VIA ELECTRONIC MAIL

February 21, 2025

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Subject: Response to Comments – Remedial Action Work Plan Addendum 1
Former Emerson Power Transmission Facility, Ithaca, New York

Dear Karen:

WSP USA Inc. (WSP), on behalf of Emerson Electric Co., has prepared this letter to respond to the comments provided by the New York State Department of Environmental Conservation (NYSDEC) regarding the Remedial Action Work Plan Addendum 1 (RAWP; dated August 5, 2024) for the Former Emerson Power Transmission Facility in Ithaca, New York. Each comment is reproduced in its entirety followed by WSP's response in bold formatted text.

1 Section 4.1.1 Weir Box Drainage Structure: This section states that flow from the Weir Box Seeps, Open Ditch 2, former Outfall 004, and former Outfall 005 will be temporarily rerouted and bypassed around the work area to the Open Ditch 1 bypass or the lower wooden sluice throughout the work activities. Given that the work is expected to take several months, the diversion discharge must be sampled in accordance with the analytes and discharge limits specified for Outfall 001 per the SPDES Permit Equivalent.

The bypassed flows, either collectively or separately based on the bypass configuration constructed, will be sampled for the same paramaters and on the same frequency required under the SPDES Permit Equivalent.

2 Section 5.2 Retaining Wall Sump Rerouting Design: Paragraph 9 states that the infiltration gallery will be sized to allow 24 hours of capacity in the event of a pump failure. The pump station must be equipped with a high-level alarm integrated with DPE system control panel such that pump repairs can be made expeditiously to avoid lengthy discharge to the bedrock surface. This modification must be included in the work plan. Additionally, revisions to the Operation and Maintenance Plan must include routine cleanout of the sump and its components in order to avoid fouling.

WSP plans to have the selected contractor's electrician evaluate alternatives for wireless high level controls with remote notification in lieu of hard-wiring a sensor to the system control panel; however, WSP believes that this additional control may not be warranted because the water discharging to the retaining wall sump does not currently exceed applicable groundwater standards. As summarized in Table 1 of the RAWP Addendum 1, the results of eight monthly samples (September 2023 through April 2024) collected from the Retaining Wall Sump after approval of the Pre-Design Study

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report did not exceed Ambient Water Quality Standards or the SPDES Permit Equivalent standards for site-related volatile organic compounds. However, rerouting of the retaining wall sump water to the drainage structure is still being performed to remove the connection to the municipal sanitary sewer system.

The primary contingency for pump or power failure is the infiltration gallery. The 24-hour capacity of the infiltration gallery cited in the addendum was estimated based on dimensions (20 feet by 5 feet, by 4 feet deep), the porosity of the stone backfill, and a conservative inflow estimate of 1 gallon per minute. The 24-hour capacity also conservatively assumes no immediate infiltration vertically into the bedrock surface or horizontally to the surrounding soils. Therefore, if a wireless sensor with remote notification capabilities is not a viable alternative for this application, WSP requests approval to perform a field infiltration study to determine the likelihood of the infiltration gallery overflowing to the adjacent drainage ditch.

The field study would involve system installation as currently designed, but with a standpipe installed in the infiltration gallery to allow periodic measurement of the water levels during the study period. The discharge pump would be turned off to start the study. The pump station and standpipe will be monitored daily for a period of approximately 10 days to determine if the water infiltrates the bedrock formation faster than the rate of discharge from the sump (i.e, whether the pump station has the potential to overflow to the drainge ditch). While the measured flow rates during previous sampling events did not appear to correlate directly to precipitation, this study period may be extended to include precipitation events of various rainfall totals and intensities. After the study is completed, the pump will be reactivated to reroute the flow to the drainage structure as planned.

WSP is in agreement that the O&M Plan will be updated to include inspections and periodic cleaning of the pump station, pump, and controls to minimize fouling.

3 Note 1.6 on Sheet 1 states that the OU-1 DPE system will be deactivated during the duration of the work. Please include a schedule of anticipated DPE system downtime that includes deactivation of the system for the work associated with the AOC-1 expansion and modifications the DPE system as described in the October 2023 RAWP. It is recommended that work be phased as necessary to minimize system downtime.

The duration of DPE system downtime will be significantly reduced by combining the actions associated with the RAWP and RAWP Addendum 1 into one mobilization in the Spring of 2025. WSP will work with the selected contractor to temporarily reroute the DPE system discharge, either to the existing 32-inch diameter corrugated metal pipe beneath the walkway or to the Open Ditch 1 bypass pipe, during replacement of the drainage structure. The contractor will also be required to schedule the weir box replacement work while the DPE system is already shut down for the planned upgrades. The length of DPE system downtime will be requested in the contractor's bids and will be one of the criteria for which the bids are evaluated. While the duration of system downtime won't be known until the contractor is selected, WSP estimates the downtime to be approximately 2 to 3 weeks during implementation of the RAWP and Addendum 1.

4 An aerial image(s) of the work areas must also be included in the work plan.

The enclosed Figure 1 with aerial imagery of the seep rerouting work areas will be included in the revised RAWP Addendum 1.

Additional Conditions:

- If excavation areas require dewatering, groundwater must be handled in accordance with Section F-8 of the EWP.

  WSP is in agreement with this statement.

- Soil or other materials proposed for import to the site must be approved per Section F-10 of the EWP.

  WSP is in agreement with this statement.

- It is understood that this RAWP will be addended to include the remedy for the seeps (expected fall 2023) and any remedial actions necessary to address vapor intrusion in new or existing buildings based on results of future pre-design studies.

  The seeps will be addressed in Addendum 1 to the RAWP and vapor intrusion will be addressed in Addendum 2 that is currently being prepared based on the results of the VI pilot studies.

- The Operation & Maintenance (O&M) Plan for the site must be revised within 90 days of completion of the construction activities to include all O&M modifications based on upgrades and expansion of the DPE system; and the remedy for the seeps.

  WSP is in agreement with this statement.

- Follow all notification requirements included in the EWP (e.g., notification to DEC 15 days prior to any ground intrusive activities).

  WSP is in agreement with this statement.

- Implementation of the remedial actions specified in this work plan along with those specified in the approved RAWP for AOC-1 and NAPL recovery is estimated to commence this fall. The DEC must be advised as soon as reasonably possible of any delays in the schedule.

  Remedial action associated with the RAWP and RAWP Addendum 1 is planned to begin in April 2025. With regards to NAPL, in accordance with the Pre-Design Study Report for Buildings 3 and 4 Product Surveillance dated October 18, 2024, and approved by the NYSDEC on November 21, 2024, no additional NAPL recovery in Buildings 3 and 4 is planned.

Upon NYSDEC's concurrence with these responses, WSP will revise the applicable sections and resubmit the RAWP Addendum 1. Please contact me at 412-375-0282 should you have any additional questions.

Kind regards,

David Rykaczewski, P.E.
Vice President

Lisa Kelly
Vice President

DAR/dar

Enclosure

cc: Stephen Clarke, Emerson (electronic copy)

EMERSON ELECTRIC CO.

REMEDIAL ACTION WORK PLAN ADDENDUM 1 REVISION 1

FORMER EMERSON POWER TRANSMISSION ITHACA, NEW YORK (NYSDEC SITE NO. 755010)

MARCH 03, 2025

REMEDIAL ACTION WORK PLAN ADDENDUM 1 REVISION 1

FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK (NYSDEC SITE NO. 755010)

EMERSON ELECTRIC CO.

PROJECT NO.: US-WSP-31405608.001
DATE: MARCH 3, 2025

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PROFESSIONAL ENGINEER CERTIFICATION

I, David Alan Rykaczewski, certify that I am currently a New York State Registered Professional Engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan Addendum for the former Emerson Power Transmission facility in Ithaca, New York, was prepared in accordance with all applicable statutes and regulations and substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

March 3, 2025

David Alan Rykaczewski, P.E.
Vice President
New York State P.E. No. 099287

Date

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1 INTRODUCTION

On behalf of Emerson Electric Co., WSP USA Inc. (WSP) has prepared this first Addendum (Addendum 1) to the Remedial Action Work Plan (RA Work Plan) for the former Emerson Power Transmission (EPT) facility (Site No. 755010) in Ithaca, New York. The RA Work Plan was submitted to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) on October 2, 2023, and conditionally approved by the NYSDEC on November 30, 2023. This RA Work Plan Addendum 1 describes the activities necessary to implement the remedies evaluated in the Pre-Design Report – Seeps dated June 23, 2023, which includes the "Building 24 Seep", "Weir Box Seeps", and the "Retaining Wall Sump." The three seeps and their associated work areas are shown on Figure 1. The following activities associated with each seep are planned:

1. Building 24 Seep
   - Reroute the Building 24 Seep to Catch Basin #03 (CB-03) which flows to Open Ditch 1, then to Open Ditch 1 Bypass, then to Outfall 011
   - Repair damaged sections of the bypass pipe between Open Ditch 1 and Outfall 011
2. Weir Box Seeps
   - Remove upper wooded sluice and improve drainage and erosion controls from the former Outfall 005 pipe to Open Ditch 2
   - Remove the existing weir box and replace with a new box drainage structure and discharge pipe to collect flow from Open Ditch 2, the Weir Box Seeps, the Retaining Wall Sump, and the existing Dual Phase Extraction (DPE) system
   - Relocate Outfall 001 to the end of the discharge pipe to monitor the combined flow from Open Ditch 2, Weir Box Seeps, Retaining Wall Sump, and DPE system discharge
3. Retaining Wall Sump
   - Disconnect the Retaining Wall Sump from the existing municipal sanitary sewer system
   - Install a new pump station to receive diverted water from the Retaining Wall Sump
   - Pump the water from the pump station to the new box drainage structure connected to Outfall 001

The RA Work Plan and this Addendum 1 have been prepared pursuant to the July 1988 Order on Consent (Index No. A7-0125-87-09) between NYSDEC and Emerson Power Transmission Co. and Emerson Electric Co. (NYSDEC. 1988), the amended Record of Decision (ROD) dated September 2021 (NYSDEC. 2021), and the procedures outlined in the Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10) (NYSDEC. 2010). Additional RA Work Plan Addenda will be prepared to address additional remedial actions at the site including the vapor intrusion mitigation systems in the onsite buildings.

The RA Work Plan Addendum 1 has been organized as follows:

SECTION	DESCRIPTION
Section 1 – Introduction	Introduction to the Addendum 1
Section 2 – Background and Pre-Design Study Summary	Seeps background, Pre-Design Study results and remedy descriptions for each seep
Section 3 – Building 24 Seep	Building 24 Seep re-routing design
Section 4 – Weir Box Seeps	Weir Box Seeps re-routing, new box drainage structure, and weir outfall design
Section 5 – Retaining Wall Sump	Retaining Wall Sump re-routing design

SECTION	DESCRIPTION
Section 6 – Project Schedule	Identification of the anticipated schedule for the performance of seep rerouting remedial activities

2 BACKGROUND AND PRE-DESIGN STUDY SUMMARY

2.1 BACKGROUND

The Building 24 Seep discharges from a weep hole along the base of the Building 24 foundation and enters a pipe that is subsequently routed through a corrugated high-density polyethylene pipe installed across the Building 24 driveway entrance along the adjacent open drainage ditch. Water in the open ditch is conveyed via the storm sewer system to a 30-inch corrugated metal pipe (CMP) that discharges at the Pipe Outlet to Open Ditch 1. Water in Open Ditch 1 is captured and conveyed through a 24-inch diameter CMP beneath an access ramp to Building 18 where it daylights briefly before entering a 24-inch diameter CMP and discharging to the lower wooden Sluice at Outfall 011. From Outfall 011, the discharge combines with water from Outfall 001 and flows to an open ditch along South Cayuga Street leading to the City of Ithaca storm sewer system, ultimately discharging to Sixmile Creek.

The Weir Box Seeps were identified during the execution of the soil Interim Remedial Measure (IRM) when the weir box was temporarily removed to facilitate the excavation near the end of Open Ditch 2. Three groundwater seeps were initially observed along the exposed bedrock surface below the elevation of the weir box inlet and outlet. One of the three seeps ceased flow within 24 hours after removing the weir box. The remaining two seeps flow beneath the weir box and into a 32-inch diameter CMP, which directs the water to the lower wooden sluice, where it combines with water from Outfalls 001 and 011 before flowing into the open ditch along South Cayuga Street. A dye tracer study completed in August 2020 (WSP. 2020) confirmed that some amount of groundwater emanating from Area of Concern (AOC) 1 discharges through these seeps.

The Retaining Wall Sump is near the north end of the retaining wall, which parallels the west wall of Building 4 and marks the western limits of AOC 1. The sump is a precast concrete vault with a removable steel cover. Water enters the vault from the south and exits to the north through 6- and 4-inch diameter cast iron pipes, respectively. Discharge is to the sanitary sewer along South Cayuga Street. A video survey of the inlet pipe to the Retaining Wall Sump and a dye tracer study confirmed that the water source is groundwater accumulating behind the retaining wall.

2.2 PRE-DESIGN STUDY AND RESULTS

In May 2021, a Pre-Design Study Work Plan was prepared to evaluate seep and surface water quality under various flow conditions, the results of which were used to determine the appropriate remedial action alternative to address the seeps. The Pre-Design Report submitted in June 2023 (WSP. 2023), summarized the results of samples collected and supporting weighted average flow calculations to justify the "reroute and monitor" remedial alternative for three seeps.

2.3 REMEDY DESCRIPTION

Based on the data presented in the Pre-Design Report, the following remedies were identified to address the three seeps:

- Building 24 Seep – provide containment at the point of exit from the building, re-routing underground to catch basin CB-03 for subsequent discharge/conveyance to the 30-inch CMP pipe, which flows to Open Ditch 1, Open Ditch 1 Bypass and Outfall 011.
- Weir Box Seeps – re-route discharge from the seeps to the weir box to combine flow with Outfall 001
- Retaining Wall Sump – re-route discharge from the seeps to the weir box to combine flow with Outfall 001

The State Pollutant Discharge Elimination System (SPDES) permit equivalent (PE) authorizes the discharge of stormwater, groundwater seepage, and treated groundwater from Outfall 001 and surface water/groundwater seepage from Outfall 011. In accordance with the NYSDEC's letter dated August 5, 2021, "If the results indicate that the Weir Box Seep and/or the Retaining Wall Sump flow can be re-routed to the weir box and ultimately Outfall 001, all discharge limitations included in

the PE for Outfall 001 must be met." Based on the pre-design study, the weighted average calculations demonstrate the PE discharge limitations will be met for chlorinated volatile organic compounds (CVOCs) under various precipitation and runoff conditions while combining flows from the Weir Box Seeps and Retaining Wall Sump. Although no numerical discharge limits for CVOCs are identified for Outfall 011 in the PE, the sampling data demonstrates that the trichloroethene (TCE) concentrations consistently meet the NYSDEC criteria (an order of magnitude less than the groundwater criterion) when the water first daylights to Open Ditch 1. The PE discharge limitations for other parameters, including pH, lead, barium, mercury, and free cyanide, were all satisfied.

The following sections describe the design and planned actions for the three seeps. Soil and other materials excavated from below cap and cover systems (below the demarcation layer), soils excavated from outside of the limits of previously identified AOCs, water and other fluids generated during excavation or other site work, and soil fill materials imported from offsite will be managed in accordance with the Excavation Work Plan (EWP) (Appendix D of the RA Work Plan). Virgin aggregate from a permitted quarry shall not require analytical testing prior to import. Materials comprising the cap or cover systems (above the demarcation layer) that require excavation will be stockpiled separately for reuse or disposal offsite.

2.4 DESIGN PACKAGE

The design drawings and specifications are provided in the Seep Rerouting and Design package in Appendix A, and include the following sheets:

- Sheet 1: Title Sheet and Specifications
- Sheet 2: Site Layout
- Sheet 3: Protection and Demolition Plan
- Sheet 4: Weir Box Seeps and Outfall 001 Plan and Sections
- Sheet 5: Weir Box Seeps and Outfall 001 Construction Details
- Sheet 6: Building 24 Seep Rerouting Plan and Details
- Sheet 7: Retaining Wall Sump Rerouting Plan
- Sheet 8: Retaining Wall Sump Rerouting Section and Details

3 BUILDING 24 SEEP

3.1 BUILDING 24 SEEP REROUTING DESIGN

The proposed design to address the Building 24 Seep involves collecting the water at the point of discharge from the building foundation and rerouting the flow from above ground to subsurface conveyance piping routed to catch basin CB-03. Subsequent discharge would occur to the 30-inch CMP pipe with flow continuing to Open Ditch 1, Open Ditch 1 Bypass, and Outfall 011.

The anticipated trenching and soil excavation limits, piping installation details, existing utility locations, and restoration details are shown on Sheet 6 of the Design Drawings (Appendix A). Additional specifications are provided on Sheet 1. Soils in these areas will be excavated and managed to facilitate the installation of conveyance piping. Excavated materials that were previously placed as backfill during the Soil IRM activities will be stockpiled and reused. Other soils excavated will be managed in accordance with the EWP.

Underground utility lines (water, electric, gas, and sewer) are known to be present within the planned excavation/trenching areas (Sheet 6). UDig NY, New York's one-call system, will be contacted at least three days before starting work to mark all public utilities at the Site. A private utility locator will also be contracted to locate and mark all utilities within the proposed work area. Utility lines within the work areas may be temporarily de-energized, drained, or removed during excavation, then restored in kind following completion. Identified utilities outside the proposed remediation areas and all overhead utilities will be protected throughout the work.

As necessary, asphalt pavement will be sawcut and removed to access soils beneath for trenching. Care will be taken to note the locations of marked utilities before the pavements are removed. Utility locations will be repainted after pavement removal. After saw-cutting, pavements will be broken up using hydraulic hammers, then removed using conventional earthmoving equipment and stockpiled pending proper characterization and recycling or disposal.

All soil will be trenched using conventional earthmoving equipment including hydraulic excavators and skidsteer equipment. Based on location and field screening, excavated soil will be either staged in temporary stockpiles on a 10-mil layer of polyethylene sheeting or placed into lined roll-off containers for offsite disposal. A portion of the trenching is located in a previously excavated area as part of the AOC 26 exterior IRM activities. Item 4 aggregate backfill removed from in the previously remediated area will be segregated for reuse. Soils not previously excavated will be staged and managed in accordance with the EWP. Any outdoor staging area where stockpiles are present will be bermed to prevent precipitation runoff, and the stockpiles will be covered with polyethylene sheeting during precipitation events and at the end of each workday. Polyethylene covers will be draped over the berms to prevent precipitation accumulation within the staging area.

Conveyance piping consisting of 4-inch diameter standard dimension ratio (SDR) 35 polyvinyl chloride (PVC) pipe with solvent welded joints will be installed within trenches excavated to the elevations shown on Sheet 6 to ensure gravity flow from the Building 24 Seep to CB-03. The trenches will be backfilled with clean excavated materials or imported fill in 4-inch lifts and compacted using conventional equipment (e.g. vibratory plate compactor or vibratory tamping rammer) as shown on the Design Drawings. In the previously remediated AOC 26 area, the High-Visibility Demarcation Layer (Geotex® 401) will be replaced. Within 12 inches of the ground surface, a 6-inch layer of aggregate subbase will be installed, followed by 4 inches of asphalt base course and 2 inches of asphalt wearing course. Tack coat and geotextile interlay will be placed between the asphalt base source and asphalt wearing course.

The existing catch basin, CB-03, will be cored on the south side of the basin to fit the 4-inch diameter SDR 35 PVC pipe. The bottom of the pipe will be placed 27 inches from the top of the ground surface. A non-shrinking hydraulic cement mortar will seal the pipe penetration through the basin. The 4-inch diameter SDR 35 PVC pipe will extend 1 inch into the basin.

Following installation, the elevation and location of the pipe route from the Building 24 Seep to Outfall 001 and inverts of CB-03 will be surveyed by a New York State-licensed land surveyor. The horizontal locations will be determined to the nearest +/- 0.1 feet and the elevations to the nearest +/- 0.01 feet. All survey data will be referenced to the state plane coordinate system and tied into the existing base map for the Site.

3.2 OPEN DITCH 1 BYPASS PIPE

The 24-inch diameter CMP stormwater pipe that receives flow from Open Ditch 1 (Sheet 3) will be video-inspected to evaluate the integrity of the piping. Damaged sections of the pipe (i.e., breaks, rust, or other deterioration resulting in pipe leakage) will be repaired in kind with new CMP. Fill materials previously placed during IRM activities will be reused as backfill. Excavated materials that were not previously placed will be managed in accordance with the EWP. Backfill will be placed in 6-inch lifts and compacted with a vibratory plate compactor. The final 6 inches shall be topsoil capable of supporting vegetative growth and disturbed areas will be seeded and mulched. Additional specifications are provided on Sheet 1.

4 WEIR BOX SEEPS

4.1 WEIR BOX SEEPS REROUTING DESIGN

The proposed design to address the Weir Box Seeps includes replacing the existing steel weir box with a new pre-cast concrete drainage structure to collect water from Open Ditch 2, the Weir Box Seeps, the Retaining Wall Sump, and the DPE system discharge. The new drainage structure will outlet to a new discharge pipe slipped through the existing pipe to a new precast concrete endwall fitted with a V-notch weir to serve as the new Outfall 001. As a supplement to the seep remedy, the upper wooden sluice receiving discharge from former Outfall 005 will be removed and replaced with above ground piping and rock to convey the flow down the hill to Open Ditch 2.

The Weir Box Seep design is shown on Sheets 3, 4, and 5 in Appendix A. Soils in these areas will be excavated and managed to facilitate the installation of a box structure and conveyance piping. Intrusive work will be conducted in accordance with the EWP.

4.1.1 WEIR BOX – DRAINAGE STRUCTURE

PRECONSTRUCTION ACTIVITIES

Before beginning any intrusive activities, UDig NY, New York's one-call system, will be contacted at least 3 days before starting work to mark all public utilities at the Site. A private utility locator will also be contracted to locate and mark all utilities within the proposed work area. Utility lines within the work areas may be hand dug to confirm their location, temporarily de-energized, drained, or removed during excavation, and restored in kind following completion. Identified utilities outside the proposed remediation areas and all overhead utilities will be protected throughout the work.

The existing weir box structure, including the inlet baffle section, will be removed and recycled as scrap metal offsite. The existing NYSDOT No. 2 stone, NYDOT 620.03 riprap, and NYSDOT Item 4 stone used during the Soil IRM activities will be removed and stockpiled to facilitate the installation of the new drainage structure. The loose material consisting of soil and fractured bedrock will be removed using vacuum excavation along the limits of the new seep collection area (approximately 6 feet wide) and stockpiled for characterization and disposal, or reused as fill on the Site, subject to EWP requirements. The existing operable unit OU-1 dual-phase extraction system conveyance piping, well vaults, monitoring wells, and geosynthetic clay liner in Open Ditch 2 will be protected during construction activities.

Flow from the Weir Box Seeps, Open Ditch 2, former Outfall 004, and former Outfall 005 will be temporarily rerouted and bypassed around the work area to the Open Ditch 1 bypass or the lower wooden sluice throughout the work activities. The bypassed flows, either collectively or separately based on the bypass configuration constructed, will be sampled for the same parameters and on the same frequency required under the SPDES PE. At least one PE sample will be collected while the DPE System is shut down during execution of the remedial action activities which is expected to last 2 to 3 weeks.

NEW DRAINAGE STRUCTURE AND SEEP COLLECTION SYSTEM

Before installation of the new structure, the existing grade will be excavated to the elevations shown on Sheet 4. AASHTO No. 57 aggregate will be placed, compacted, and leveled to serve as a sub-base under the drainage structure. A precast drainage structure manufactured by Binghamton Precast and Supply or a WSP-approved equivalent will be placed in the location of the former weir box structure. A groundwater seep collection system will consist of a cast-in-place concrete collection apron between the new drainage structure and the existing hillside. The concrete apron will be placed to align with the seeps shown on Sheet 4 and Sheet 5. The concrete apron will have a trapezoidal shape, as shown on Sheet 5. At the base of the trapezoidal apron, a 2-foot long by 5-inch wide Polycast® 400 channel will be installed to collect and divert seep water to a 3-inch diameter schedule 80 PVC pipe for discharge to Outfall 001. A schedule 40 to schedule 80 PVC adapter may be needed for the Polycast® 400 channel. The trapezoidal concrete apron extending from the new drainage structure to the bedrock outcrop interface will consist of a 9-inch-thick concrete slab. The concrete will be high early strength, cast in place, and have a minimum 28-day compressive strength of 4,000 pounds per square inch. The selected concrete mix design will be capable of curing in wet and submerged conditions. Joints will not be installed in the concrete apron.

The new box drainage structure will be equipped with an open headwall with a steel grate or horizontal bars to prevent bodily entry to receive water from Open Ditch 2. The drainage structure will be equipped with a lockable 48-inch by 48-inch hinged aluminum cover to access the drainage structure for cleaning and maintenance.

The discharge pipes from the DPE system and new retaining wall pump station will be plumbed into the new box drainage structure.

NEW DISCHARGE PIPE

The existing 30-inch inside diameter CMP between the new drainage structure and the existing lower wooden sluice will be slipped with a new 28-inch outer diameter high density polyethylene (HDPE) pipe. The connection into the new box drainage structure will be made using a water-tight rubber pipe adapter/boot. Elevations are shown on Sheet 4. In the unlikely event that the HDPE pipe cannot be slipped, soils above the existing metal pipe will be removed, and the top of the existing metal pipe will be cut off to assist in installing the HDPE pipe. The end of the 30-inch CMP will be cut to allow installation of the new endwall and weir structure as described below.

NEW WEIR FOR OUTFALL 001 SAMPLING AND FLOW MEASUREMENT

A pre-cast concrete weir endwall will be installed at the outfall of the 28-inch HDPE pipe. This weir endwall will serve as the new Outfall 001 flow measurement and sampling point. The weir endwall will be installed on 6 inches of compacted AASHTO No. 57 aggregate. A deadman anchor system will be used to secure the weir endwall in place (Sheets 4 and 5).

Following installation, the elevation and location of the seeps, the drainage structure, and influent and effluent pipe and weir inverts will be surveyed by a New York State-licensed land surveyor. The horizontal locations will be determined to the nearest +/- 0.1 feet and the elevations to the nearest +/- 0.01 feet. All survey data will be referenced to the state plane coordinate system and tied into the existing base map for the Site.

4.1.2 FORMER OUTFALL 005

The existing 4-inch corrugated HDPE pipe and wooden sluice below the former Outfall 005 will be removed. The 4-inch corrugated HDPE pipe will be replaced along the hillside between the existing Outfall 005 stormwater pipe and Open Ditch 2 on top of a layer of 8-oz. woven geotextile fabric (Sheets 4 and 5). To the extent practical, the pipe route along the hillside will be notched or trenched to potentially allow the HDPE pipe to be partially buried. Notched or trenched material will be managed in accordance with the EWP. Bedrock may be encountered along the hillside and will not be removed to accommodate burying the HDPE pipe. The pipe will then be covered with a 4- to 6-inch layer of NYSDOT No. 2 stone or riprap for erosion protection along the slope.

5 RETAINING WALL SUMP

5.1 CURRENT CONDITIONS

The retaining wall west of AOC 1 impedes lateral movement of groundwater within the overburden and B-zone. Based on facility drawings and dye testing, a portion of groundwater accumulating behind the wall is conveyed to a drain system via weep holes along the toe of the wall with discharge to the Retaining Wall Sump. Water enters the sump from the south and exits to the north through 6- and 4-inch diameter cast iron pipes, respectively. The sump water then discharges to the sanitary sewer on South Cayuga Street.

In addition to the dye test described above, several phases of remediation have been performed in the vicinity of the retaining wall. As part of the soil IRM work completed in September 2019, shallow soil within AOC 1 was remediated by excavating to a maximum depth of approximately 3.5 feet with offsite disposal and confirmation sampling. Deeper soil in AOC 1 that could not be safely excavated due to the presence of building foundations and active utilities was addressed by constructing a low-permeability cap consisting of GCL, clean fill, and asphalt. The cap is expected to significantly reduce infiltration, which would cause vertical migration of CVOCs to groundwater behind the retaining wall. In July 2020, the weep holes, drain pipe, and Retaining Wall Sump were cleaned by water jetting to remove accumulated sediment and debris. Water and sediment were collected and disposed offsite. Lastly, in 2021 in-situ injections were performed in the vicinity of MW-5-40. The bioremediation injection amendment formulation was designed to stimulate the sequential reduction pathway in which TCE is reduced to dichloroethene (DCE) to vinyl chloride to ethene. These combined remedial actions have resulted in the overall reduction of CVOC concentrations discharging to the Retaining Wall Sump.

Following NYSDEC approval of the Pre-Design Study Report for the Seeps on September 12, 2023, WSP resumed monthly flow measurements and sample collection from the Retaining Wall Sump to further evaluate the effect of past remediation on sump water quality. In the 8 monthly samples collected from September 21, 2023, through April 23, 2024, there have been no exceedances of Ambient Water Quality Standards (AWQS) or SPDES PE standards recorded. Only cis-1,2-DCE and vinyl chloride have historically been detected in the Retaining Wall Sump. During this post-approval period, cis-1,2-DCE concentrations have ranged from an estimated concentration of 0.9 micrograms per liter (µg/L) to 2.5 µg/L as compared to the AWQS and SPDES PE limits of 5 µg/L and 10 µg/L, respectively. Vinyl chloride concentrations have ranged from non-detect (less than 1 µg/L) to 1.8 µg/L as compared to the AWQS and SPDES PE limits of 2 µg/L and 10 µg/L, respectively. Flows into the Retaining Wall Sump have ranged from 0.1 to 0.45 gallons per minute. The results of the post-approval Retaining Wall Sump sampling are provided in Table 1.

While the recent data suggests that past remediation efforts have been successful in reducing CVOC concentrations in the Retaining Wall Sump, rerouting of the Retaining Wall Sump is still necessary to remove the connection to the municipal sanitary sewer system.

5.2 RETAINING WALL SUMP REROUTING DESIGN

The proposed design includes constructing a pump station approximately 45 feet to the north of the Retaining Wall Sump. Seep water from the existing Retaining Wall Sump will be routed via gravity flow to the new pump station. The pump station will be equipped with a sump pump to transfer the water to the newly constructed box drainage structure. The pump station consists of a pre-cast concrete vault equipped with a pump, and two overflow drainage features – one contingency overflow to an infiltration basin during temporary loss of power and one emergency overflow to surface water for longer term power loss or equipment failure.

Sheets 7 and 8 in Appendix A show the Retaining Wall Sump rerouting design. Soils in these areas will be excavated and managed to facilitate the installation of conveyance piping. Intrusive work will be conducted in accordance with the EWP.

The soil in the vicinity of the proposed pump station was previously remediated, as documented in the Remedial Activities Report – Remedial Design Petroleum Containing Soil by Radian Corporation, dated April 9, 1996. Between October 30, 1995, and January 10, 1996, the oil skimmer house (4,200-gallon oil-water separator with an 830-gallon oil collection tank) and soil containing petroleum constituents were excavated to the top of bedrock (depth ranged from 1.7 to 5 feet below ground surface). Approximately 300 cubic yards of impacted soil were removed and disposed offsite. The excavation was

backfilled and compacted with clean No. 2 crusher run stone, with clayey soil placed on the north end of the excavation (i.e., under the former railroad bridge).

A sanitary sewer is present within the planned excavation area (Sheet 7). UDig NY, New York's one-call system, will be contacted at least 3 days before starting work to mark all public utilities at the Site. A private utility locator will also be contracted to locate and mark all utilities within the proposed work area. Utility lines within the work areas may be hand dug to confirm their location, temporarily de-energized, drained, or removed during excavation, and restored in kind following completion. Identified utilities outside the proposed remediation areas and all overhead utilities will be protected throughout the work.

All soil will be trenched using conventional earthmoving equipment including hydraulic excavators and skidsteer equipment. A portion of the trenching is located in a previously remediated area; therefore, these soils are expected to be clean and will be stockpiled separately for reuse. Based on location and field screening, excavated soil will be staged in temporary stockpiles on a 10-mil layer of polyethylene sheeting. Any outdoor staging area where stockpiles are present will be bermed to prevent precipitation runoff, and the stockpiles will be covered with polyethylene sheeting during precipitation events and at the end of each workday. Polyethylene covers will be draped over the berms to prevent precipitation accumulation within the staging area.

The proposed pump station, consisting of a 3-foot by 3-foot and 9.5-foot deep precast concrete vault, will be installed at the location shown on Sheet 8. The concrete vault will have 6-inch thick walls and will be equipped with a lockable solid hinged lid. Soils will be excavated to bedrock, and the bedrock will be cut as shown on Sheet 8, Detail 1. The pump station will be set in place using a flowable fill concrete mix to fill the void between the vault and bedrock.

The north side of the existing Retaining Wall Sump will be demolished to the extent necessary to install the new conveyance pipe. Conveyance piping consisting of 4-inch diameter schedule 80 PVC pipe with solvent welded joints will be installed extending from the existing Retaining Wall Sump to the new pump station location. The pipe transition from the existing sump will consist of a welded metal flange to a PVC flange. The existing pipe to the municipal sanitary sewer system will be plugged.

The corridor between the new pump station and new box drainage structure will be cleared of vegetation and trenched to approximately 2 feet below grade or to bedrock. Based on location and field screening, excavated soil will be staged in temporary stockpiles on a 10-mil layer of polyethylene sheeting. A 3-inch HDPE carrier pipe and a 2-inch PVC electrical conduit will be placed in the trench before backfilling, as described below. Electric from the existing DPE System will be routed to the new pump station to provide power to the submersible pump. A submersible pump, level switches, valves, pipe transition fittings, and associated water conveyance piping will be installed as shown on Sheet 8. In lieu of hard-wiring sensors to the treatment building, a wireless high-high alarm sensor will be installed in the pump station to alert the system operator of a pump or power failure to minimize pump downtime.

In the event of pump failure or a temporary power outage, an infiltration gallery will be installed on the south side of the new pump station. The infiltration gallery will be 5 feet wide by 20 feet long and 4 feet deep (Sheet 8). The top of the infiltration gallery will be covered with a layer of HDPE liner to minimize stormwater from entering the gallery. The bottom of the infiltration gallery will be installed directly above the bedrock surface. The infiltration gallery is sized to allow 24 hours of capacity based on the average flow (i.e., 1 gallon per minute) from the Retaining Wall Sump, assuming there is no infiltration from other sources (i.e., groundwater seepage or stormwater infiltration). In the event the flow rate from the Retaining Wall Sump is greater than the gallery infiltration rate and storage capacity, a second emergency overflow will divert water to the drainage ditch along South Cayuga Street where Outfall 001 ultimately discharges. The emergency overflow system(s) are expected to only be used on rare occasions when the pump fails and requires replacement or during power outages. A spare pump will be purchased and stored on-site to reduce downtime associated with replacement.

The trenches and excavations necessary for this work will be backfilled with excavated materials and placed in 6-inch lifts and compacted as shown on Sheet 8. While the excavated materials are expected to be clean due to previous remedial efforts in this area, the excavated materials will be sampled in accordance with the EWP. Clean imported soil/fill will be placed above the conveyance piping to ensure the pipe is covered by 3 feet of soil/fill to protect the piping from freezing conditions. Erosion control matting and a perennial fescue seed mixture will be placed within the disturbed areas.

If the wireless high-high alarm sensor is not effective, a field infiltration study will be conducted to determine the likelihood of the infiltration gallery overflowing to the adjacent drainage ditch. A standpipe will be installed in the infiltration gallery to allow periodic measurement of the water levels during the study period. The discharge pump would be turned off to start the study. The pump station and standpipe will be monitored daily for a period of approximately 10 days to determine if the

water infiltrates the bedrock formation faster than the rate of discharge from the sump (i.e, whether the pump station has the potential to overflow to the drainge ditch). While the measured flow rates during previous sampling events did not appear to correlate directly to precipitation, this study period may be extended to include precipitation events of various rainfall totals and intensities. After the study is completed, the pump will be reactivated to reroute the flow to the drainage structure as planned.

Following installation, the elevation and location of the new pump station and piping will be surveyed by a New York State-licensed land surveyor. The horizontal locations will be determined to the nearest +/- 0.1 feet and the elevations to the nearest +/- 0.01 feet. All survey data will be referenced to the state plane coordinate system and tied into the existing base map for the Site. The O&M Plan for the DPE system will be revised within 90 days of completion of site work to include periodic cleaning of the pump station and pump to minimize fouling.

6 PROJECT SCHEDULE

With the recent conditional approval of the RA Work Plan on November 30, 2023, WSP anticipates combining AOC 1 Groundwater and Seeps Remedial Actions into one construction mobilization beginning in the spring of 2025. Request for Proposal preparation and bidding will be performed in the winter of 2025.

The estimated schedule for key tasks and deliverables is summarized below:

- Design and RA Work Plan Addendum 1 submittal (Seeps remedy) – September 2024
- Bid specifications and Request for Proposal – February 2025
- Pre-bid site meeting, bidding, and contract award – March 2025
- Pre-remediation planning – March 2025
- Implementation of remedial action activities – April to June 2025

Vapor intrusion mitigation in the Site buildings will be addressed in a separate RA Work Plan Addendum. The schedule for design and implementation of the vapor intrusion activities will be based on the site owner's plan for redevelopment. The Final Engineering Report or Construction Complete Report will be prepared and submitted within 4 months after all remedial actions at the site have been completed.

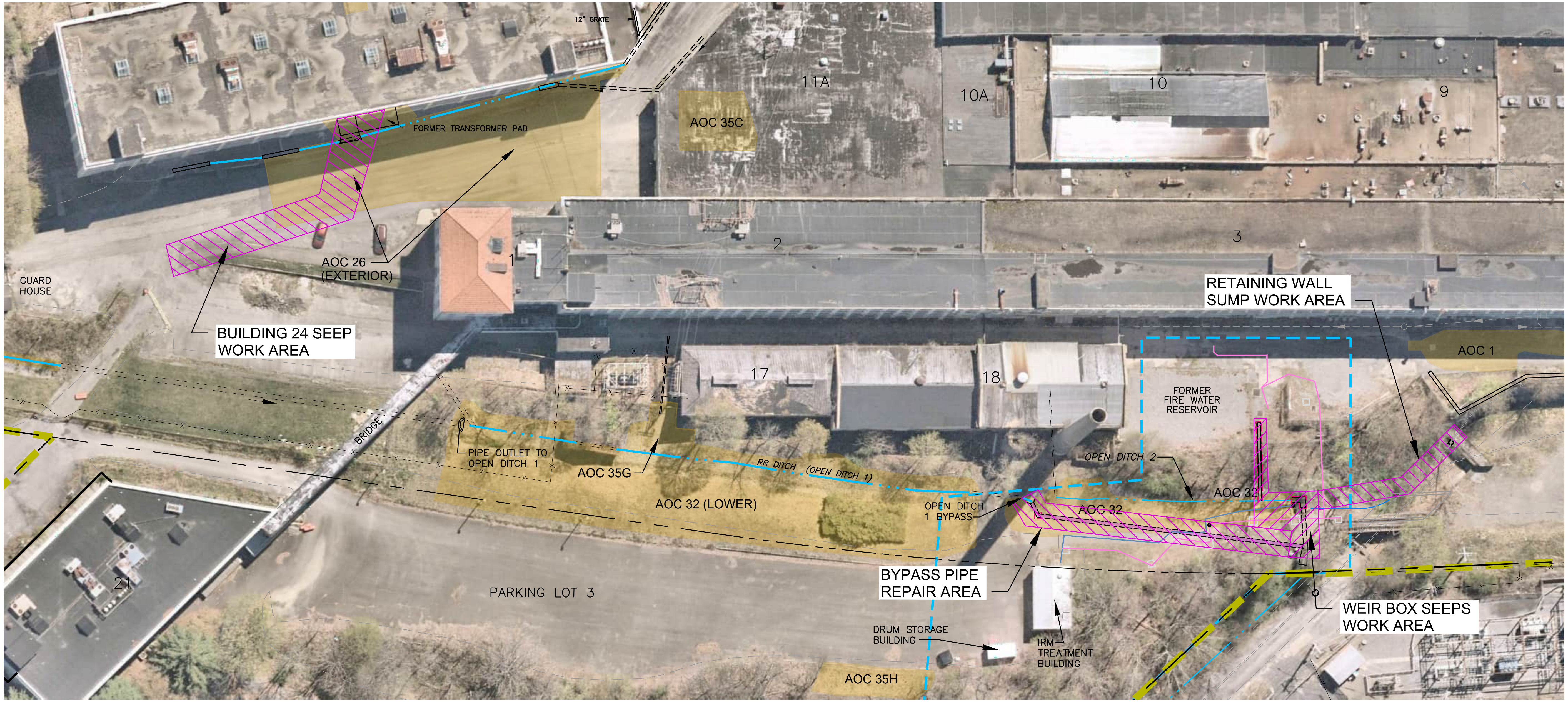
REFERENCES

- New York State Department of Environmental Conservation (NYSDEC). 1988. Order on Consent #A7-0125-87-09 between the New York State Department of Environmental Conservation and Emerson Power Transmission Company and Emerson Electric Co. July 13.
- NYSDEC. 2010. Department of Environmental Remediation (DER-10) Draft Technical Guidance for Site Investigation and Remediation. May 3.
- NYSDEC. 2021. Division of Environmental Remediation. Amended Record of Decision, Morse Industrial Corporation Site, Operable Unit Numbers: 1 and 2, Ithaca, Tompkins County, Site No. 766010. September.
- Radian Corporation. 1996. Remedial Activities Report – Remedial Design Petroleum Containing Soil. Emerson Power Transmission (EPT), Ithaca, New York. April 9, 1996.
- WSP. 2020. Dye Tracer Study Report, Former Emerson Power Transmission, New York, Site No. 755010. December 28, 2020.
- WSP. 2021. July through December 2020 Dual Phase Extraction System Operations, Maintenance, and Monitoring Report #24, Emerson Power Transmission, Ithaca, New York. Site No. 7 55 010. May 20.
- WSP. 2023. Pre-Design Report, Former Emerson Power Transmission Facility, Ithaca, New York – Site No. 7-55-010. June 23.

ACRONYMS

AOC	Area of Concern
AWQS	Ambient Water Quality Standards
CMP	corrugated metal pipe
CVOC	chlorinated volatile organic compound
DPE	dual phase extraction
EPT	Emerson Power Transmission
EWP	Excavation Work Plan
GCL	geosynthetic clay liner
HDPE	high density polyethylene
µg/L	micrograms per Liter
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
IRM	Interim Remedial Measure
PE	Permit Equivalent
PVC	polyvinyl chloride
SDR	standard dimension ratio
SPDES	State Pollutant Discharge Elimination System
TCE	trichloroethene
WSP	WSP USA Inc.

FIGURES



NOTES:

1. NEARMAP AERIAL PHOTOGRAPH, IMAGERY DATE: APRIL 26, 2024.

2. AERIAL PHOTOGRAPH USED FOR THIS ILLUSTRATION CONTAINS INHERENT DISTORTIONS RESULTING FROM THE PHOTOGRAPHIC PROCESS THAT MAY RESULT IN SLIGHT MISALIGNMENTS WITH THE SURVEYED SITE FEATURES.

LEGEND

Symbol	Description
9	BUILDING NUMBER
	PROPERTY BOUNDARY
	INTERMITTENT FLOW
	OU-1 DPE EXTRACTION AND CONVEYANCE PIPE
	OU-1 DPE DISCHARGE PIPE
	OU-1 BOUNDARY
	OU-2 BOUNDARY
	AOC LIMITS
	SEEP REROUTING WORK AREA

N

0 30 60 120

SCALE, FEET

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

Drawn By: RAZ 02/18/2025

Checked: DAR 02/19/2025

Approved:

Dwg Name: 314P5608.001-B31

FORMER EMERSON POWER TRANSMISSION

ITHACA, NEW YORK

PREPARED FOR

EMERSON

ST. LOUIS, MISSOURI

FIGURE 1

SEEP REROUTING WORK AREAS

WSP USA Inc.
11 STANWIX STREET
SUITE 950
PITTSBURGH, PA 15222
TEL: +1 412.604.1040

B

R:\Shared_GIS\CAD\Shared\CAD\Acad_CLIENTS\EMERSON\NY-Ithaca\314P5608.001\314P5608.001-B31.dwg 2/19/2025 9:55 AM USRZ01165

TABLES

Table 1

Summary of Retaining Wall Sump Sample Results - VOCs
(January 2021 - April 2024)
Remedial Action Work Plan Addendum 1
Former Emerson Power Transmission Facility
Ithaca, New York (a)

			Sample Location:	Pre-Design Study Period										Post Approval Period							
			Flow Rate (gpm):	1.0	0.25	0.35	0.31	0.28	0.48	0.30	2.75	0.58	0.75	0.90	0.10	0.16	0.15	0.22	0.45	0.14	0.17	0.18
			Sample Date:	01/13/21	03/16/21	05/06/21	07/01/21	07/08/21	07/21/21	08/02/21	08/17/21	09/09/21	09/16/21	11/08/21	09/21/23	10/27/23	11/21/23	12/26/23	01/26/24	02/26/24	03/21/24	04/23/24
	NYSDEC Criteria (b)		Permit																			
Parameters	Ground-water	Surface Water	Equivalent (c) Daily Maximum																			
CVOCs (µg/l)																						
cis-1,2-DCE	5	-	10	5.9	10.6	7.3	1.0	2.6	3.4	2.7	1.5	3.0	0.79 J	6.0	1.1	1.1	1.4	1.9	0.9 J	1.7	2.5	1.7
Vinyl chloride	2	-	10	5.6	9.2	6.3	0.94 J	1.8	3.0	2.5	1.8	3.7	1.2	9.0	1.6	1.4	1.8	1.7	1 U	0.75 J	1.8	0.96 J

Boxed values indicate exceedences of the NYSDEC Class GA groundwater standards
Yellow highlighted values indicate exceedences of the SPDES permit equivalent limits

a\ NYSDEC = New York State Department of Environmental Conservation; CVOC = chlorinated volatile organic compound; DCE = dichloroethene; TCE = trichloroethene; gpm = gallons per minute; µg/l = micrograms per liter; "-" indicates criterion not established or analysis not performed.
Data Qualifiers:
U = constituent not detected at the reporting limit noted
J = constituent detected at an estimated concentration between the reporting and method detection limits (organics)

b\ Evaluation criteria are the New York State Ambient Water Quality Standards and Guidance Values for Class GA groundwater provided in the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), dated June 1998, and the April 2000 Addendum.

c\ Source: NYSDEC Wastewater Discharge SPDES Permit Equivalent, DER Site No. 7-55-010, Effective date August 1, 2022.

APPENDIX

A SEEP REROUTING DESIGN DRAWINGS

TITLE SHEET

SEEP REROUTING DESIGN FORMER EMERSON POWER TRANSMISSION SITE ITHACA, NEW YORK

PREPARED FOR

EMERSON ST. LOUIS, MISSOURI

INDEX OF DRAWINGS

DRAWING NUMBER	SHEET NUMBER	DESCRIPTION
314P5608.001-D60	1	TITLE SHEET AND SPECIFICATIONS
314P5608.001-D50	2	SITE LAYOUT
314P5608.001-D46	3	PROTECTION AND DEMOLITION PLAN
314P5608.001-D44	4	WEIR BOX SEEPS AND OUTFALL 001 PLAN AND SECTIONS
314P5608.001-D44	5	WEIR BOX SEEPS AND OUTFALL 001 CONSTRUCTION DETAILS
314P5608.001-D45	6	BUILDING 24 SEEP REROUTING PLAN AND DETAILS
314P5608.001-D48	7	RETAINING WALL SUMP REROUTING PLAN
314P5608.001-D47	8	RETAINING WALL SUMP REROUTING SECTION AND DETAILS

GENERAL

G1.1 A WSP QUALITY ASSURANCE OVERSIGHT REPRESENTATIVE SHALL BE ONSITE DURING THE WORK. THE CONTRACTOR'S SITE SUPERINTENTENT OR ITS APPROVED EQUIVALENT SHALL BE ONSITE AT ALL TIMES DURING THE WORK.

G1.2 THE WSP ONSITE REPRESENTATIVE SHALL REPORT DIRECTLY TO THE WSP PROFESSIONAL ENGINEER (PE). THE CONTRACTOR'S SITE SUPERINTENDENT SHALL COORDINATE WITH THE WSP ONSITE REPRESENTATIVE.

G1.3 THE SITE WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) DIVISION OF ENVIRONMENTAL REMEDIATION (DER)-10, THE APRPOVED REMEDIAL ACTION WORK PLAN AND ADDENDA, AND THE APPROVED INTERIM SITE MANAGEMENT PLAN (ISMP) DATED AUGUST 19, 2022, EXCEPT AS NOTED IN THESE SPECIFICATIONS. DER 10 AND THE ISMP SPECIFY THE SAMPLING PROCEDURES REQUIRED TO ALLOW THE REUSE OF EXCAVATED SOIL FOR BACKFILL AND ALLOW THE IMPORT OF SOIL FOR USE.

G1.4 ALL TRENCHING AND EXCAVATION ACTIVITIES WILL BE COMPLETED IN ACCORDANCE WITH THE EXCAVATION WORK PLAN (APPENDIX F OF THE ISMP).

G1.5 EXCEPT AS DIRECTED BY THE WSP PE, ALL LIQUIDS, INCLUDING THOSE LISTED IN THE EXCAVATION WORK PLAN, WILL BE PROCESSED THROUGH THE ONSITE GROUNDWATER TREATMENT SYSTEM. THE GROUNDWATER TREATMENT SYSTEM SHALL BE OPERATED IN ACCORDANCE WITH THE OPERATION & MAINTENANCE PLAN (APPENDIX H OF THE ISMP). BEFORE ENTRY INTO THE ONSITE GROUNDWATER TREATMENT SYSTEM, THE LIQUIDS SHALL BE FILTERED USING A BAG FILTER. THE BAG FILTERS AND ACCUMULATED SLUDGE SHALL BE DISPOSED OF OFF-SITE AT A PERMITTED FACILITY IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.

G1.6 WSP EMPLOYEES WILL CONDUCT THEIR WORK IN ACCORDANCE WITH THE HEALTH AND SAFETY PLAN (HASP; APPENDIX G OF THE ISMP). SUBCONTRACTORS SHALL BE REQUIRED TO PREPARE AND CONDUCT WORK IN ACCORDANCE WITH THEIR HASP. WSP WILL NOT PROVIDE APPROVAL OF A SUBCONTRACTOR HASP.

G1.7 UNLESS OTHERWISE APPROVED BY THE WSP PE, THE WORK SHALL BE SEQUENCED IN THIS ORDER: 1. OPEN DITCH 1 BYPASS PIPE, 2. FORMER OUTFALL 005 SLOPE STABILIZATION, 3. WEIR BOX STRUCTURE, 4. RETAINING WALL SUMP, AND 5. BUILDING 24 SEEP. CERTAIN ACTIVITIES MAY BE PERFORMED CONCURRENTLY.

G1.8 EMERGENCY VEHICLE ACCESS THROUGH ALL FACILITY ROADWAYS MUST BE MAINTAINED AT ALL TIMES DURING EXECUTION OF THE WORK, PARTICULARLY IN THE BUILDING 24 SEEP REROUTING WORK AREA.

DEMOLITION OF EXISTING WEIR BOX, UPPER SLUICE BOX, AND RETAINING WALL SUMP (SHEET 3)

1.1 THE EXISTING WEIR BOX STRUCTURE, INCLUDING THE INLET BAFFLE SECTION, SHALL BE REMOVED AND TRANSPORTED OFFSITE FOR RECYCLING. ALL METAL DEBRIS GENERATED SHALL RINSED TO REMOVE SEDIMENT BUT SHALL NOT BE REQUIRED TO BE CLEANED OF ANY SCALING. SEE SECTION 10 FOR ADDITIONAL WASTE MANAGEMENT REQUIREMENTS.

1.2 EXISTING NYSDOT NO. 2 STONE, NYSDOT 620.03 RIPRAP, AND COMPACTED NYSDOT ITEM 4 SHALL BE TEMPORARILY REMOVED AS NEEDED AND STAGED ONSITE TO FACILITATE THE INSTALLATION OF THE NEW DRAINAGE STRUCTURES. EROSION PROTECTION MATERIALS SHALL BE REPLACED AS NEEDED FOLLOWING INSTALLATION OF THE DRAINAGE FEATURES.

1.3 LOOSE MATERIAL (SOIL AND FRACTURED BEDROCK) ALONG THE SLOPE IMMEDIATELY SOUTH OF THE WEIR BOX SHALL BE REMOVED USING VACUUM EXCAVATION MEANS ALONG LIMITS OF NEW SEEP COLLECTION SYSTEM (APPROXIMATELY 6 FEET) AND SEGREGATED FOR DISPOSAL. WASTE SHALL BE MANAGED IN ACCORDANCE WITH SECTION 10.

1.4 EXISTING WOODEN UPPER SLUICE BOX SHALL BE REMOVED AND TRANSPORTED OFFSITE FOR DISPOSAL. THE SUBCONTRACTOR SHALL PROTECT THE EXISTING 8" CORRUGATED METAL PIPE (CMP) AT THE TOP OF THE SLOPE AND THE 4" DIAMETER CORRUGATED POLYETHYLENE DRAINAGE PIPE WHICH CONNECTS TO IT.

1.5 SUBCONTRACTOR SHALL PROTECT EXISTING OPERABLE UNIT (OU)-1 DUAL PHASE EXTRACTION (DPE) SYSTEM CONVEYANCE PIPING, CONTROLS, UTILITIES, WELL VAULTS, AND MONITORING WELLS IN THE LOWER WELL FIELD AND THE GEOSYNTHETIC CLAY LINER (GCL) IN OPEN DITCH 2 DURING DEMOLITION ACTIVITIES.

1.6 FLOW FROM OPEN DITCH 2, FORMER OUTFALL 004, AND FORMER OUTFALL 005 SHALL BE TEMPORARILY REROUTED/BYPASSED AROUND THE WORK AREA TO EITHER THE OPEN DITCH 1 BYPASS OR THE LOWER WOODEN SLUICE THROUGHOUT WORK ACTIVITIES. THE AVERAGE OBSERVED FLOW RATE FROM THE OPEN DITCH 2, INCLUDING FORMER OUTFALL 005, IS 54 GPM. THE MAXIMUM OBSERVED FLOW RATE FROM OPEN DITCH 2 IS 200 GPM. THE OU-1 DPE SYSTEM DOWNTIME SHALL BE MINIMIZED DURING SEEP REROUTING WORK.

1.7 THE NORTH SIDE OF THE RETAINING WALL SUMP BOX SHALL BE DEMOLISHED TO ACCOMODATE THE PROPOSED 4" SCHEDULE 80 PVC CONVEYANCE PIPING TO THE NEW PUMP STATION. IF NEEDED, THE EAST AND WEST WALLS OF THE SUMP MAY BE PARTIALLY REMOVED TO ADD THE PIPE COUPLING FLANGE. THE SOUTH WALL OF THE RETAINING WALL SUMP SHALL REMAIN UNDISTURBED WITH SUFFICENT ANCHORAGE TO SUPPORT THE EXISTING 4" PIPE.

1.8 EXISTING FOUNDATIONS FOR THE OUTFALL 011 STAIRS SHALL BE PROTECTED. PORTIONS OF STAIRS INTERFERING WITH PLACEMENT OF WEIR ENDWALL SHALL BE SELECTIVELY DEMOLISHED (i.e., CUT USING MECHANICAL OR OXY-FUEL TORCH METHODS) OR MOVED AS DETERMINED BY THE ONSITE WSP REPRESENTATIVE.

FORMER OUTFALL 005 SLOPE REINFORCEMENT (SHEET 4)

2.1 ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF SLOPE REINFORCEMENT SHALL BE SMOOTH AND FREE OF LOOSE ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING, GRUBBING, AND GRADING.

2.2 SUBCONTRACTOR SHALL INSTALL WOVEN GEOTEXTILE SECURED WITH 11 GAUGE 6" x 1" x 6" SOD STAPLES ALONG THE OUTFALL 005 SLOPE AS INDICATED ON THE DRAWINGS. SUBCONTRACTOR SHALL PLACE NYSDOT NO. 2 STONE ALONG THE SLOPE FROM THE EXISTING 8" DIAMETER OUTFALL PIPE AT THE TOP OF THE SLOPE TO THE PRESENT EDGE OF OPEN DITCH 2 CHANNEL. THE EXISTING 4" DIAMETER CORRUGATED POLYETHYLENE DRAINAGE PIPE SHALL BE PLACED WITHIN THE DRAINAGE CHANNEL FORMED BY THE STONE AND COVERED WITH A MINIMUM OF 3" OF STONE BACKFILL.

WEIR BOX SEEP COLLECTION SYSTEM - CONCRETE BASIN AND CHANNEL DRAIN (SHEETS 4 AND 5)

3.1 THE WEIR BOX SEEP COLLECTION SYSTEM SHALL CONSIST OF A CAST-IN-PLACE CONCRETE COLLECTION APRON PLACED AGAINST THE SOUTH FACING WALL OF THE 6' x 8' INNER DIMENSIONS (ID) PRE-CAST CONCRETE DRAINAGE STRUCTURE. THE APRON SHALL BE FORMED AND CONSTRUCTED IN THE FIELD TO ALIGN WITH THE ELEVATIONS OF THE SEEPS AS SPECIFIED IN THESE SHEETS AND IN PARAGRAPH 3.5 BELOW.

3.2 A TRAPEZPOIDAL-SHAPED DITCH SHALL BE CUT AND SLOPED AS SHOWN ON SHEET 5 TO FORM A 6" THICK (MINIMUM) LAYER OF AASHTO NO. 57 STONE THAT WILL THEN BE COMPACTED BY A MIMIMUM OF THREE PASSES WITH A VIBRATING PLATE COMPACTOR OR AS DETERMINED BY THE ONSITE WSP REPRESENTATIVE.

3.3 AT THE BASE OF THE TRAPEZOIDAL DITCH, SUBCONTRACTOR SHALL INSTALL A 2' LONG, 5" WIDE POLYCAST® 400 CHANNEL DRAIN. POLYCAST® 400 CHANNEL SHALL BE INSTALLED USING POLYCAST® DA0634 INSTALLATION CHAIRS IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. GRATING SHALL CONSIST OF POLYCAST® DG0441. THE DRAIN, END CAP, AND ASSOCIATED 3" SCHEDULE 80 PIPING AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS AND CONFORM TO THE ELEVATIONS AND CONFIGURATION SHOWN ON SHEETS 4 AND 5.

3.4 WEIR BOX SEEP FLOWS SHALL BE TEMPORARILY DIVERTED TO THE EXTENT PRACTICAL DURING CONCRETE APRON CONSTRUCTION. CONCRETE FOR THE COLLECTION SYSTEM, EXTENDING TO THE BEDROCK INTERFACE, SHALL CONSIST OF A 9-INCH THICK SLAB. CONCRETE SHALL BE HIGH EARLY STRENGTH, CAST-IN-PLACE, AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 POUNDS PER SQUARE INCH. THE CONCRETE MIXTURE SHALL BE CAPABLE OF CURING IN WET AND SUBMERGED CONDITIONS. FORMED OR SAWED CONTRACTION JOINTS SHALL NOT BE INSTALLED.

3.5 AT LEAST 10 DAYS BEFORE CONCRETE PLACEMENT, SUBCONTRACTOR SHALL SUBMIT A CONCRETE MIX DESIGN FOR APPROVAL BY THE WSP PE.

3.5.1 THE SUBCONTRACTOR SHALL CONFIRM ALL ELEVATIONS DURING INSTALLATION ACTIVITIES. IF GROUNDWATER SEEPS ARE CONFIRMED IN THE FIELD BELOW 559.25', CONCRETE SHALL BE PLACED IN A MANNER TO CREATE AN IRREGULARLY SHAPED, 2" WIDE, 4" DEEP TROUGH AGAINST THE BEDROCK INTERFACE. THE SUBCONTRACTOR SHALL UTILIZE PLASTIC FLEX AND WOODEN FORMS AS NECESSARY TO CONFORM TO THE EXPOSED ROCK FACE, AS SHOWN IN THE DETAIL ON SHEET 4. TWO SEPARATE CONCRETE POURS MAY BE REQUIRED. A WATER IMMERSION-RATED, SELF-LEVELING POLYURETHANE SEALANT (SIKA® MASTERSEAL SL2 OR WSP PE APPROVED EQUIVALENT) SHALL BE INSTALLED AT THE BEDROCK-CONCRETE INTERFACE WITHIN THE TROUGH.

3.5.2 IF GROUNDWATER SEEPS ARE CONFIRMED IN THE FIELD BY THE WSP REPRESENTATIVE TO BE ABOVE 559.25', THE TROUGH ALONG THE BEDROCK INTERFACE WILL NOT BE NECESSARY. A CLOSED-END CAP (POLYCAST® MODEL DP0405C) SHALL BE INSTALLED AT THE END OF THE DRAIN FACING THE BEDROCK SLOPE.

3.6 THE SUBCONTRACTOR SHALL TEMPORARILY DIVERT THE SEEP WATER AND DEWATER THE WORK AREA AS NECESSARY TO ENSURE PROPER CURING OF THE CONCRETE. THE AVERAGE OBSERVED FLOW RATE FROM THE SEEPS IS APPROXIMATELY 0.25 GPM. THE MAXIMUM OBSERVED FLOW RATE FROM THE SEEPS IS 0.6 GPM.

WEIR BOX SEEP COLLECTION SYSTEM - CONVEYANCE PIPING (SHEETS 4 AND 5)

4.1 WEIR BOX SEEP COLLECTION SYSTEM CONVEYANCE PIPING SHALL CONSIST OF SCHEDULE 80 PVC PIPE. PIPING WILL BE INSTALLED AT THE ELEVATIONS SHOWN ON SHEETS 4 AND 5. PIPING FROM THE CHANNEL DRAIN DISCHARGE WILL TRANSITION THROUGH THE SIDEWALL OF THE 6' x 8' ID DRAINAGE STRUCTURE, THEN DISCHARGE THROUGH THE DRAINAGE STRUCTURE'S 28" OUTER DIAMETER (OD) HIGH-DENSITY POLYETHLENE (HDPE) OUTLET PIPE.

4.2 THE TRANSITION THROUGH THE DRAINAGE STRUCTURE'S SOUTH-FACING WALL WILL BE MADE USING A LINK-SEAL® SYSTEM (LINK-SEAL® MODEL LS-300-C-8) INSTALLED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS AND AT THE ELEVATIONS SHOWN ON SHEET 4.

WEIR BOX SEEP COLLECTION SYSTEM - PRE-CAST CONCRETE DRAINAGE STRUCTURE INSTALLATION (SHEETS 4 AND 5)

5.1 HEADWALL, WEIR BOX ENDWALL, AND DRAINAGE STRUCTURE SHALL BE PRE-CAST CONCRETE MANUFACTURED BY BINGHAMTON PRECAST AND SUPPLY (BP&S) OR APPROVED EQUIVALENT. THE HEADWALL INLET SHALL BE COVERED WITH A STEEL GRATE OR HORIZONTAL BARS SPACED 4 INCHES APART TO PREVENT HUMAN/ANIMAL ENTRY. THE DRAINAGE STRUCTURE SHALL INCLUDE A LOCKABLE TOP ACCESS ALUMINUM GRATE AND LADDER RUNGS TO PROVIDE ACCESS. SUBCONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL PRE-CAST CONCRETE STRUCTURES TO WSP PE FOR APPROVAL BEFORE FABRICATION.

5.2 PRE-CAST BOX DRAINAGE - 6' X 8' ID

5.2.1 BP&S DRAWING NUMBER 11-DW1, D1=24", D2=32". ELIMINATE 6" LIP ALONG THE HORIZONTAL BOTTOM OF THE STRUCTURE.

5.2.2 BP&S DRAWING NUMBER 1068. T=6". FABRICATE IN 2 PIECES. BASE HEIGHT = 2'-6". TOP SECTION H=2'-6". PROVIDE INTERIOR LADDER ON OPPOSITE SIDE OF PIPE OPENING. D1 = 32", D2 = 32".

5.2.3 PROVIDE 48" X 48" HINGED ALUMINUM COVER WITH BAR GRATING FROM OHIO GRATINGS OR OTHER APPROVED VENDOR IN ACCORDANCE WITH DETAILS SHOWN ON SHEET 5.

5.2.4 ATTACH CONCRETE HEADWALL TO 6' X 8' ID BOX DRAINAGE STRUCTURE USING CONCRETE ANCHORS.

5.3 PRE-CAST WEIR ENDWALL

5.3.1 BP&S DRAWING 11-DW1. D1 = 24", D2 = 28". WING WALL ANGLE = 90°. ELIMINATE 6" LIP ALONG THE HORIZONTAL BOTTOM OF THE STRUCTURE. FABRICATE PRE-CAST CONCRETE STRUCTURES IN ACCORDANCE WITH DETAILS SHOWN ON SHEET 5.

5.3.2 SECURE CONCRETE ENDWALL WITH DEADMAN ANCHORS AS SHOWN ON SHEETS 4 AND 5.

5.3.3 INSTALL AND SEAL WEIR PLATE AS SHOWN ON DETAIL 2 ON SHEET 5.

5.3.4 MODIFIED STAIRS SHALL BE FASTENED TO WEIR ENDWALL USING CORROSION-RESISTANT HARDWARE AT APPROPRIATE LOCATIONS (i.e. HAND RAIL, STAIRS, AND/OR BALUSTERS).

5.4 PROVIDE 6" MINIMUM OF COMPACTED AASHTO NO. 57 AGGREGATE UNDER ALL PRE-CAST CONCRETE STRUCTURES.

5.5 OU-1 DPE DISCHARGE (4" DIAMETER BUTT-FUSED OR ELECTRO-FUSED, DR 11 IPS HDPE 3408), FLEXIBLE LIQUID TIGHT CONDUIT, AND RETAINING WALL SUMP DISCHARGE (3" DIAMETER BUTT-FUSED OR ELECTRO FUSED, SDR 9 HDPE CARRIER PIPE WITH 1" DIAMETER CONTINUOUS SDR 9 HDPE WATER CONVEYANCE PIPE) AND POWER (2" DIAMETER SCHEDULE 40 PVC CONDUIT WITH GLUED JOINTS) SHALL BE AT THE DRAINAGE STRUCTURE AT THE ELEVATIONS AND CONFIGURATIONS SHOWN ON SHEET 5. CONNECTIONS INTO THE BOX SHALL BE MADE USING APPROPRIATE, WATER-TIGHT RUBBER PIPE ADAPTERS OR BOOTS. THE SUBCONTRACTOR SHALL REPLACE THE OU-1 DPE DISCHARGE PIPE AT THE EXISTING CLEANOUT TO FACILITATE CONNECTION. REPLACEMENT OR RECONNECTION OF EXISTING HEAT TRACE NOT REQUIRED. THE SUBCONTRACTOR SHALL INSTALL THE EXISTING CONDUIT PREVIOUSLY USED FOR HEAT TRACE INTO A WEATHER-PROOF NEMA 6 JUNCTION BOX LOCATED INSIDE THE DRAINAGE STRUCTURE (ELECTRIC SHALL BE USED TO POWER THE RETAINING WALL SUMP PUMP). THE JUNCTION BOX AND LIQUID-TIGHT CONDUIT SHALL BE AFFIXED AND SUPPORTED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC). THE JUNCTION BOX SHALL BE INSTALLED A MAXIMUM OF 12" BELOW THE TOP OF THE BOX'S SLAB COVER.

REPLACEMENT OUTFALL 001 PIPE (SHEET 4)

6.1 REPLACEMENT OUTFALL 001 PIPING BETWEEN THE 6' X 8' ID BOX DRAINAGE STRUCTURE AND THE WEIR ENDWALL SHALL CONSIST OF 28" OD HDPE PIPE. CONNECTION INTO THE BOX AND ENDWALL SHALL BE MADE AT THE ELEVATIONS SHOWN ON SHEETS 4 AND 5 USING APPROPRIATE, WATER-TIGHT RUBBER PIPE ADAPTERS OR BOOTS. THE SUBCONTRACTOR SHALL SUBMIT THE PIPE ADAPTER AND BOOT TO THE WSP PE FOR APPROVAL.

6.2 HDPE PIPE WILL BE SLIPPED THROUGH THE EXISTING 30" ID CMP TO ELIMINATE THE NEED FOR TRENCHING AROUND OU-1 DPE SYSTEM CONVEYANCE PIPING. END SECTIONS OF THE 30" ID CMP MAY BE CUT TO FACILITATE THE INSTALLATION OF THE HDPE PIPE AND CONNECTIONS.

6.3 IF THE HDPE PIPE CAN NOT BE SLIPPED THROUGH, THEN THE TOP OF THE EXISTING 30" ID CMP PIPE WILL BE EXPOSED AND CUT OFF TO ASSIST IN THE INSTALLATION OF THE 28" OD HDPE PIPE. THE EXISTING OU-1 DPE SYSTEM CONVEYANCE PIPING SHALL BE PROTECTED THROUGHOUT THE WORK.

6.4 THE 28" HDPE PIPE SHALL BE ANCHORED TO BOTH THE BOX DRAINAGE STRUCTURE AND THE WEIR ENDWALL TO PROVIDE ADDITIONAL SUPPORT.

OPEN DITCH 1 BYPASS PIPE SCOPING AND STORMWATER CMP/ELBOW REPLACEMENT (SHEET 2)

7.1 SUBCONTRACTOR SHALL PERFORM VIDEO PIPE INSPECTION OF THE EXISTING 24" CMP AND ELBOW STORMWATER PIPE FROM OUTFALL 011 TO THE INLET HEADWALL USING A HIGH-RESOLUTION VIDEO CAMERA. A WSP REPRESENTATIVE WILL BE PRESENT TO DOCUMENT POINTS OF BREAKAGE, CORROSION,PUNCTURES, OR OTHER SOURCES OF DAMAGE.

7.2 IF THE CMP OR ELBOW ARE FOUND TO BE DAMAGED, THE SUBCONTRACTOR SHALL EXCAVATE AROUND AND REPLACE THE DAMAGED CMP AND ELBOW AS SHOWN ON SHEET 2. EXCAVATION LIMITS SHALL BE MINIMIZED TO AVOID CONFLICT WITH EXISTING DPE SYSTEM CONVEYANCE PIPING AND MONITORING WELLS.

7.3 REPLACEMENT 45° ELBOW SHALL CONSIST OF 24" 16 GAUGE (GA) GALVANIZED STEEL. SUBCONTRACTOR SHALL UTILIZE APPROPRIATE BAND COUPLERS TO JOIN NEW AND EXISTING PIPE WITH REPLACEMENT ELBOW.

7.4 EXCAVATED FILL SHALL BE TESTED IN ACCORDANCE WITH THE EXCAVATION WORK PLAN AND IF ACCEPTABLE REUSED TO BACKFILL EXCAVATION. EXISTING FILL SHALL BE PLACED BACK INTO THE EXCAVATION IN 6-INCH THICK LIFTS AROUND THE PIPE AND COMPACTED TO THE SURROUNDING GRADE. DISTURBED SURFACES SHALL BE REVEGETATED WITH NATIVE GRASSES.

RETAINING WALL SEEP PUMP STATION AND CONVEYANCE PIPING (SHEETS 7 AND 8)

8.1 SUBCONTRACTOR SHALL PROCURE CONCRETE RETAINING WALL PUMP STATION.

8.1.1 THE CONCRETE RETAINING WALL PUMP STATION SHALL BE 3' WIDE X 3' WIDE AND 9.5' DEEP ID. THE WALLS OF THE STRUCTURE SHALL BE 6 INCHES THICK. THE STRUCTURE'S TOP SHALL BE SECURED WITH A LOCKABLE SOLID HINGED LID.

8.1.2 THE SUBCONTRACTOR SHALL EXCAVATE THROUGH NATIVE SOIL DOWN TO BEDROCK AND CUT OUT THE BEDROCK AS SHOWN IN SHEET 7. THE PUMP STATION SHALL BE SET IN PLACE AND LEVELED ON A COMPACTED BED OF AASHTO NO. 57 AGGREGATE BASE. THE VOID BETWEEN THE BEDROCK VERTICAL FACE AND THE STRUCTURE SHALL BE FILLED WITH FLOWABLE FILL OR CEMENT TO SECURE THE STRUCTURE IN PLACE.

8.1.3 THE RETAINING WALL PUMP STATION SHALL BE FITTED WITH THE INFLUENT AND EFFLUENT PIPING AND CONDUIT, AS SHOWN ON SHEET 8. ON THE SOUTH SIDE OF THE STRUCTURE, A 1' HIGH X 2' WIDE 316 STAINLESS STEEL WOVEN WIRE MESH WITH LESS THAN ½" OPENINGS AND WIRE DIAMETER 0.12" SHALL BE CAST INTO PLACE AS SHOWN ON SHEET 8. ON THE NORTH SIDE OF THE STRUCTURE, A 0.5" HIGH X 2' WIDE 316 STAINLESS STEEL WOVEN WIRE MESH WITH LESS THAN ½" OPENINGS AND WIRE DIAMETER 0.12" SHALL BE CAST INTO PLACE AS SHOWN ON SHEET 8.

8.2 THE SUBCONTRACTOR SHALL CLEAR THE VEGETATION AND TRENCH BETWEEN THE NEW RETAINING WALL PUMP STATION AND THE EXISTING RETAINING WALL SUMP.

8.2.1 THE CONTINGENCY OVERFLOW INFILTRATION GALLERY SHALL BE INSTALLED BEFORE THE SUMP WATER CONVEYANCE PIPING IS INSTALLED (SHEETS 7 AND 8). THE DIMENSIONS OF THE INFILTRATION GALLERY SHALL BE 5' WIDE X 20' LONG X 4' DEEP. THE BOTTOM OF THE INFILTRATION GALLERY SHALL INTERCEPT THE TOP OF THE BEDROCK. THE SUBCONTRACTOR SHALL REMOVE DEBRIS AND FINES FROM THE TOP OF THE BEDROCK WITHIN THE FOOTPRINT OF THE INFILTRATION GALLERY. THE INFILTRATION GALLERY SHALL CONSIST OF CRUSHED STONE - NYSDOT #3 (1" TO 2.5" DIAMETER) AND FREE OF FINES). THE TOP OF THE INFILTRATION GALLERY SHALL BE COVERED WITH 30 MIL HDPE LINER TO PREVENT FINES AND STORMWATER FROM ENTERING THE GALLERY.

8.2.2 THE CONVEYANCE PIPING SHALL BE INSTALLED AFTER INFILTRATION GALLERY CONSTRUCTION. A SCHEDULE 80 PVC SOCKET WELD FLANGE SHALL BE INSTALLED ON THE END OF THE CONVEYANCE PIPING NEAR THE EXISTING RETAINING WALL SUMP.

8.3 THE SUBCONTRACTOR SHALL DEMOLISH THE SOUTH SIDE OF THE RETAINING WALL SUMP FOR THE INSTALLATION OF THE NEW PIPING. THE SUBCONTRACTOR MAY DEMOLISH THE EAST AND WEST SIDES IF ACCESS IS NEEDED. THE NORTH SIDE OF THE RETAINING WALL SUMP SHALL REMAIN UNDISTURBED TO SUPPORT THE EXISTING STEEL PIPE.

8.3 THE SUBCONTRACTOR SHALL INSERT A TEMPORARY PNEUMATIC PLUG INTO THE EXISTING RETAINING WALL SUMP PIPE. THE END OF THE EXISTING STEEL PIPE SHALL BE CLEANED AND PROPERLY PREPARED FOR WELDING. THE SUBCONTRACTOR SHALL WELD A CLASS 150 STEEL FLANGE WITH AN 8-BOLT PATTERN ON THE END OF THE EXISTING STEEL PIPE. AFTER WELDING IS COMPLETE, THE SUBCONTRACTOR SHALL INSTALL A BLANK FLANGE AND AIR PRESSURE TEST THE WELD AT A LOW PRESSURE SO AS NOT TO PUSH THE PNEUMATIC PACKER INTO THE PIPE. ONCE THE PRESSURE TEST IS COMPLETE, THE BLANK FLANGE AND PNEUMATIC PACKER SHALL BE REMOVED.

8.4 THE SUBCONTRACTOR SHALL CONNECT THE SCHEDULE 80 PVC FLANGE AND THE CLASS 150 STEEL FLANGE USING AN EPDM FLANGE GASKET AND 316 STAINLESS STEEL BOLTS AND NUTS. THE BOLTS AND NUTS SHALL BE TIGHTENED TO THE TORQUE SPECIFIED FOR THE SCHEDULE 80 PVC FLANGE.

8.5 THE SCHEDULE 80 PVC CONVEYANCE PIPING SHALL BE COVERED WITH NATIVE SOIL AND IMPORTED SOIL/FILL TO ENSURE THE TOP OF THE CONVEYANCE PIPING IS 3' BELOW GROUND SURFACE BETWEEN THE NEW PUMP STATION AND THE EXISTING SUMP. SOIL SHALL BE PLACED IN 6" LIFTS AND COMPACTED. DISTURBED SURFACES SHALL BE REVEGETATED WITH NATIVE GRASSES. EXCAVATED FILL OR IMPORTED FILL SHALL BE TESTED IN ACCORDANCE WITH THE EXCAVATION WORK PLAN BEFORE USE AS BACKFILL.

8.6 THE CARRIER PIPE AND CONDUIT ROUTE BETWEEN THE NEW RETAINING WALL PUMP STATION AND BOX DRAINAGE STRUCTURE SHALL BE CLEARED OF VEGETATION/TREES AND TRENCHED DOWN TO BEDROCK OR 3' OF UNCONSOLIDATED SOIL, WHICHEVER IS LESS. THE CARRIER PIPE AND CONDUIT SHALL BE PLACED IN THE BOTTOM OF THE TRENCH, AND THE TRENCH SHALL BE BACKFILLED SO THAT THE CARRIER PIPE AND CONDUIT ARE A MINIMUM OF 3' BELOW GROUND SURFACE. BACKFILLED SOIL SHALL BE PLACED IN 6" LIFTS AND COMPACTED. DISTURBED AREAS SHALL BE SEEDED IWHT NATIVE GRASSES AND COVERED WITH BIODEGRADABLE EROSION MATTING.

8.7 THE CARRIER PIPE SHALL CONSIST OF 3" DIAMETER SDR 9 HDPE PIPE WITH BUTT-FUSED OR ELECTRO-FUSED COUPLINGS. THE CONDUIT SHALL CONSIST OF 2" DIAMETER SCHEDULE 40 PVC CONDUIT WITH SOLVENT WELDED JOINTS.

REROUTING OF BUILDING 24 PIPE (SHEET 6)

9.1 THE PROPOSED STORM WATER COLLECTION LINE EXTENDING FROM BUILDING 24 SEEP TO CB-03 SHALL BE INSTALLED IN ACCORDANCE WITH SHEET 6.

9.2 SUBCONTRACTOR SHALL TEMPORARILY DIVERT OR REROUTE GROUNDWATER EMANATING FROM THE BUILDING 24 SEEP TO STORM WATER CATCH BASINS OR DITCHES, AS NECESSARY, TO LIMIT WATER INTRUSION INTO THE WORK AREAS. THE AVERAGE FLOW RATE OBSERVED AT THE BUILDING 24 SEEP IS 3.4 GPM. MAXIMUM OBSERVED FLOW RATE FROM THE BUILDING 24 SEEP IS 13 GPM.

9.3 ASPHALT PAVEMENT SHALL BE SAWCUT TO PRODUCE SMOOTH EDGES ALONG THE LIMITS OF DISTURBANCE PRIOR TO BREAKING THE ASPHALT FOR TRENCHING. TRENCHING LIMITS AND PROPOSED TRENCH DEPTHS ARE SHOWN ON SHEET 6.

9.4 THE SUBCONTRACTOR SHALL TRENCH INTO THE EXPOSED BEDROCK OUTCROP TO FACILITATE THE INSTALLATION OF THE PIPE TO THE INVERT ELEVATION SHOWN AT THE EXTERIOR WALL OF BUILDING 24. TRENCHING, APPROXIMATELY 2.5' WIDE, SHALL CONTINUE ALONG THE LIMITS SHOWN INTO PREVIOUSLY REMEDIATED AREAS BACKFILLED WITH NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) 304.02/NYSDOT ITEM 4 COMPACTED FILL. EXISTING NYSDOT ITEM 4 STONE SHALL BE TEMPORARILY STOCKPILED IN AN APPROPRIATE STAGING AREA FOR REUSE. EXISTING FILL OUTSIDE OF THE PREVIOUS EXCAVATION LIMITS SHALL BE SEGREGATED USING A PHYSICAL BARRIER (E.G., 10-MIL POLYETHYLENE SHEETING) AND LOCATED ON PAVED SURFACES. STOCKPILES OF SOIL SHALL BE COVERED WITH POLYETHYLENE SHEETING DURING PRECIPITATION EVENTS AND AT THE END OF EACH WORKDAY.

9.5 SUBCONTRACTOR SHALL COVER ANY OPEN TRENCHES IN THE DRIVEWAY WITH ROAD PLATES THAT ARE NOT BACKFILLED AT THE END OFF EACH WORKDAY.

9.6 BELOW-GRADE UTILITIES ENCOUNTERED DURING PAVEMENT DEMOLITION AND SOIL EXCAVATION SHALL BE PROTECTED. KNOWN ACTIVE UTILITIES TO BE CROSSED DURING TRENCHING INCLUDE STORMWATER AND WATER LINES. UNCONFIRMED INACTIVE UTILITIES INCLUDE A 4" DIAMETER GAS LINE AND A CONCRETE ENCASED ELECTRICAL CONDUIT. CROSSINGS OF THESE UTILITIES SHALL BE MADE AT THE ELEVATIONS SHOWN ON SHEET 6. SUBCONTRACTOR SHALL CONFIRM THE CROSSING ELEVATIONS AND PIPE SLOPES BEFORE PIPE INSTALLATION.

9.7 AT THE STORMWATER DITCH CROSSING, DITCH FLOW SHALL BE BYPASSED WITH SANDBAG DAM AND BYPASS PUMP AS NECESSARY.

9.8 REPLACEMENT PIPING SHALL CONSIST OF SOLVENT WELDED, 4" DIAMETER SDR 35, PVC PIPING. PIPING SHALL EXTEND TO EXISTING CB-03, A 2' X 2' X 32" PRE-CAST CONCRETE CATCH BASIN. CONNECTION INTO CB-03 SHALL BE MADE AT THE ELEVATIONS SHOWN ON SHEET 7 USING APPROPRIATE, WATER-TIGHT RUBBER PIPE ADAPTERS OR BOOTS.

9.9 EXISTING FILL SHALL BE TESTED IN ACCORDANCE WITH THE EXVCAVATION WORK PLAN BEFORE REUSE AS BACKFILL. IF APPROVED, FILL SHALL BE PLACED BACK INTO THE TRENCH IN 4-INCH-THICK LIFTS AROUND THE PIPE AND COMPACTED. LIFTS SHALL BE PLACED UNTIL BACKFILL IS WITHIN 6 INCHES OF THE SURROUNDING PAVEMENT GRADE.

9.10 ASPHALT PATCH BASE COURSE & WEARING COURSE (I.E. 4-INCH BASE COURSE AND 2-INCH WEARING COURSE) SHALL BE PLACED AND COMPACTED TO MATCH EXISTING GRADE.

WASTE MANAGEMENT

10.1 PAVING MATERIALS GENERATED SHALL BE TRANSPORTED AND DISPOSED OF OR RECYCLED OFFSITE AND WILL NOT BE USED AS BACKFILL. NON-METAL CONSTRUCTION AND DEMOLITION (C&D) DEBRIS (PVC, PLASTIC, CONCRETE, WOOD) SHALL BE ASSUMED NON-HAZARDOUS AND WILL BE TRANSPORTED AND DISPOSED OF OFFSITE AS C&D DEBRIS.

10.2 WSP WILL BE RESPONSIBLE FOR ALL WASTE CHARACTERIZATION SAMPLING OF SOIL SPOILS GENERATED. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROFILING AND COORDINATION OF DISPOSAL WITH AN EMERSON-APPROVED WASTE DISPOSAL FACILITY. THE SUBCONTRACTOR SHALL LOAD AND DISPOSE OF MATERIAL AS NECESSARY BASED ON THE RESULTS OF WASTE CHARACTERIZATION AND PROFILING.

10.3 LIQUIDS GENERATED DURING EXCAVATION ACTIVITIES (E.G. DEWATERING AND DECONTAMINATION FLUIDS) SHALL BE COLLECTED AND PLACED IN APPROPRIATE CONTAINERS THAT SHALL BE LABELED AND TRANSPORTED TO A WASTE STAGING AREA FOR WASTE CHARACTERIZATION AND PROFILING BY WSP. WSP WILL REVIEW WATER CHARACTERIZATION RESULTS FOR SUITABILITY TO BE TREATED BY THE ONSITE TREATMENT SYSTEM. WATER THAT IS SUITABLE FOR ONSITE TREATMENT SHALL BE PUMPED THROUGH BAG FILTERS BEFORE TRANSFER TO THE ONSITE TREATMENT SYSTEM. WATER DETERMINED TO BE NOT SUITABLE FOR ONSITE TREATMENT SHALL BE PROFILED FOR OFFSITE DISPOSAL. THE SUBCONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO MINIMIZE THE VOLUME OF WATER TO BE TREATED OR DISPOSED.

D

REVISIONS

REV	DESCRIPTION		
	Revised:	Chkd:	Appr.:
	Revised:	Chkd:	Appr.:
	Revised:	Chkd:	Appr.:

SEAL

DATE

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APPROVED

TITLE SHEET AND SPECIFICATIONS

SEEP REROUTING DESIGN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI

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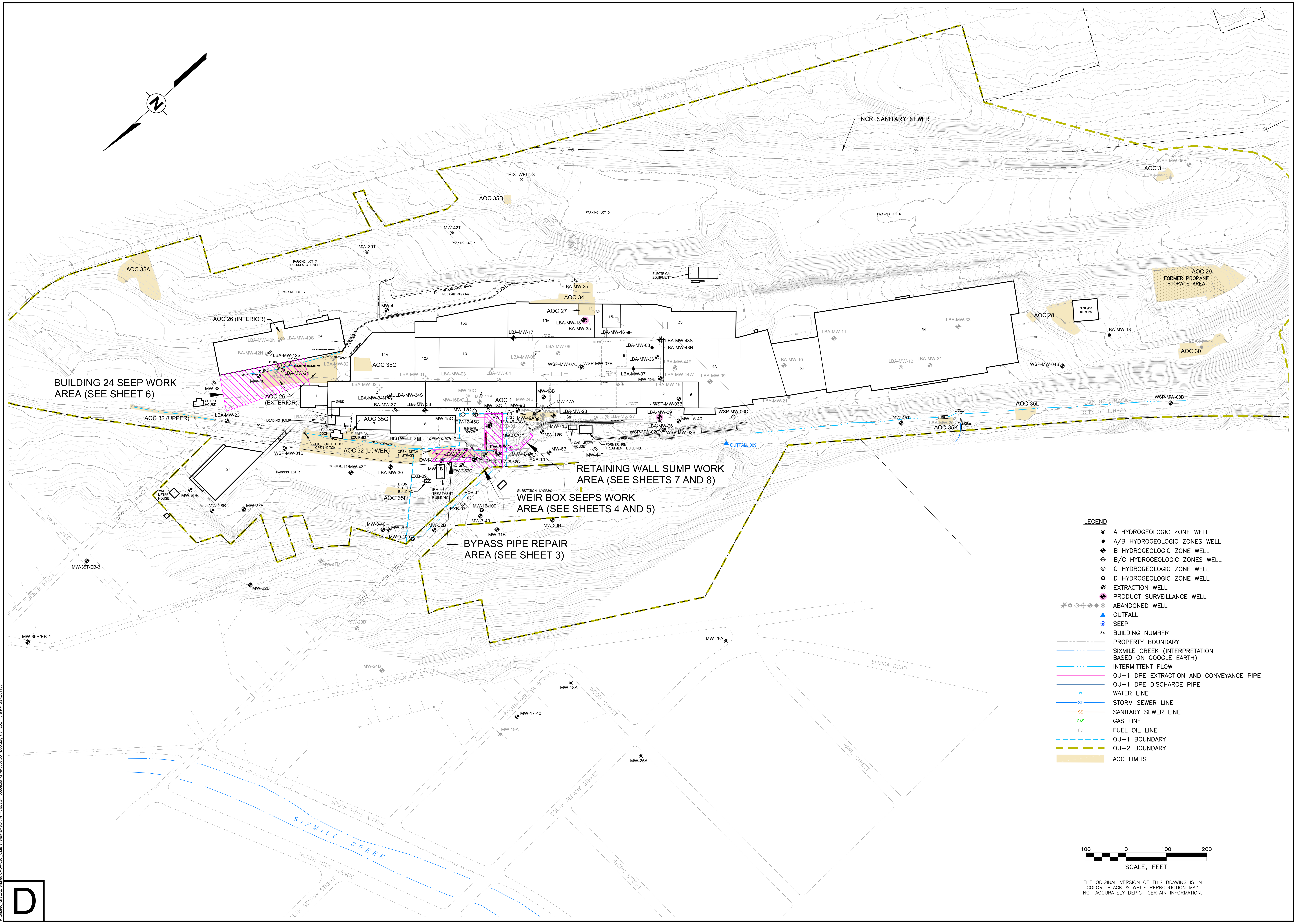
SHEET 1

Drawing Number
314P5608.001–D60



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DATE

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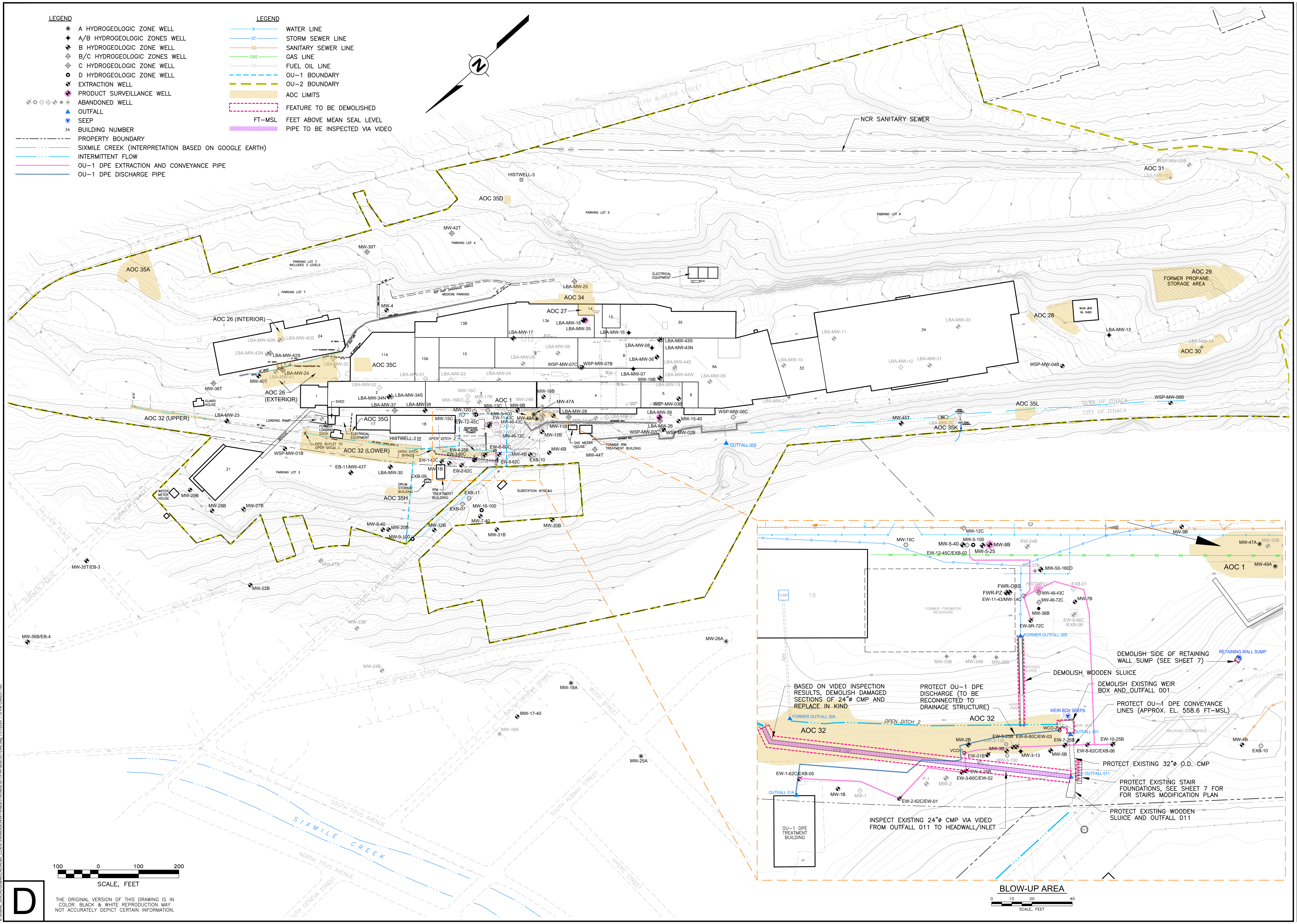
SHEET 2

Drawing Number
314P5608.001-D50



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PROTECTION AND DEMOLITION PLAN

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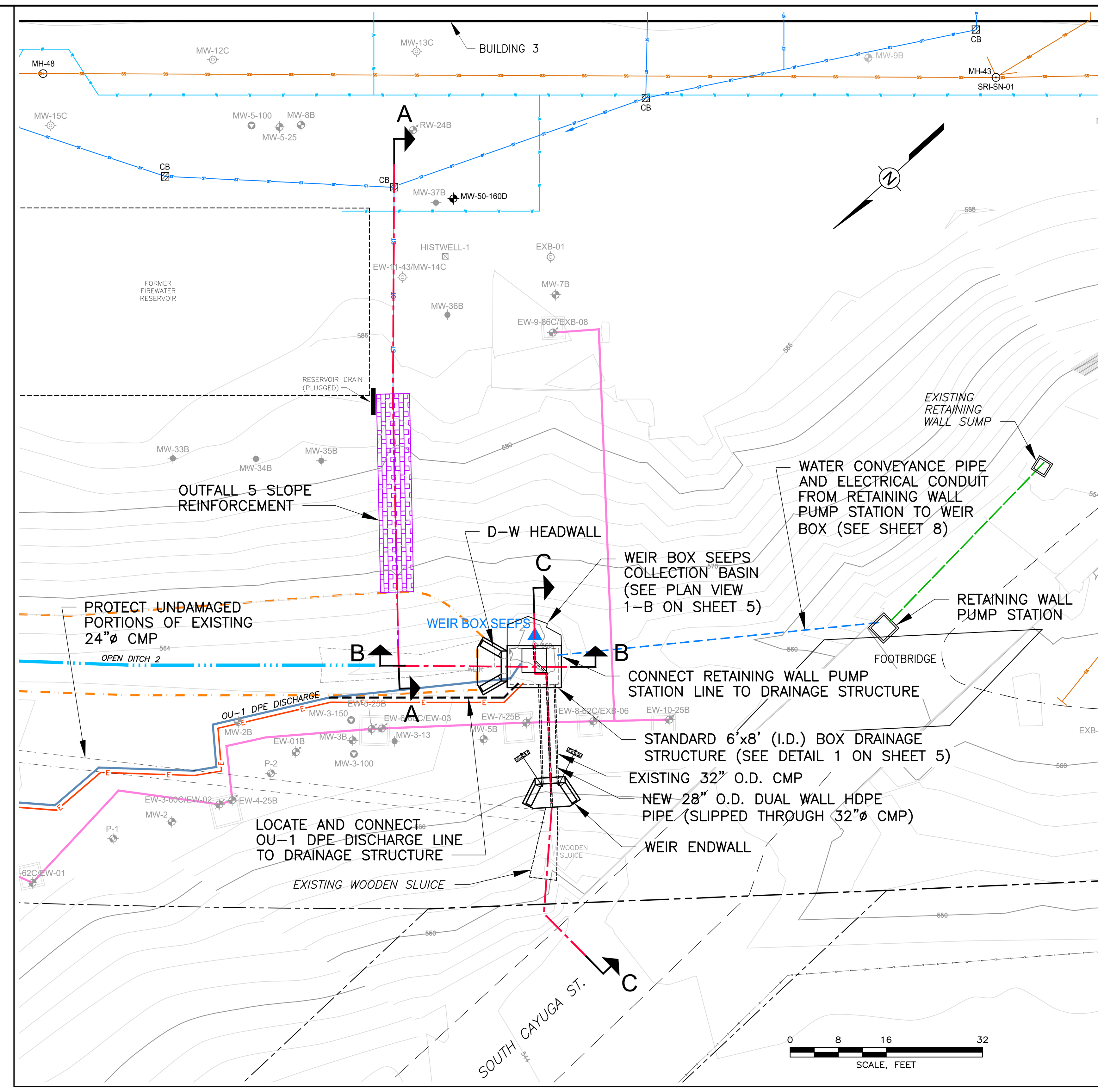
SHEET 3

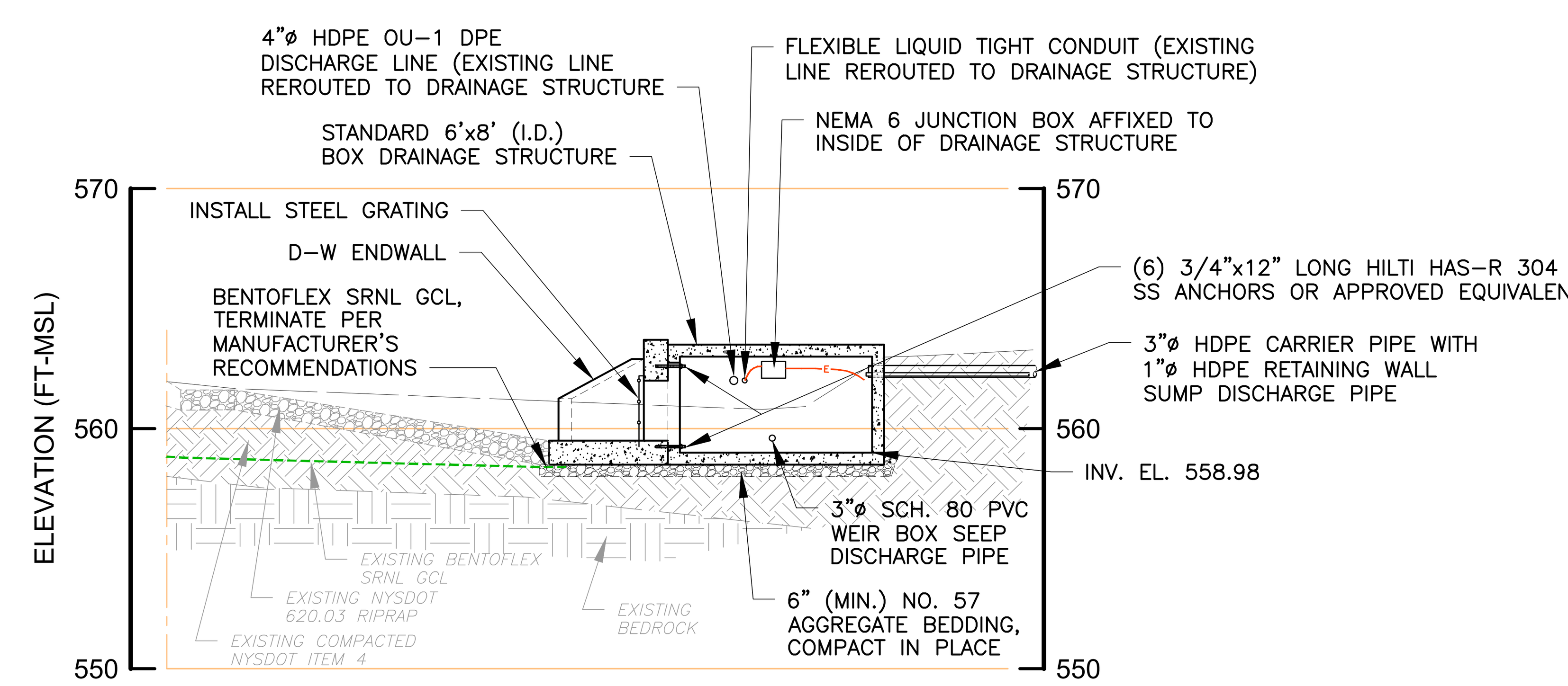
Drawing Number
314P5608.001-D46



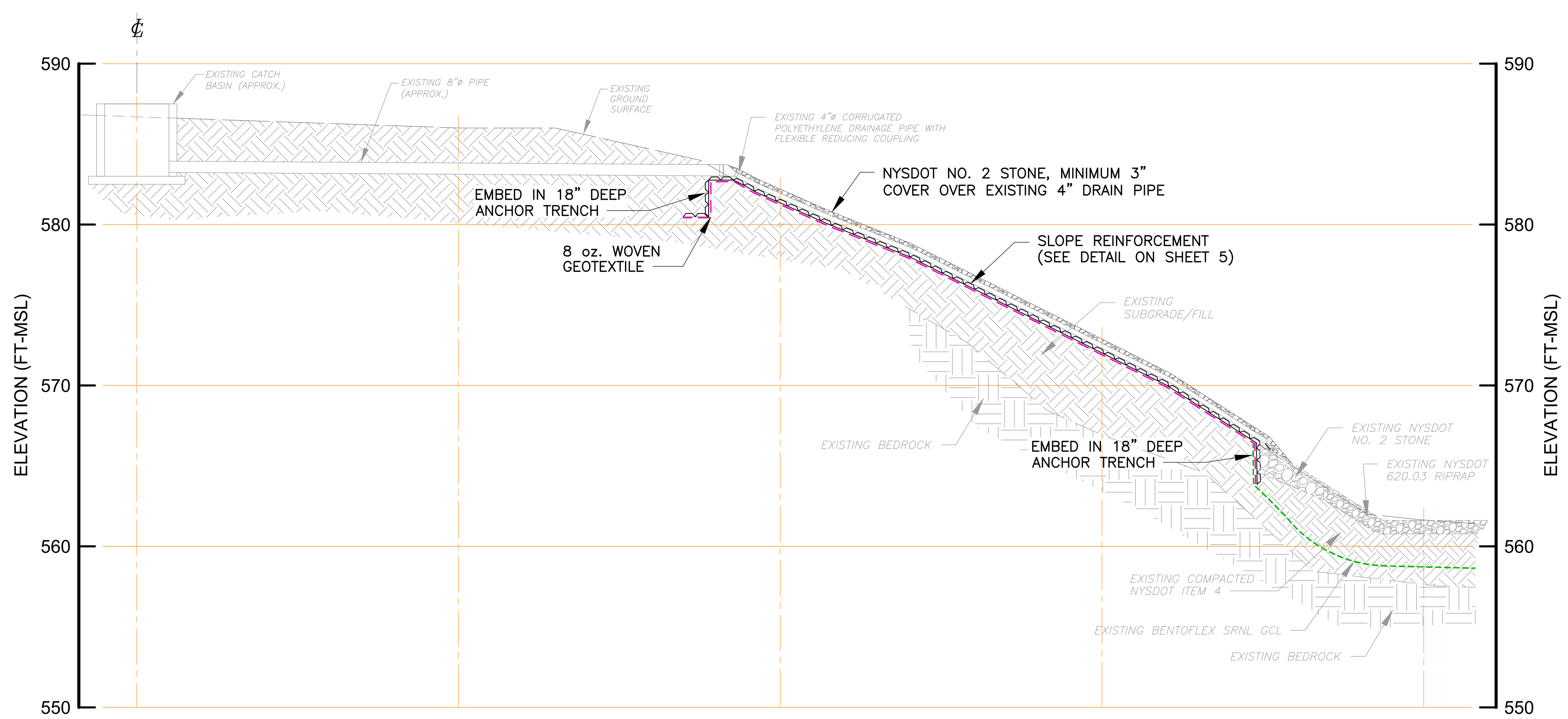
WEIR BOX SEEPS AND RETAINING WALL SUMP PLAN

LEGEND

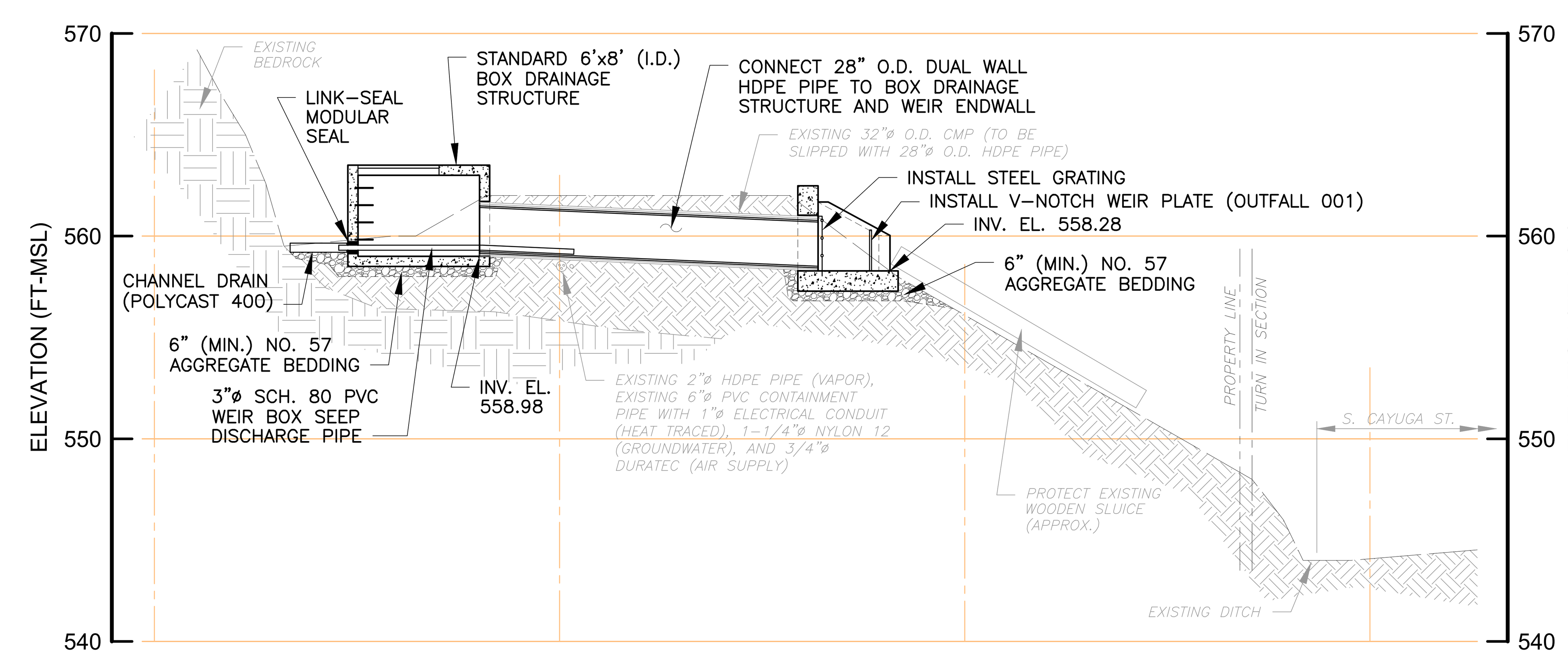
- HISTORICAL WELL
- A/B HYDROGEOLOGIC ZONES
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- D HYDROGEOLOGIC ZONE
- EXTRACTION WELL
- PIEZOMETER
- MANHOLE/MANWAY
- CATCH BASIN
- PROPERTY BOUNDARY
- WATER LINE (APPROXIMATE LOCATION)
- STORM WATER SEWER LINE (APPROXIMATE LOCATION)
- SANITARY SEWER LINE (APPROXIMATE LOCATION)
- INTERMITTENT STREAM OR DRAINAGE DITCH CENTERLINE
- LIMITS OF ARMORED CHANNEL (APPROXIMATE)
- GEOSYNTHETIC CLAY LINER (GCL)
- WELL VAULT JUNCTION BOX
- OU-1 DPE EXTRACTION AND CONVEYANCE LINES



CROSS SECTION B-B



CROSS SECTION A-A



CROSS SECTION C-C

6 4 2 0 6 12
SCALE, FEET

D

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REVISIONS

REV	DESCRIPTION

DRAWN BY RK 11/29/2023
CHECKED MTS 06/12/2024
APPROVED SAR 07/31/2024

WEIR BOX SEEPS AND OUTFALL 001 PLAN AND SECTIONS

SEEP REROUTING DESIGN
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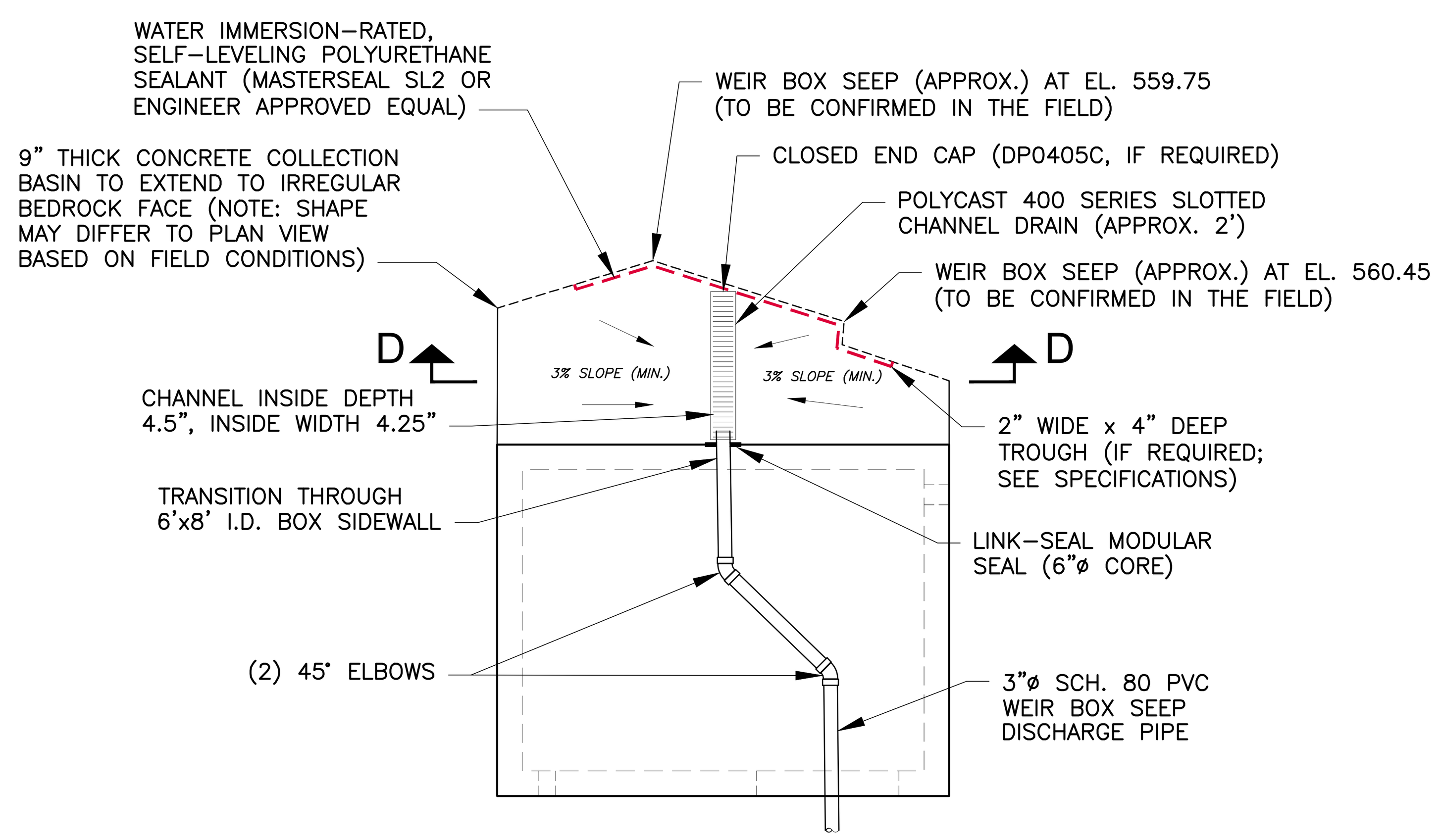
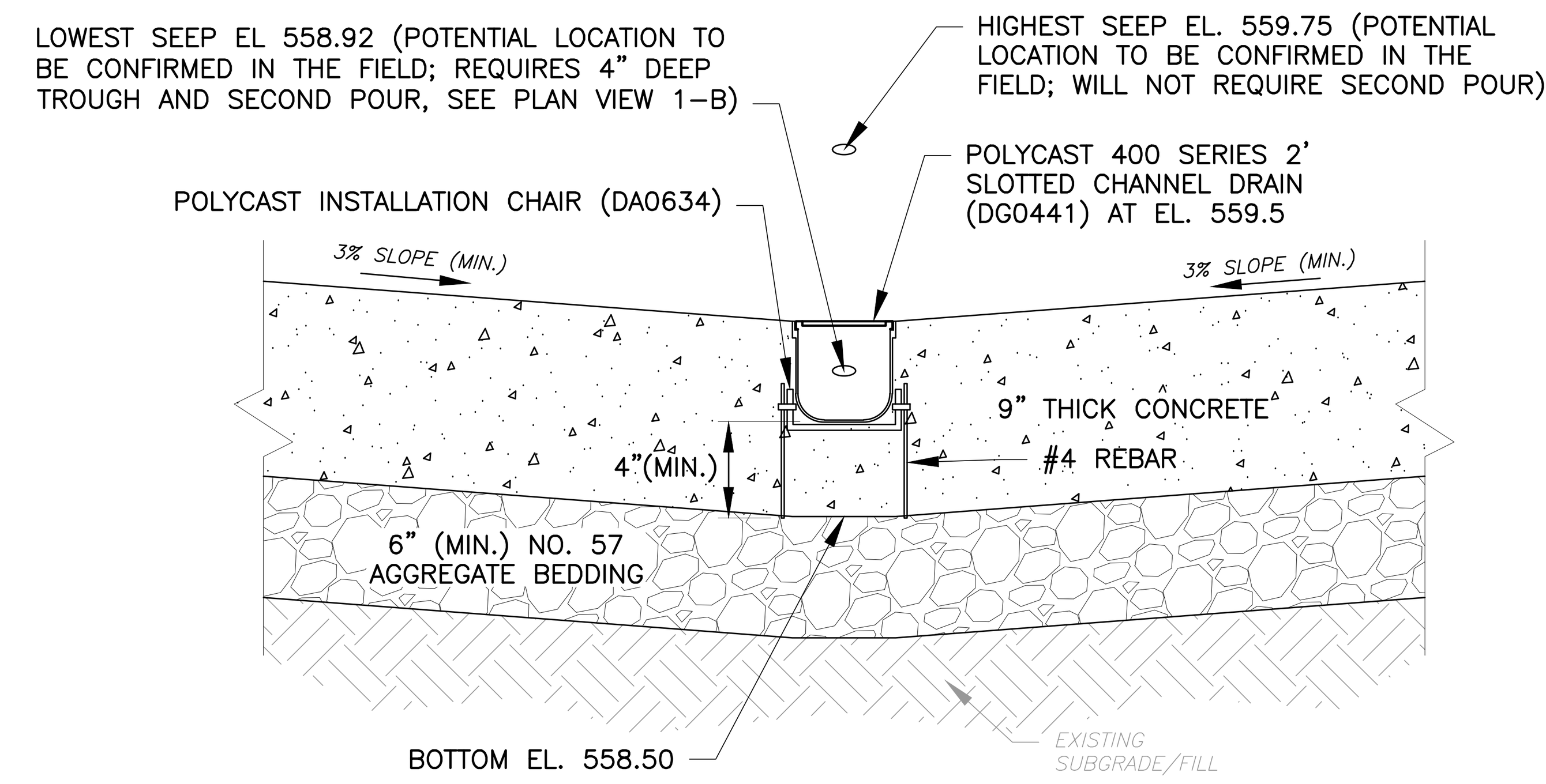
SHEET 4

Drawing Number
314P5608.001-D44



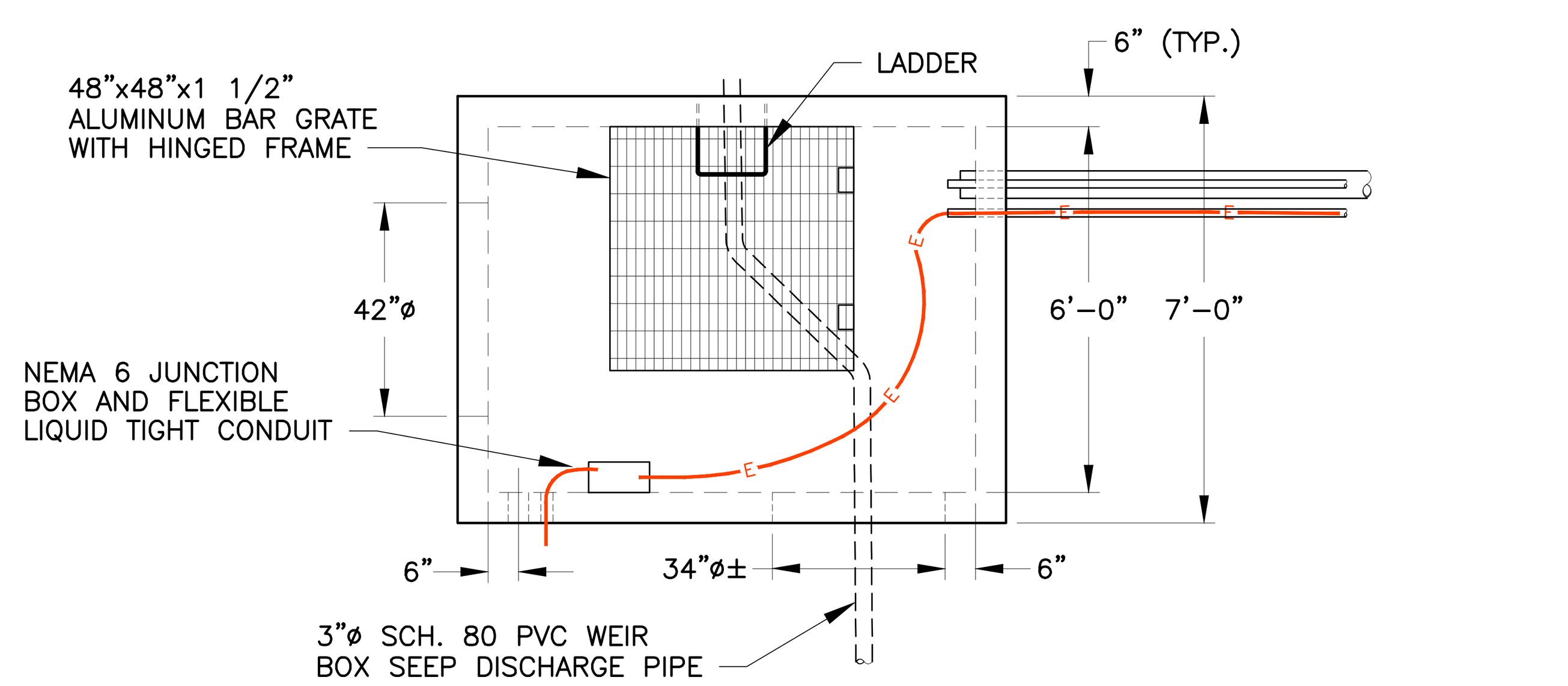
PLAN VIEW 1-B - WEIR BOX SEEPS COLLECTION BASIN

NOT TO SCALE

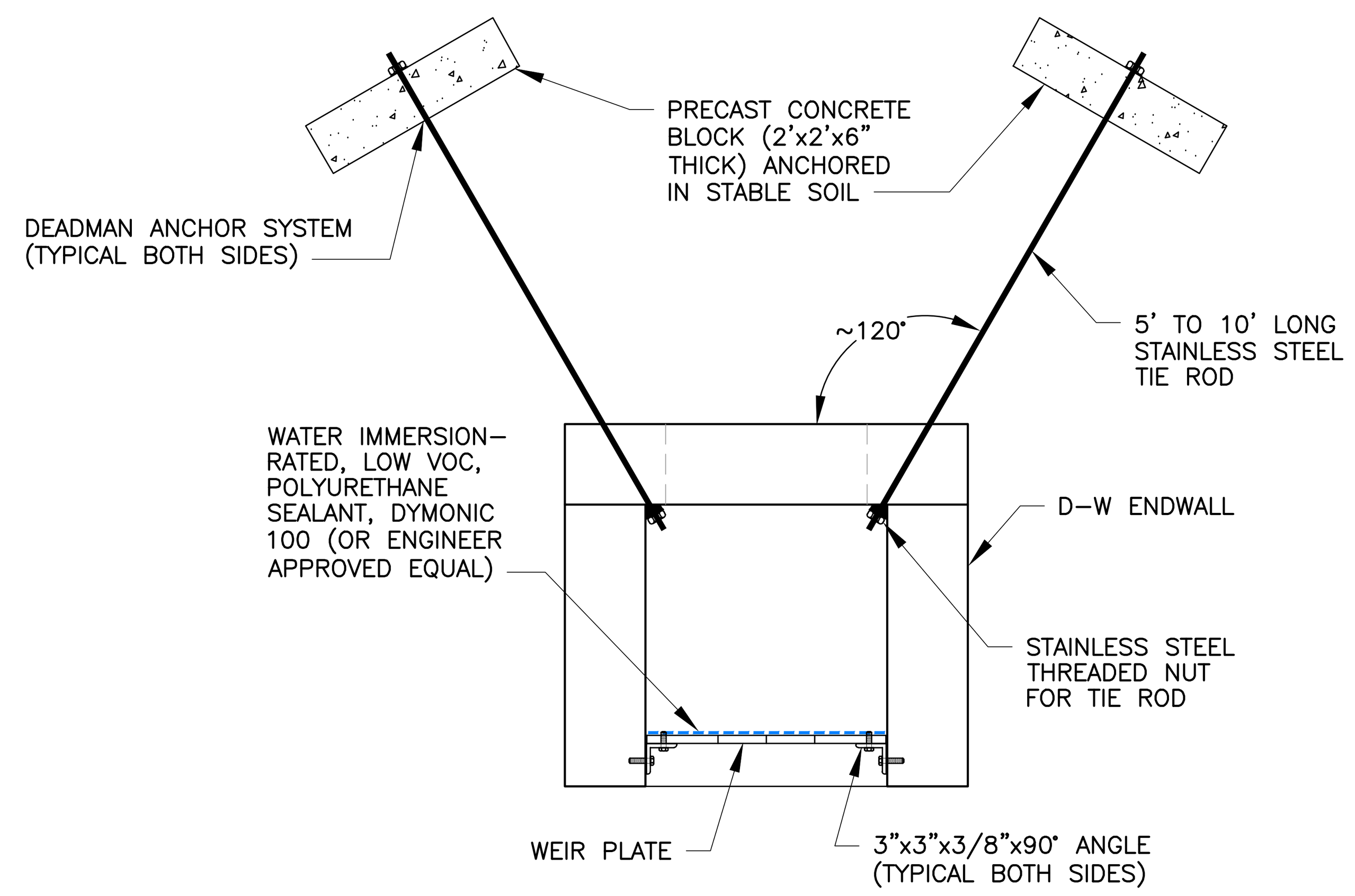


SECTION D-D

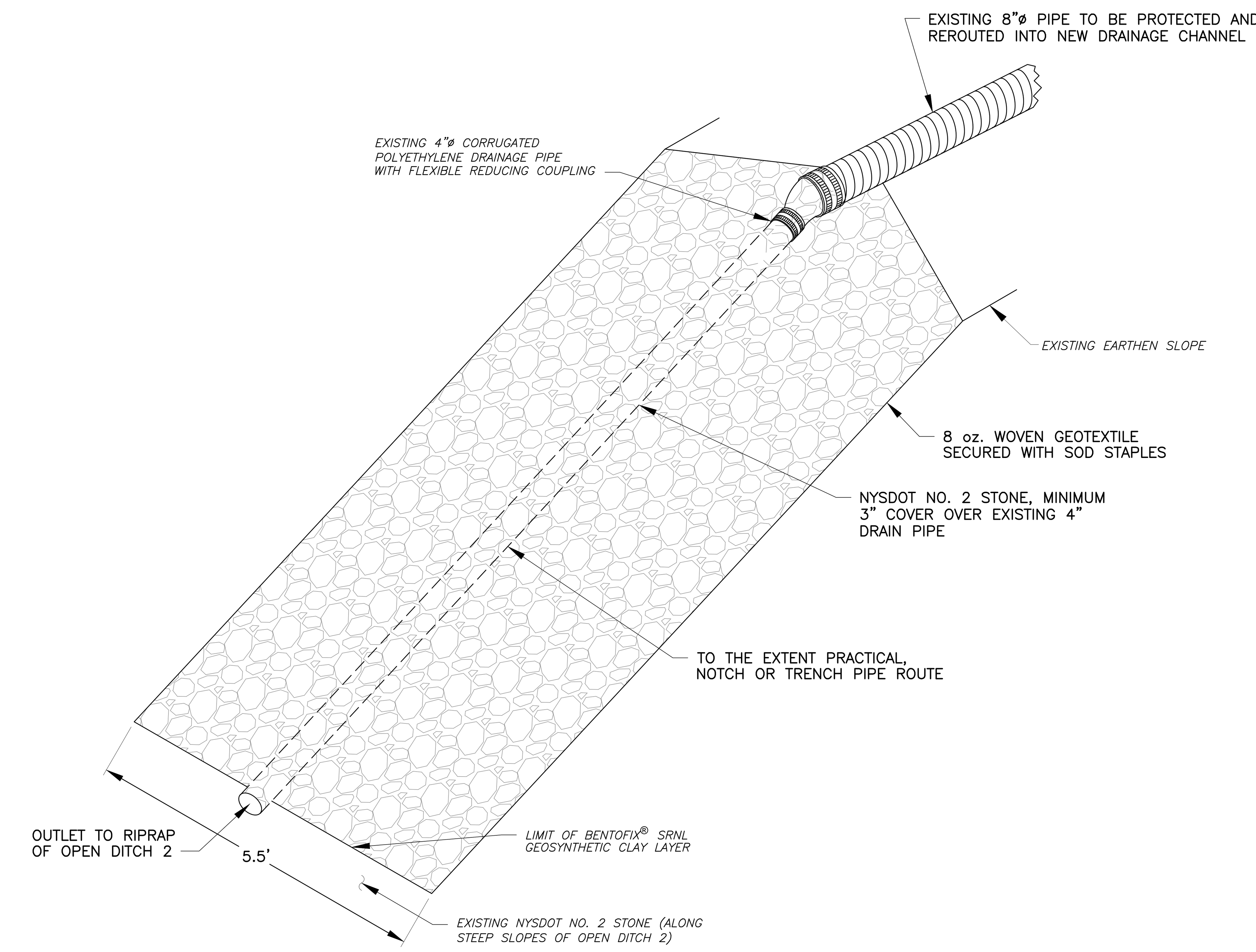
NOT TO SCALE



PLAN VIEW 1-A - BOX DRAINAGE STURCTURE

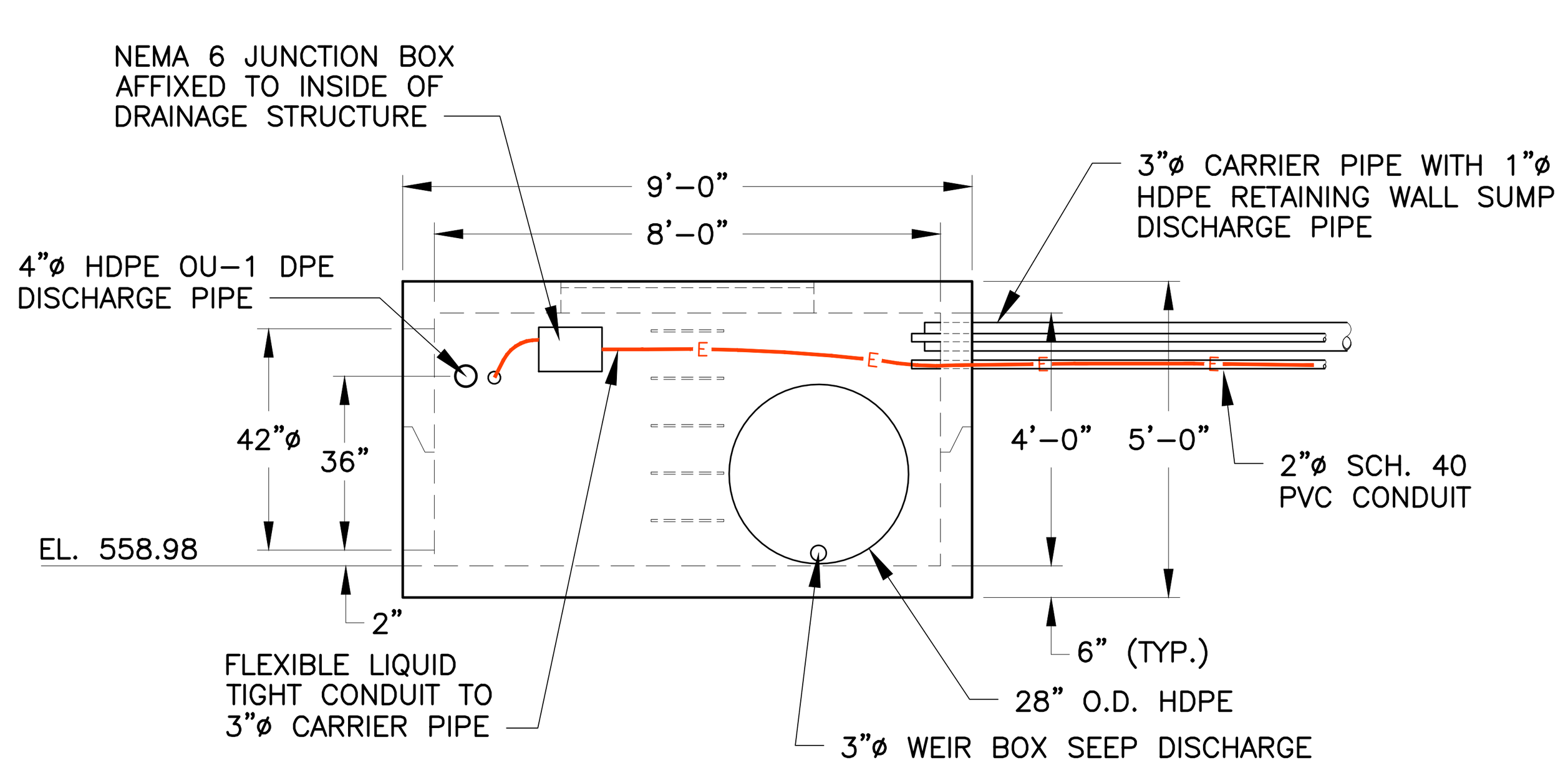


PLAN VIEW 2 - WEIR ENDWALL



DETAIL 3 - OUTFALL 005 SLOPE REINFORCEMENT INSTALLATION DETAIL

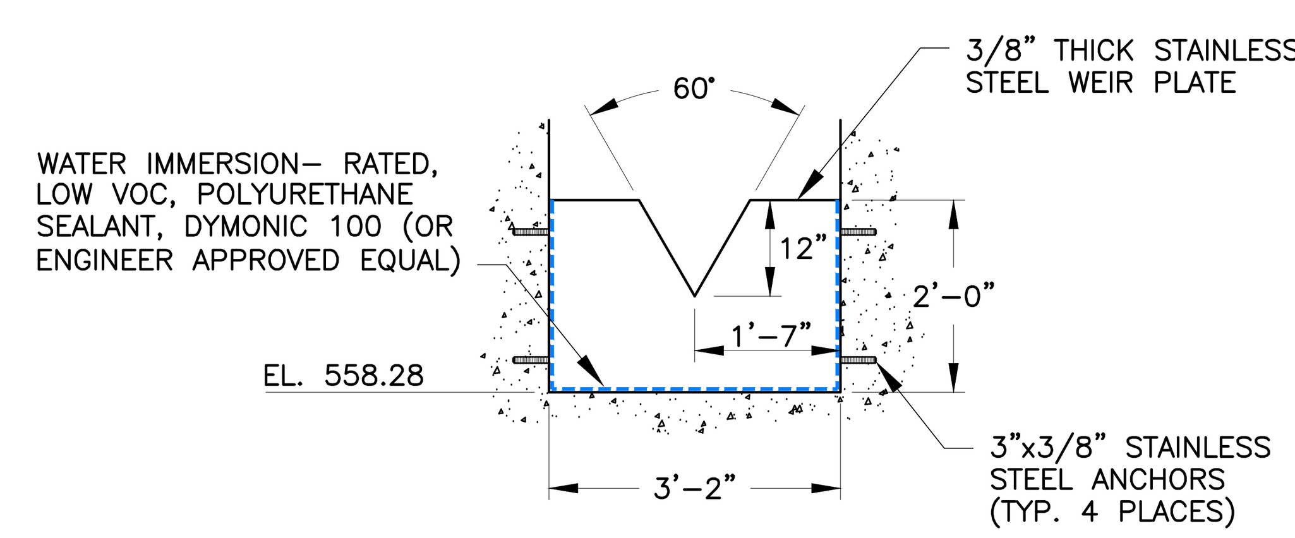
NOT TO SCALE



ELEVATION VIEW 1 - BOX DRAINAGE STRUCTURE

DETAIL 1

0 1 2 3 6
SCALE, FEET



ELEVATION VIEW 2 - WEIR

DETAIL 2

NOT TO SCALE

D

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REVISIONS

REV	DESCRIPTION

SEAL

DATE

DRAWN BY RJG 11/29/2023
CHECKED MTS 07/29/2024
APPROVED SHR 07/31/2024

WEIR BOX SEEPS AND OUTFALL 001 CONSTRUCTION DETAILS

SEEP REROUTING DESIGN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI

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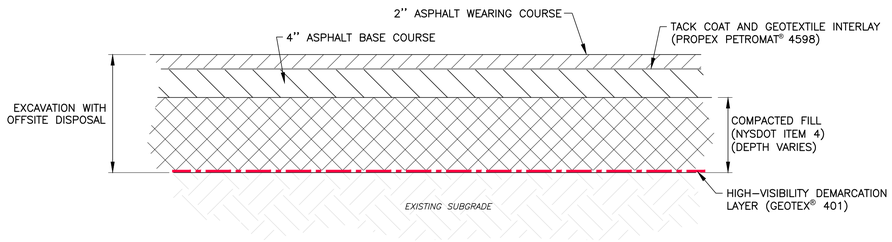
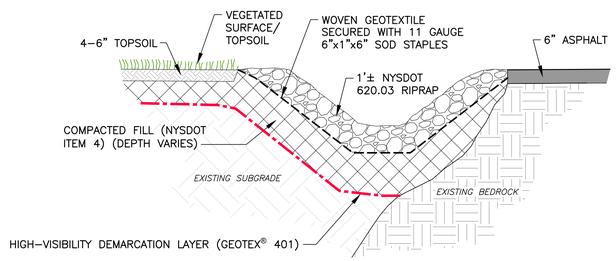
SHEET 5

Drawing Number
314P5608.001–D44



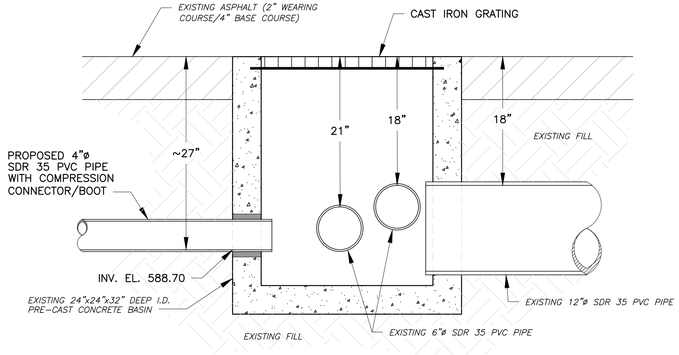
DETAIL 1 - TYPICAL ASPHALT RESTORATION

NOT TO SCALE



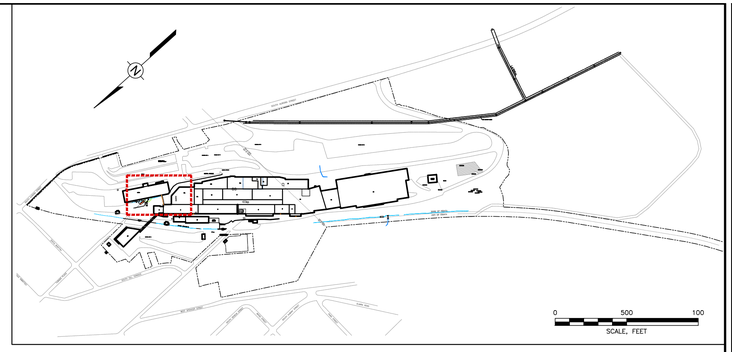
DETAIL 2 - TYPICAL DRAINAGE DITCH RESTORATION

NOT TO SCALE

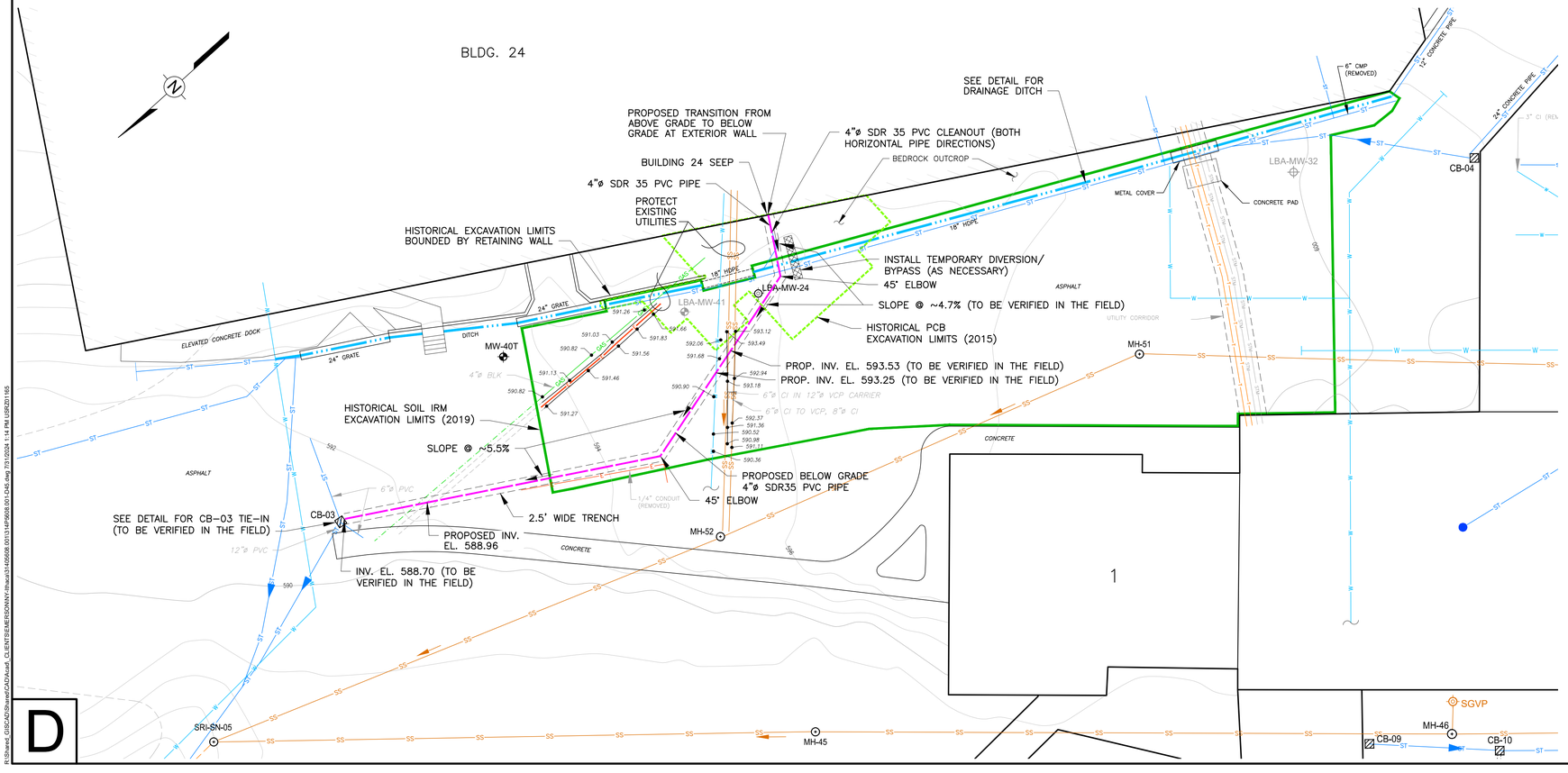


DETAIL 3 - 4"Ø PVC PIPE TIE-IN TO CB-03

NOT TO SCALE



KEY MAP



LEGEND

- SOIL BORING
- ABANDONED WELL
- B HYDROGEOLOGIC ZONE
- B/C HYDROGEOLOGIC ZONES
- C HYDROGEOLOGIC ZONE
- MH-52 MANHOLE/MANWAY
- CB-03 CATCH BASIN
- ROOF DRAIN
- SGVP SANITARY GAS VENT PIPE
- 34 BUILDING NUMBER
- CI CAST IRON
- CMP CORRUGATED METAL PIPE
- HDPE HIGH DENSITY POLYETHYLENE
- PVC POLYVINYL CHLORIDE
- VCP VITREOUS CLAY PIPE
- BLK BLACK STEEL
- PROPOSED BUILDING 24 SEEP CONVEYANCE LINE
- TEMPORARY DIVERSION/BYPASS
- W WATER LINE
- ST STORM WATER SEWER LINE
- SS SANITARY SEWER LINE
- GAS GAS LINE
- STM STEAM LINE
- T TELECOMMUNICATIONS LINE
- E ELECTRICAL CONDUIT
- INTERMITTENT STREAM OR DRAINAGE DITCH
- FINAL EXTENT OF HISTORICAL SOIL EXCAVATION
- FINAL EXTENT OF HISTORICAL PCB EXCAVATION

NOTE:

1. UTILITY LINES SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE PROTECTED.
2. EXISTING AND PROPOSED PIPE INVERT ELEVATIONS AND SLOPES SHALL BE VERIFIED IN THE FIELD BEFORE INSTALLATION.
3. DRAINAGE DITCH AND ASPHALT PAVEMENT SHALL BE RESTORED IN KIND AS SHOWN IN DETAILS 1 AND 2 FOLLOWING BUILDING 24 SEEP REROUTING ACTIVITIES.

15 10 5 0 15 30
SCALE, FEET

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

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REVISIONS

REV	DESCRIPTION	Chkd:	Appr.:
1	Revised:	Chkd:	Appr.:
2	Revised:	Chkd:	Appr.:
3	Revised:	Chkd:	Appr.:

SEAL

DATE

DRAWN BY RAE 11/7/23
CHECKED DLC
APPROVED SAR 07/31/24

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BUILDING 24 SEEP REROUTING PLAN AND DETAILS

SEEP REROUTING DESIGN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI

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TEL: +1 412.604.1040

SHEET 6

Drawing Number
314P5608.001-D45

PROPOSED WEIR BOX SEEP COLLECTION BASIN (APPROXIMATE)

WEIR BOX SEEPS

WEIR BOX

PROPOSED BOX DRAINAGE STRUCTURE

PROPOSED D–W HEADWALL

EW-7-25B

EW-8-62C/EXB-06

EW-10-25B

MW-5B

PROPOSED 28" O.D. DUAL WALL HDPE PIPE

PROPOSED WEIR ENDWALL

MODIFY STAIRS AND FASTEN TO NEW PRE–CAST WEIR ENDWALL

EXISTING METAL STAIRS WITH RAILING

ALIGN EDGE OF ENDWALL WITH EXISTING WOODEN SLUICE

OUTFALL 011

WEIR PLATE

NEW OUTFALL 001 LOCATION

PROPOSED CARRIER AND WATER CONVEYANCE PIPE FROM RETAINING WALL PUMP STATION TO WEIR BOX

PROPOSED 2"ø ELECTRICAL CONDUIT FROM RETAINING WALL PUMP STATION TO WEIR BOX (CONNECT TO EXISTING ELECTRICAL SERVICE)

EXISTING RETAINING WALL SUMP

DEMOLISH SIDE OF EXISTING RETAINING WALL SUMP

PLUG EXISTING POTW CONNECTION

PROPOSED 4"ø SCH. 80 PVC PIPE

PROPOSED INFILTRATION GALLERY (5' WIDE x 20' LONG)

PROPOSED RETAINING WALL PUMP STATION

EXISTING SANITARY SEWER

RAILROAD FOOTBRIDGE

SANITARY SEWER

MW-4B

OFFSITE DISCHARGE TO SANITARY SEWER SYSTEM

LEGEND

- B HYDROGEOLOGIC ZONE WELL
- EXTRACTION WELL
- OUTFALL
- SEEP
- PROPERTY BOUNDARY
- INTERMITTENT FLOW
- IRM EXTRACTION AND CONVEYANCE PIPE
- IRM DISCHARGE PIPE
- OU–1 BOUNDARY
- OU–2 BOUNDARY
- AOC LIMITS
- PROPOSED RETAINING WALL PIPE EXTENSION
- PROPOSED RETAINING WALL SUMP CONVEYANCE PIPE TO WEIR BOX
- PROPOSED ELECTRICAL CONDUIT

NOTES:

1. THE PROPOSED CARRIER AND WATER CONVEYANCE PIPING, AND ELECTRICAL CONDUIT SHALL BE INSTALLED BY CLEARING VEGETATION/TREES AND TRENCHING THE PIPE AND CONDUIT ROUTE DOWN TO BEDROCK. ONCE THE PIPE AND CONDUIT ARE INSTALLED, THE PIPE AND CONDUIT SHALL BE COVERED WITH NATIVE SOIL AND IMPORTED SOIL/FILL TO ENSURE THE DEPTH OF THE PIPING IS 3 FEET BELOW GROUND SURFACE. REPLACED SOIL AND FILL SHALL BE COMPACTED WITH A VIBRATING PLATE COMPACTOR. EROSION MATTING SHALL BE PLACED ALONG TOP OF THE GROUND SURFACE FOR ALL DISTURBED AREAS.

2. THE PROPOSED RETAINING WALL PIPE EXTENSION BETWEEN THE EXISTING RETAINING WALL SUMP AND PROPOSED RETAINING WALL PUMP STATION SHALL BE INSTALLED BY CLEARING VEGETATION/TREES AND TRENCHING THE PIPE AND CONDUIT ROUTE AS SHOWN. ONCE THE PIPE IS INSTALLED, THE PIPE AND CONDUIT SHALL BE COVERED WITH NATIVE SOIL AND IMPORTED SOIL/FILL TO ENSURE THE DEPTH OF THE PIPING IS 3 FEET BELOW GROUND SURFACE. REPLACED SOIL AND FILL SHALL BE COMPACTED WITH A VIBRATING PLATE COMPACTOR. EROSION MATTING SHALL BE PLACED ALONG TOP OF THE GROUND SURFACE OR ALL DISTURBED AREAS.

3. SOIL OR OTHER MATERIALS PROPOSED FOR IMPORT TO THE SITE SHALL BE APPROVED PER SECTION F–10 OF THE EXCAVATION WORK PLAN.

4. THE EDGE OF THE INFILTRATION GALLERY SHALL NOT BE CLOSER THAN 3 FEET FROM THE SANITARY SEWER PIPE.

4 0 4 8
SCALE, FEET

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

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REVISIONS

REV	DESCRIPTION	Drwn:	Appr.:
1	Revised	Drwn:	Appr.:
2	Revised	Drwn:	Appr.:
3	Revised	Drwn:	Appr.:

SEAL

DATE

DRAWN BY: RAL 07/31/2024
CHECKED: JRB 07/31/2024
APPROVED: SMR 07/31/2024

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RETAINING WALL SUMP REROUTING PLAN

SEEP REROUTING DESIGN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK

PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI

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11 STANWIX STREET, SUITE 950
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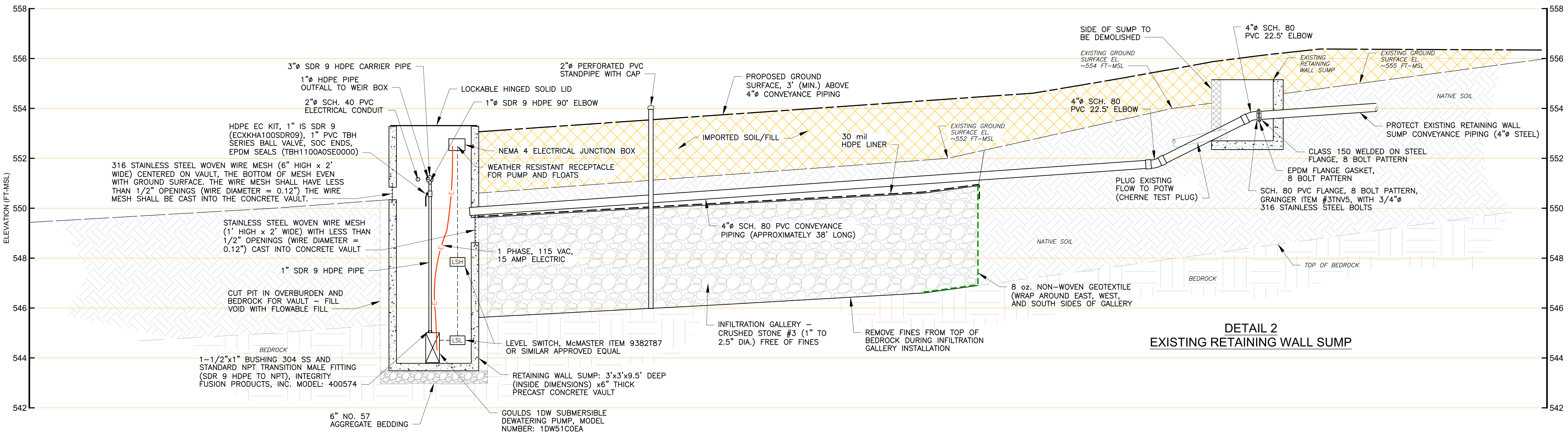
TEL: +1 412.604.1040

SHEET 7

Drawing Number
314P5608.001–D48



DETAIL 2
EXISTING RETAINING WALL SUMP

DETAIL 1
PROPOSED RETAINING WALL PUMP STATION

2 1 0 2 4
SCALE, FEET

THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.

NOTES:

1. BEDROCK DEPTHS WERE ESTIMATED BASED ON THE FINAL REPORT – REMEDIAL INVESTIGATION STAGES 1 AND 2, EMERSON POWER TRANSMISSION (EPT), ITHACA, NEW YORK, FEBRUARY 1990 PREPARED BY THE RADIAN CORPORATION. SEE SOIL BORINGS B-10 AND B-13.

2. GROUND ELEVATIONS WERE SURVEYED BY WSP USA INC. BETWEEN AUGUST 26, 2022 AND SEPTEMBER 2, 2022.

3. THE INFILTRATION GALLERY SHALL BE INSTALLED 1 FOOT BELOW EXISTING GROUND SURFACE AND EXTEND TO THE TOP OF BEDROCK WHICH IS APPROXIMATELY 5 FEET BELOW GROUND SURFACE.

4. THE DIMENSIONS OF THE INFILTRATION GALLERY SHALL BE 20 FEET LONG, 5 FEET WIDE, AND 4 FEET DEEP.

5. THE TOP OF THE INFILTRATION GALLERY SHALL BE COVERED WITH 30 mil HDPE LINER. THE EDGES SHALL BE WRAPPED DOWNWARD APPROXIMATELY 6 INCHES ON ALL SIDES OF THE GALLERY, EXCEPT THE SIDE OF THE SUMP.

6. THE INFILTRATION GALLERY SHALL BE FILLED WITH NYSDOT #3 STONE.

7. CONVEYANCE PIPING SHALL BE COVERED WITH A MINIMUM OF 3 FEET OF FILL AS APPROVED PER SECTION F-10 OF THE EXCAVATION WORK PLAN.

8. LSH – LEVEL SWITCH HIGH (PUMP ON).

9. LSL – LEVEL SWITCH LOW (PUMP OFF).

REVISIONS

REV	DESCRIPTION

SEAL

DATE

DRAWN BY
CHECKED
APPROVED

RETAINING WALL SUMP REROUTING SECTION AND DETAILS

SEEP REROUTING DESIGN
FORMER EMERSON POWER TRANSMISSION
ITHACA, NEW YORK
PREPARED FOR
EMERSON – ST. LOUIS, MISSOURI

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SHEET 8

Drawing Number
314P5608.001-D47

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