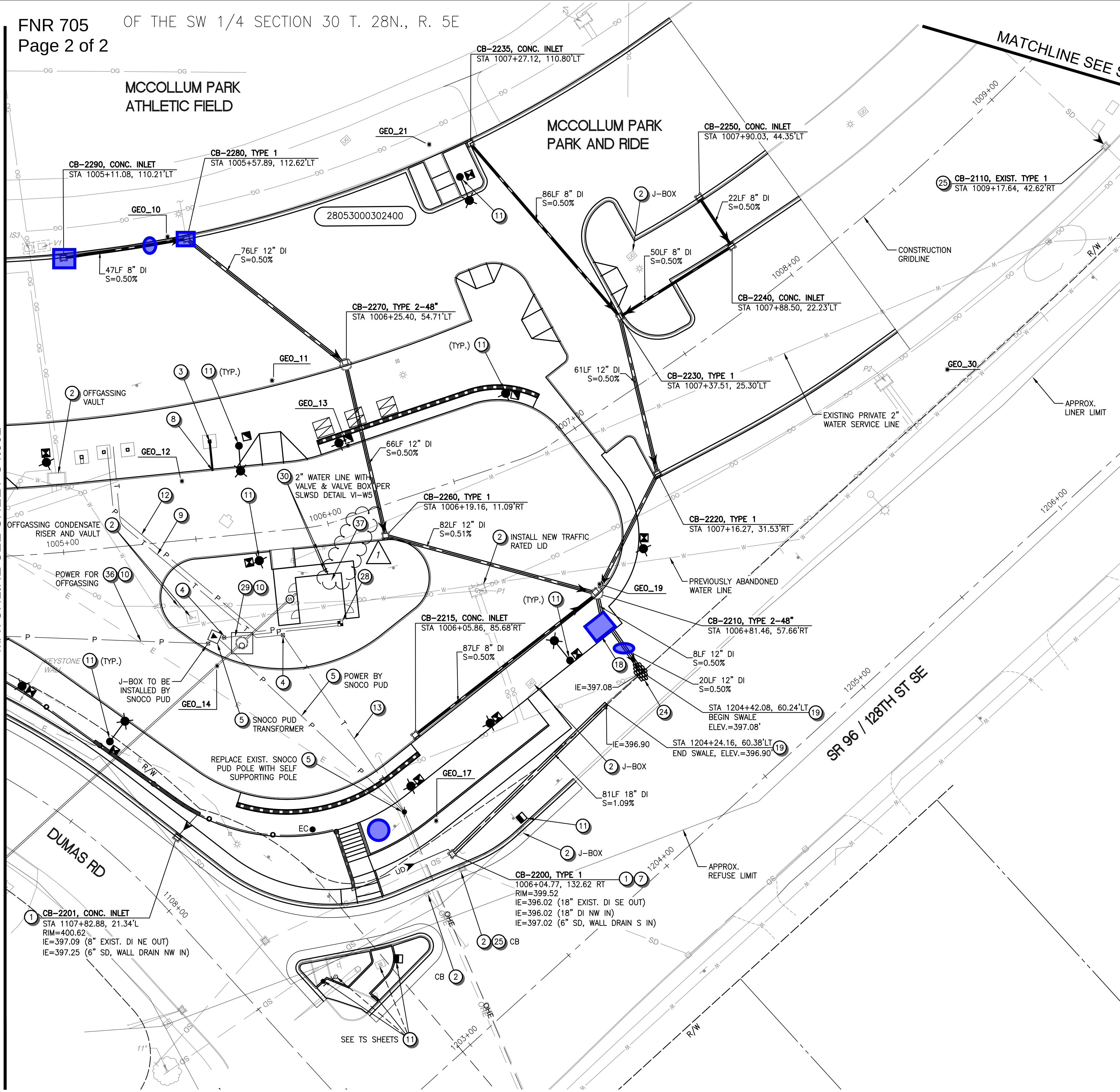

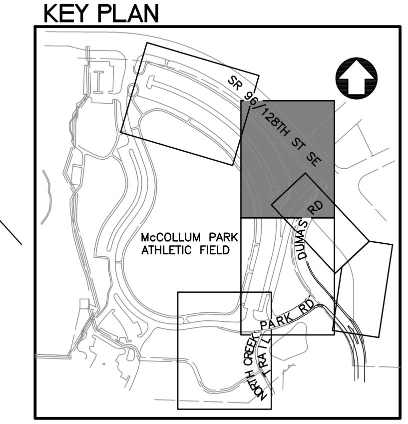

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36. INSTALL 2" CONDUIT WITH 4#2 CONDUCTORS FOR OFFGASSING POWER SERVICE.
37. INSTALL WASHINGTON STATE APPROVED 2" BACKFLOW ASSEMBLY IN RESTROOM MECHANICAL ROOM.
38. INSTALL 1-1/2" IRRIGATION WATER SERVICE CONNECTION PER CITY OF LYNNWOOD STD PLAN 5-02.

GENERAL NOTES

1. ALL PROPOSED STORM & SEWER PIPE SLOPES, TYPES & STRUCTURE IES NOT CALLED OUT IN C4.3 SERIES ARE SHOWN IN PROFILE VIEW ON C4.5 & C4.6 SERIES PLANS.

LEGEND

- EXISTING R/W
- R/W EASEMENT
- PROPERTY LINE
- PERMANENT EASEMENT
- UTILITY EASEMENT
- TCE — TEMPORARY CONSTRUCTION EASEMENT
- P — POWER
- T — COMMUNICATION
- W — WATER
- OG — OFFGASSING LINE
- GEO_XX — EXPLORATION POINT (SEE GEOTECHNICAL REPORT FOR DATA)
- DRAINAGE SWALE
- UD — UNDERDRAIN
- RETAINING WALL

20 0 20 40
SCALE IN FEET

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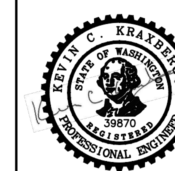
NO.	REVISION COMMENTS	DESIGNER	DRAWN
1	REV 1 – SLWSD BACKFLOW ASSEMBLY		



1/11/22

communitytransit
Swift ORANGE LINE – 100% SUBMITTAL
TERMINI UTILITY PLANS
EASTERN TERMINUS - MCCOLLUM PARK P&R
(STATION # EB 3223 & WB 3224)

TITLE

Otak

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Redmond, WA 98052
425.822.4446
www.otak.com

32880.H
PROJECT NUMBER

C4.303
DRAWING NO.

SHEET 254 OF 622

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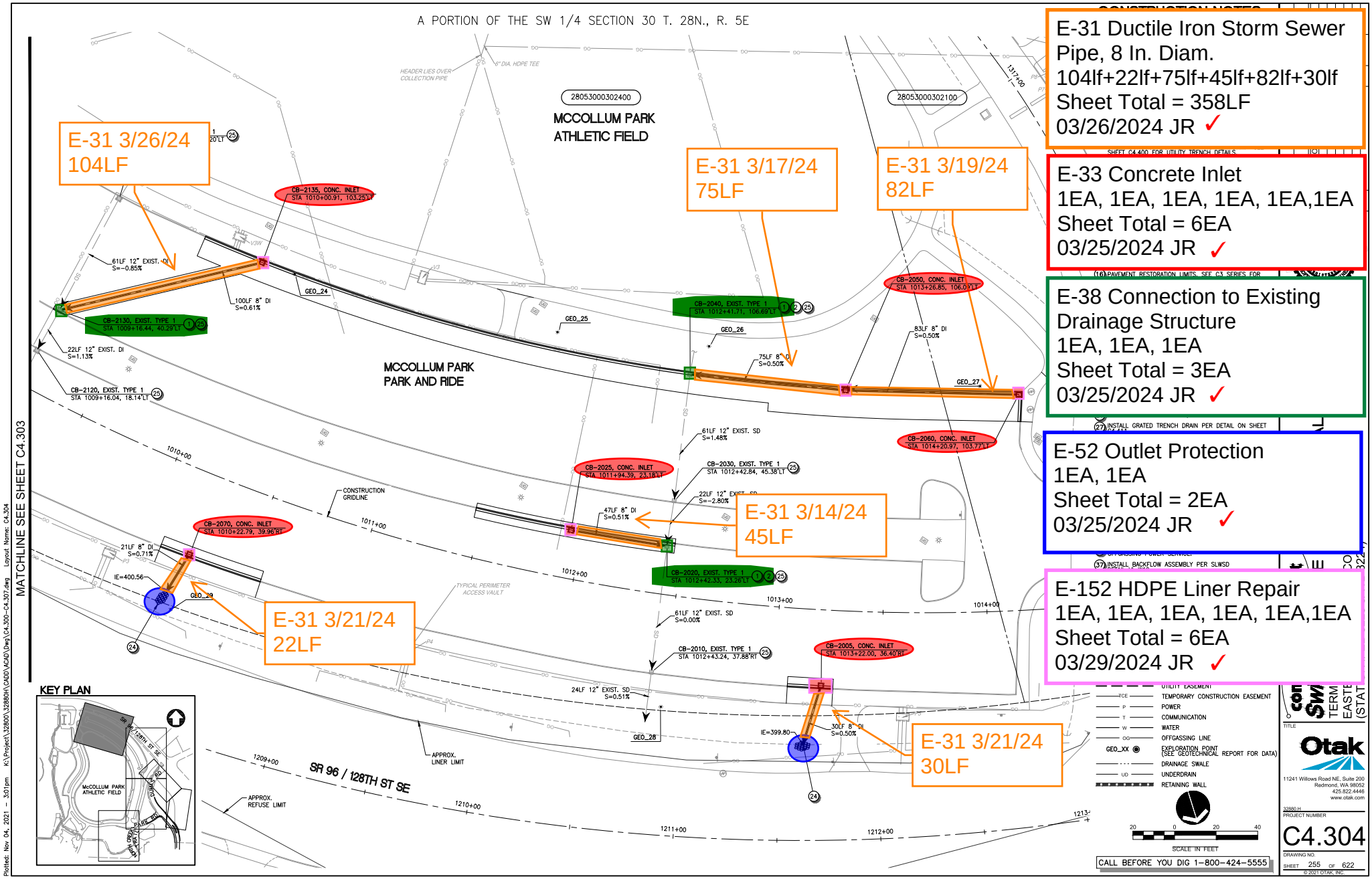
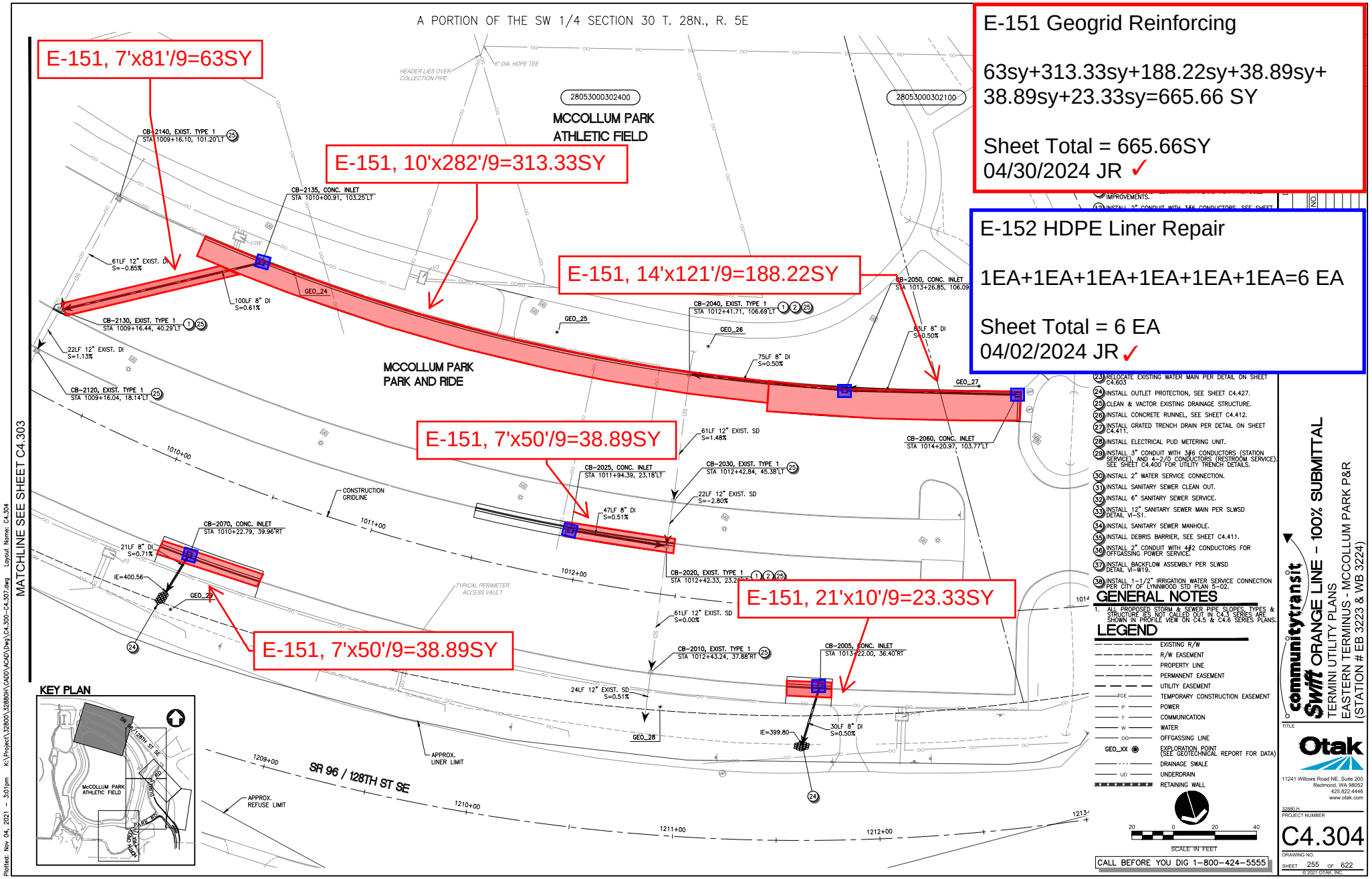
Plotted: Jan 11, 2022 – 11:20am   K:\Project\32800\32880H\CADD\ACAD\Dwg\C4.300-C4.307.dwg   Layout Name: C4.303


A PORTION OF THE SW 1/4 SECTION 30 T. 28N., R. 5E
MATCHLINE SEE SHEET C4.303
MCCOLLUM PARK ATHLETIC FIELD
MCCOLLUM PARK PARK AND RIDE
SR 96 / 128TH ST SE
E-31 3/26/24 104LF
E-31 3/17/24 75LF
E-31 3/19/24 82LF
E-31 3/14/24 45LF
E-31 3/21/24 22LF
E-31 3/21/24 30LF
E-31 Ductile Iron Storm Sewer Pipe, 8 In. Diam.
104lf+22lf+75lf+45lf+82lf+30lf
Sheet Total = 358LF
03/26/2024 JR ✓
E-33 Concrete Inlet
1EA, 1EA, 1EA, 1EA, 1EA,1EA
Sheet Total = 6EA
03/25/2024 JR ✓
E-38 Connection to Existing Drainage Structure
1EA, 1EA, 1EA
Sheet Total = 3EA
03/25/2024 JR ✓
E-52 Outlet Protection
1EA, 1EA
Sheet Total = 2EA
03/25/2024 JR ✓
E-152 HDPE Liner Repair
1EA, 1EA, 1EA, 1EA, 1EA,1EA
Sheet Total = 6EA
03/29/2024 JR ✓
KEY PLAN
SCALE IN FEET
CALL BEFORE YOU DIG 1-800-424-5555
Otak
C4.304



E-151 Geogrid Reinforcing

63sy+313.33sy+188.22sy+38.89sy+
38.89sy+23.33sy=665.66 SY

Sheet Total = 665.66SY
04/30/2024 JR ✓

E-152 HDPE Liner Repair

1EA+1EA+1EA+1EA+1EA+1EA=6 EA

Sheet Total = 6 EA
04/02/2024 JR ✓

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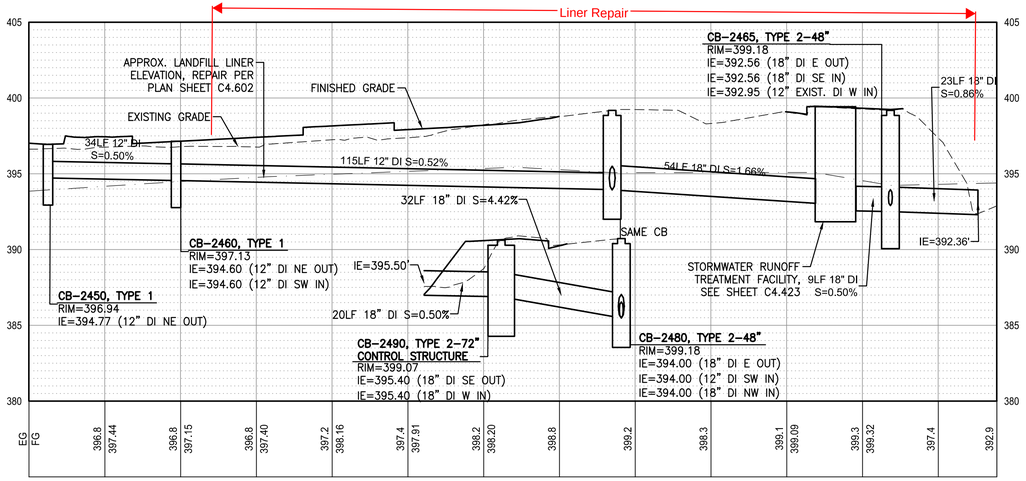
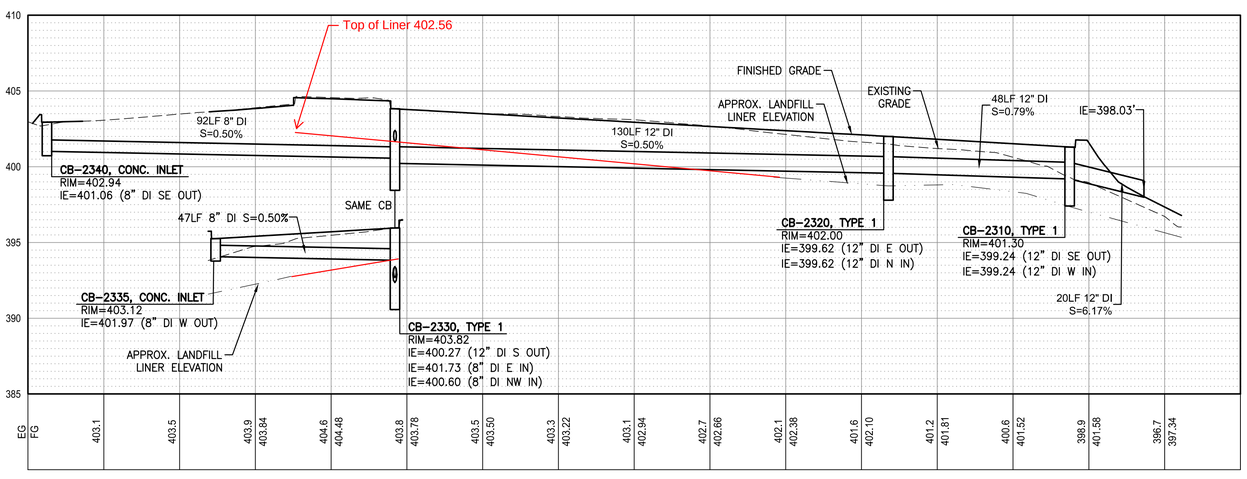


CB-2450 TO NORTH OUTFALL

NOT TO SCALE



CB-2340 TO POND

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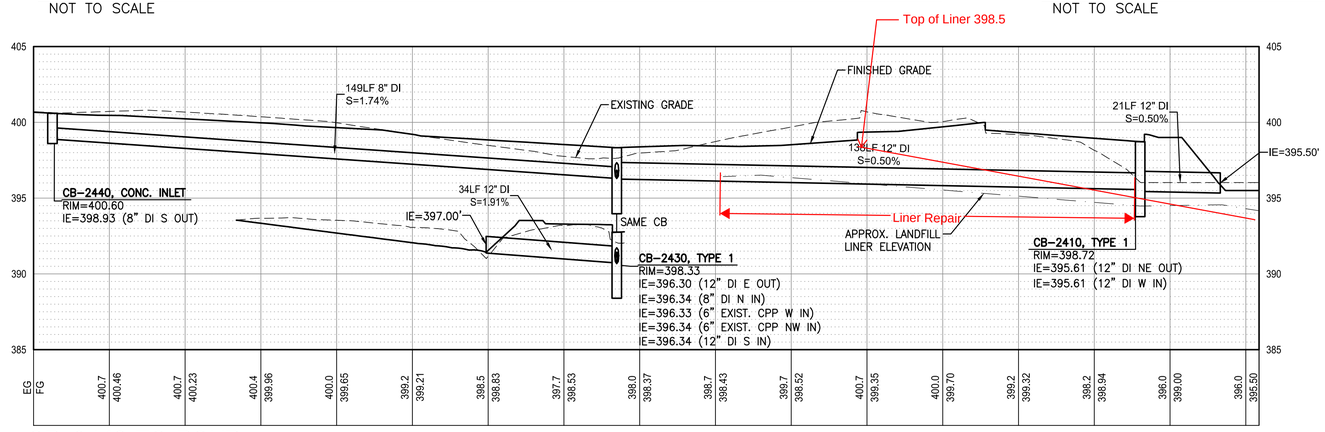

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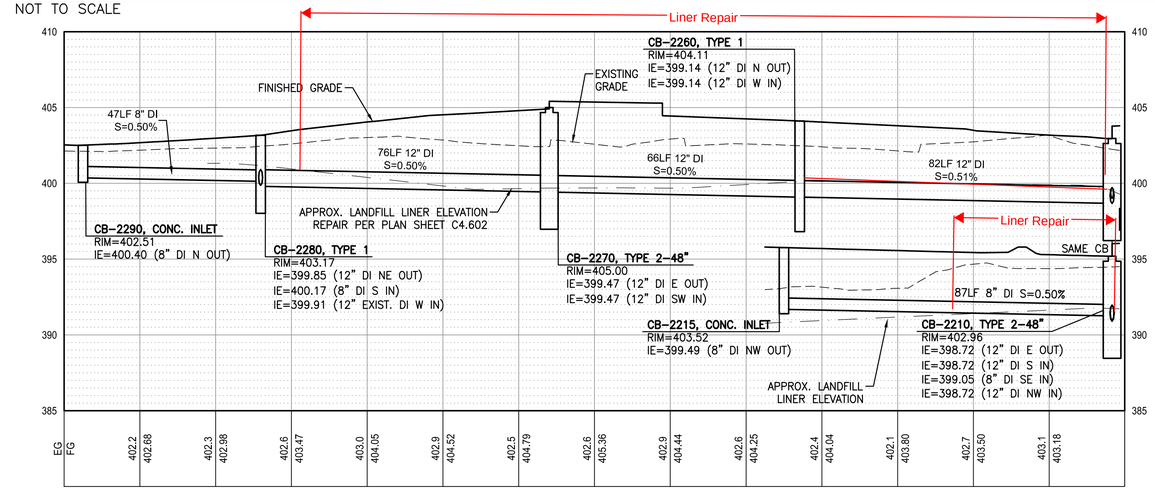

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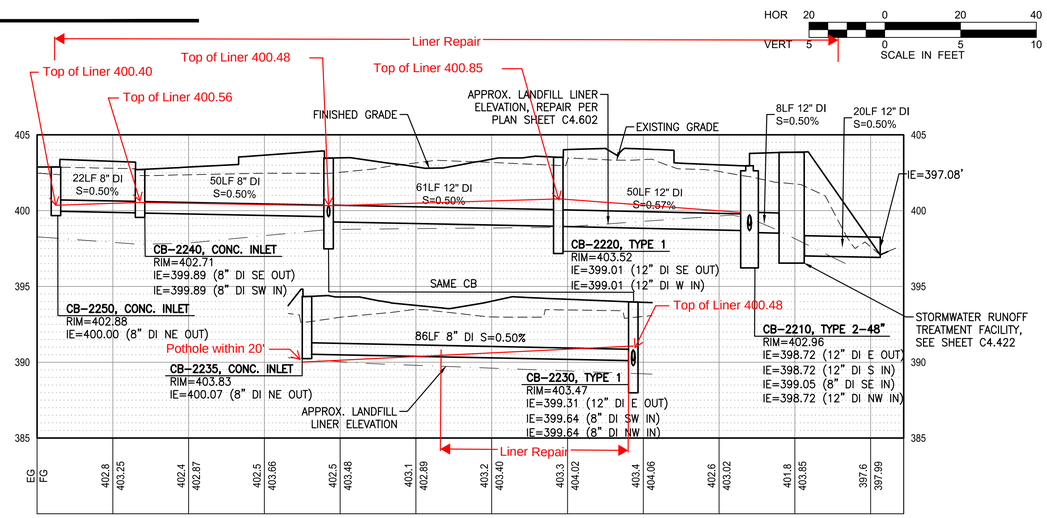
NOT TO SCALE



CB-2250 TO SOUTH OUTFALL

NOT TO SCALE

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NO.	REVISION COMMENTS	BY	REVIEW	DATE

DESIGNER | DRAWN BY | CHECKED BY

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER
10/27/21

JASON D. HOUNSELL — STATE OF WASHINGTON — 46957 — REGISTERED PROFESSIONAL ENGINEER
10/27/21

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Swift ORANGE LINE – 100% SUBMITTAL

STORM DRAIN PROFILES
EASTERN TERMINUS-MCCOLLUM PARK P&R
(STATION # EB3223 & WB 3224)

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PROJECT NUMBER

C4.504
DRAWING NO.

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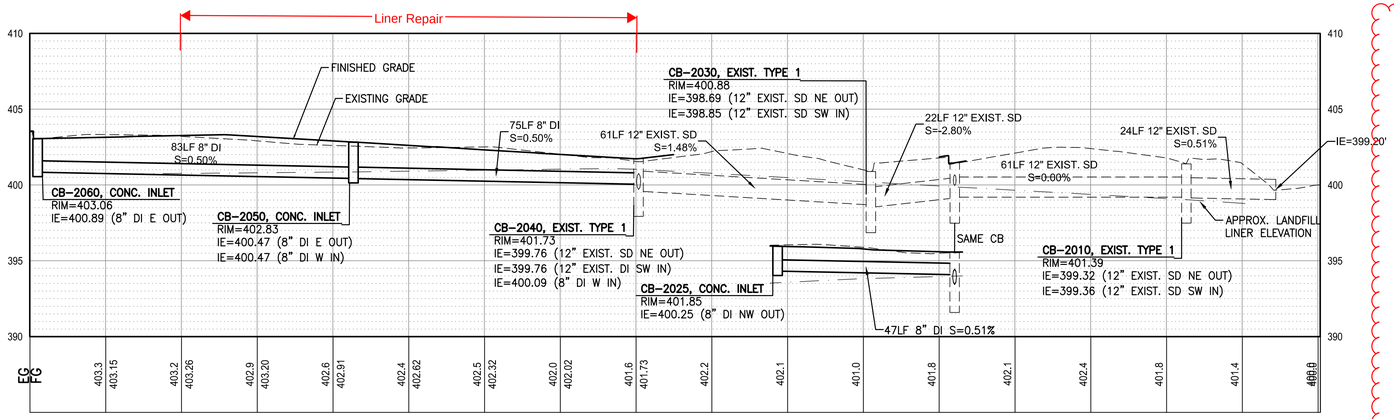


CB-2060 TO EXISTING EAST OUTFALL

NOT TO SCALE

CB-2140 TO MIDDLE OUTFALL

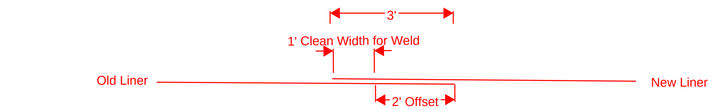
NOT TO SCALE

CB-2070 TO OUTFALL

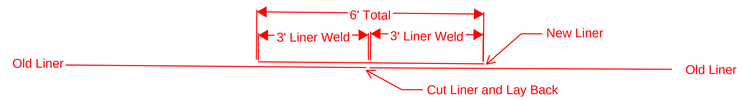
NOT TO SCALE

CB-2005 TO OUTFALL

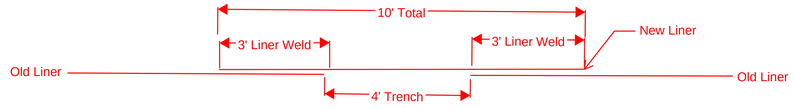
NOT TO SCALE



Liner Weld Detail



CUT LINER DETAIL



TRENCH LINER DETAIL

NO.	REVISION COMMENTS	BY	REVIEW	DATE

DESIGNER

DRAWN BY

CHECKED BY

KEVIN C. KRAXBERGER — STATE OF WASHINGTON — 39870 — REGISTERED PROFESSIONAL ENGINEER

10/15/21

LYNN D. HOLSEN — STATE OF WASHINGTON — 46957 — REGISTERED PROFESSIONAL ENGINEER

10/15/21

TITLE

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